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Aktuálne otázky svetovej
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**International Relations 2025:
Current issues of world
economy and politics**

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Foreword

Distinguished Colleagues,

On November 26–27, 2025, we convened at the traditional international scientific conference entitled International Relations 2025: Current Issues in World Economy and Politics, organized by the Faculty of International Relations, Bratislava University of Economics and Business.

The conference marked a significant milestone—the 25th anniversary of the establishment of the Faculty of International Relations. The gathering thus served not only as a forum for scholarly exchange, but also as a dignified commemoration of a quarter century of the Faculty's contributions to education, research, and the advancement of international relations.

Over the past twenty-five years, the Faculty of International Relations has undergone dynamic development. During this period, it has emerged as a respected academic institution. It has responded consistently to the changing conditions of the global environment. The anniversary therefore offered an opportunity to review past achievements. At the same time, it encouraged reflection on future challenges facing the world economy, international politics, and law amid increasing complexity and uncertainty.

These proceedings are the outcome of scholarly discussions conducted in a ceremonial yet intellectually rigorous atmosphere. They present a selection of academic contributions addressing current issues of global development, geopolitical change, and economic transformation. They also examine challenges in the fields of international and European law. The thematic and methodological diversity of the contributions reflects the interdisciplinary character of the Faculty. It further confirms its long-standing commitment to the comprehensive study of international phenomena.

The contributors include established scholars and faculty members, as well as early-career researchers and doctoral candidates. Their work supports the development of a new generation of experts in international economic relations. The contributions combine theoretical perspectives with empirical analyses and practical insights. They are relevant to both academic research and policy-oriented practice.

This volume also serves as a tribute to all those who have contributed to the establishment and development of the Faculty of International Relations over the past twenty-five years. It stands as a meaningful record of this anniversary conference. It also seeks to inspire future research and to encourage continued scholarly dialogue, which remains central to the Faculty's mission.

Finally, we wish to express our sincere appreciation to all conference participants. Their active engagement, scholarly contributions, and open exchange of ideas ensured the substantive and dignified character of this anniversary event. Particular thanks are extended to the authors of the papers and to the members of the organizing and program committees for their dedication and professionalism. We also acknowledge the partner institutions and supporters whose assistance made this conference possible. We are confident that this gathering will further strengthen scholarly cooperation and academic dialogue in the years to come

Section 1

CURRENT ISSUES OF ENVIRONMENTAL ASPECTS IN INTERNATIONAL RELATIONS

THE ENVIRONMENTAL KUZNETS CURVE AND WATER STRESS: REVISITING THE EVIDENCE WITH STRUCTURAL, DEMOGRAPHIC, AND INSTITUTIONAL VARIABLES¹

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Abstract: The objective of this study is to empirically examine if a non-linear relationship between economic development and water stress exists, as proposed by the Environmental Kuznets Curve (EKC) hypothesis. A cross-sectional regression model for 84 countries was applied to test the EKC hypothesis and to evaluate the effects of GDP per capita, agricultural and manufacturing shares in GDP, population density, and government effectiveness. The results reveal that the EKC hypothesis is not supported, as income growth alone does not significantly explain variation in water stress. Instead, structural and demographic factors emerge as the most significant determinants in our model. The study contributes to the existing literature by extending the EKC framework through the inclusion of these additional variables and by providing new empirical evidence on the drivers of water stress across countries.

Keywords: Environmental Kuznets Curve, water stress, economic development, agriculture, manufacturing industry, population density, government effectiveness

JEL: Q25, Q56, O44

Introduction

Water stress ranks among the key environmental issues of the 21st century, stemming from its strong connection to climate change, recurring droughts, and the growing occurrence of extreme weather phenomena that collectively strain freshwater resources. It is commonly evaluated using measures such as water scarcity, availability, withdrawals, consumption levels, and the water footprint (Wang et al., 2021). In addition to natural influences, economic and societal processes – such as expanding industrial activity, agricultural intensification, and accelerated urban growth – further increase freshwater demand. Conversely, these pressures can be alleviated through effective governance, technological progress, and the adoption of sustainable approaches to water management.

In the broader field of environmental economics, the Environmental Kuznets Curve (EKC) provides a theoretical framework linking environmental degradation to economic growth. Originating from Simon Kuznets's hypothesis on income inequality, the EKC suggests that environmental pressures first increase and later decline as income per capita rises, forming an inverted U-shaped trajectory (Dinda, 2004). The EKC framework has been frequently

¹ The paper was published within the Water4All project ID 101060874 under HORIZON-CL6-2021-CLIMATE-01.

applied to various forms of environmental degradation, yet evidence regarding its relevance to water stress in academic literature remains limited.

The objective of this study is to re-examine whether the EKC applies to water stress when economic development is analysed separately, and together with structural, demographic, and institutional conditions. Specifically, we test a non-linear relationship between GDP per capita and water stress on a refined cross-sectional sample of 84 countries, based on the last available data for year 2024, that excludes extreme outliers (water stress $\geq 50\%$), and we quantify the effects of manufacturing and agricultural shares in GDP, population density, and government effectiveness. Methodologically, we employ a block OLS regression with mean-centered log GDP and its quadratic term to compare model fits as additional covariates are introduced. The study's contribution is twofold: (i) it provides empirical evidence on whether economic development alone explains cross-country variation in water stress, and (ii) it identifies other potential mechanisms that more directly drive water stress.

1 Literature review

Water stress is commonly defined as the pressure exerted on the quality and quantity of renewable water resources, and it represents one of the most urgent environmental issues around the world. According to the United Nations any country extracting more than 25% of their renewable freshwater resources is considered under water stress (United Nations, 2019).

With the rapid growth of the global population, economic development, and shifting consumption patterns, water stress has emerged as a major global issue, increasingly visible in Europe as well (Wang et al., 2021). This is further supported by Esen et al. (2020), who pointed out that although freshwater is a renewable resource, its availability is inherently limited. Water represents a fundamental role for the functioning of economic, social and natural systems, and plays a vital role in ensuring human health, as well as food and energy security, thereby directly influencing overall quality of life (Esen et al., 2020).

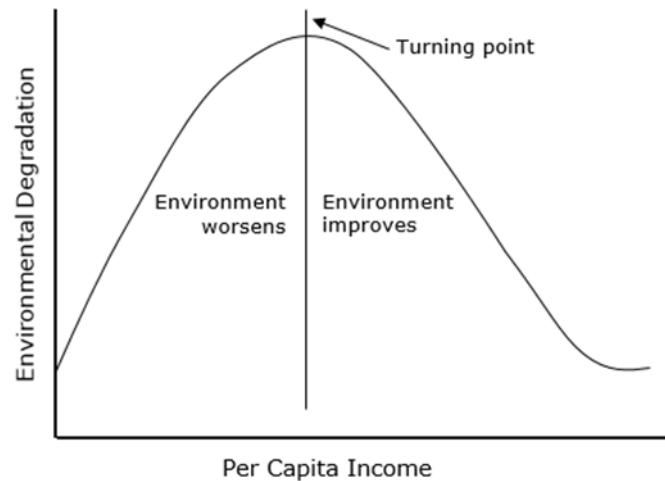
In recent decades the availability of freshwater resources has been steadily diminishing because of intensive human intrusion with the natural water cycle and the impacts of climate change (Dudgeon, 2019; Kuang et al., 2024; Rodell et al., 2018). Rapid industrialization, socio-economic development, urbanization continuously pressures the water resources leading to situations where quality and quantity of available water often fail to meet the increasing demand (Boretti & Rosa, 2019; Deng et al., 2021; Hao et al., 2019; Wang et al., 2021).

To better understand the scale of this issue within the European context, the European Environmental agency's report (Europe's state of water, 2024) uncovered that less than 40% of Europe's surface waters are in favourable condition. Moreover, over one quarter of groundwater reserves do not comply with the requested chemical standards. When measuring the overall status of European water bodies, the report reasoned that water quality has shown almost no significant improvements since 2009 (Dinov et al., 2025). These findings point out that Europe, despite its developed environmental policies, faces water availability and quality challenges. With these challenges, it is becoming essential to explore economic mechanisms that connect environmental degradation with development. A framework that addresses this connection is the Environmental Kuznets Curve (EKC).

The EKC concept originates from Simon Kuznets' original hypothesis, which suggested that income inequality first rises and later declines as an economy develops. The EKC framework extends this idea to environmental issues, examining whether, after reaching a certain level of economic development, resource depletion and environmental pollution can be mitigated without sacrificing income per capita. This pattern is most evident in advanced economies. Theoretically, the relationship between per capita income and environmental degradation follows an inverted U-shaped curve. In the early stages of industrialization and structural transformation, pollution tends to increase. Once a specific

income threshold is surpassed, environmental pressures tend to decrease due to technological advancements, stricter environmental regulations, and evolving consumer preferences (Hubbard, 2024; Naveed et al., 2022).

Figure 1: The Environmental Kuznets Curve



Source: Wikimedia, 2015

Grossman and Krueger were among the first to prove that the relationship between economic growth and environmental degradation follows an inverted U-shaped pattern (Grossman & Krueger, 1991). Subsequent research conducted in countries such as South Africa, the United States, and Pakistan provided additional empirical evidence for the EKC hypothesis (Alola & Ozturk, 2021; Danish et al., 2017; Rafindadi & Usman, 2019).

Despite the extensive literature on EKC, only a limited number of studies have explored the direct connection between the EKC framework and Water stress. Miglieta et al. (2017) examined the association between national water consumption and economic growth using the water footprint as the dependent variable. Nevertheless, their cross-sectional regression analysis did not confirm the existence of the EKC hypothesis in this context. Lee et al. (2019) investigated the connection between water pollution and economic growth with the help of the GMM method on a dataset of 97 countries, identifying regional differences in the validity of EKC. In another study Esen et al. (2020) analysed whether real GDP per capita has threshold effect on water stress levels by applying a non-linear panel threshold regression model towards nine Eurozone countries. Their result pointed out a non-linear relationship between income per capita and water stress, which was not consistent with the classic inverted U-shape of the EKC (Esen et al., 2020). On the contrary a study from Iran covering 31 regions between 2005 and 2018 confirmed an inverted U-shape relationship between economic growth and water withdrawals in both the agricultural and service sectors (Hosseinzadeh et al., 2022). The EKC does not fully cover the complexity of the water related topic and that is the reason why recent studies have transitioned their attention toward sectoral and structural determinants to shape water stress dynamics.

In particular, the agricultural sector plays a critical role due to its water requirements and sensitivity to climate variability. Ingrao et al. (2023) conducted research in the field of agriculture and water scarcity. Their study focuses on finding solutions that would increase the efficiency and resilience of agricultural production and food consumption. The authors emphasize the need to prioritize water conservation measures over the expansion of water management infrastructure. In the context of climate change and increasing water stress, they consider sustainable irrigation to be a key tool for ensuring stability and long-term

sustainability for agriculture (Ingrao et al., 2023). Dounmanee's study (2016) deepens our understanding of agriculture in relation to water stress and examines the relationship between agricultural water use and economic development levels in 154 countries around the world. It concludes that agriculture is the largest consumer of water in less developed economies. The study also showed that as the country's income grows, the amount of water used in agriculture initially increases, but in the most advanced economies, this trend is declining, indicating greater efficiency in the use of water resources (Dounmanee, 2016).

At the same time, industrial expansion has also become an issue connected to water demand. Global demand for water is projected to rise by 55% by 2050, driven primarily by the growing requirements of the manufacturing sector – notably the food industry – as well as by expanding thermal power generation and household consumption (OECD, n.d.). Numerous studies confirm that industrial production is one of the main factors putting pressure on water resources. Karki et al. (2023) emphasize that the implementation of innovations can reduce water consumption by up to 60%, but without support for these measures, industrial development exacerbates water stress. Dalstein and Naqvi (2022) confirm in their analysis that despite efforts to decouple economic growth from water consumption, the expansion of industrial sector continues to be a major factor in increasing water withdrawal. This trend is also confirmed by a study by Lee et al. (2019), which is based on the regional water stress index (AWARE-US), which showed that energy and industrial activities in drier areas significantly increase water stress levels.

Another determinant influencing the level of water stress is demographic indicators. Liu et al. (2024) point out that while increasing water use efficiency can contribute to reducing water stress, continuous population growth and population density gradually neutralize this positive factor. Le Blanc a Perez (2008) analysed the relationship between rainfall and population density in sub-Saharan Africa in their study and concluded that higher population concentrations in drier areas cause more intense pressure on water resources. These conclusions are supplemented by Tong et al. (2024), who confirm that population density growth can significantly affect water availability and contribute to water scarcity in future. Increased water demand from the industrial and manufacturing sectors, combined with rising population density in some regions and the impacts of climate change, is expected to further intensify water stress (Water4All, 2022).

Handoyo (2024), Mahadevan and Shenoy (2023), Wang and Zhao (2025) focus their research on the impact of institutional and political aspects of governance as factors influencing countries' environmental performance and water stress levels. All of the above studies have confirmed that high quality institutions, well-designed water resource management policies, and effective public administration contribute to reducing environmental risks and thus water stress.

The literature presents varied conclusions and provides valuable insight, while also revealing significant gaps between economic growth, sectoral composition of economy, demographic factors, and institutional quality in connection with water stress. Based on this evidence, the study calls for a deeper empirical assessment of how these factors interact over time. Building these findings, this study re-evaluates the relationship and formulates the following hypothesis:

H1: The relationship between GDP per capita and water stress is non-linear, following an inverted U-shape.

H2: A higher share of agricultural and industrial production in GDP is associated with higher levels of water stress.

H3: Higher population density is associated with higher levels of water stress.

H4: Greater government effectiveness reduces the level of water stress.

2 Methodology

This study investigates the relationship between economic development and the level of water stress across countries. The analysis builds on the assumption that this relationship follows a non-linear pattern, specifically an inverted U-shape, commonly referred to in the literature as the Environmental Kuznets Curve (EKC). According to this framework, low-income countries typically face relatively low levels of water stress, developing economies experience rising stress because of industrialization, urbanization, and increasing consumption, while in highly developed economies water stress is expected to decline due to the adoption of advanced technologies, stricter environmental regulations, and more efficient resource management.

Our previous research (Augustín & Nagy, 2025) examined this relationship in a sample of 95 countries; however, the EKC hypothesis was not confirmed. In the present study, we refine this approach by reducing the sample to exclude outlier cases. Specifically, we retained only countries with water stress values below 50%, thereby eliminating states with atypical or highly specific conditions that, due to their extreme values, could distort the distribution of the dependent variable. The resulting sample comprises 84 countries (Table 1), which still represents a sufficiently robust dataset with broad regional coverage, enabling a more reliable test of the inverted Kuznets Curve hypothesis. The objective was to assess whether the hypothesized non-linear association between GDP per capita and water stress would emerge more clearly within this adjusted sample.

Table 1: Overview of the countries in the sample by region

Region	Countries	Number
Europe	Albania, Austria, Bosnia and Herzegovina, Bulgaria, Croatia, Cyprus, Czechia, Denmark, Estonia, Finland, France, Germany, Greece, Hungary, Iceland, Ireland, Italy, Latvia, Lithuania, Luxembourg, Moldova, Netherlands, North Macedonia, Poland, Portugal, Romania, Serbia, Slovak Republic, Slovenia, Spain, Sweden, Switzerland, United Kingdom	33
Africa	Angola, Benin, Botswana, Cameroon, Cote d'Ivoire, Ghana, Kenya, Malawi, Mali, Mauritius, Namibia, Nigeria, Rwanda, Senegal, Sierra Leone, Tanzania, Zambia, Zimbabwe	18
Asia	Bangladesh, Cambodia, China, Georgia, Indonesia, Kazakhstan, Laos, Malaysia, Mongolia, Nepal, Philippines, Thailand, Turkiye, Vietnam	14
North & Central America	Costa Rica, Dominican Republic, El Salvador, Guatemala, Honduras, Jamaica, Mexico, Nicaragua, Panama, United States	10
South America	Argentina, Brazil, Chile, Colombia, Ecuador, Paraguay, Peru, Uruguay	8
Australia & Oceania	Australia	1

Source: Own compilation

The statistical analysis was conducted using the software SPSS. Given the design of the study, the analysis follows a cross-sectional approach, drawing on data for the year 2024. This approach allows for the comparison of a broad sample of countries at a single point in time. As the source of data for the dependent variable, we employed the indicator *Water_stress* (water stress index, %), which expresses freshwater withdrawal as a proportion

of total available freshwater resources. The data were obtained from the Travel & Tourism Development Index (TTDI) for the year 2024, published by the World Economic Forum. The main independent variable, gross domestic product per capita (GDP per capita, PPP in USD, constant prices, 2024), was drawn from the World Development Indicators database of the World Bank. This indicator was selected as a proxy for the level of economic development, since it represents one of the most widely used measures in the empirical literature on the Environmental Kuznets Curve. Moreover, it enables the examination of the relationship between economic growth and environmental pressures in an international comparative perspective.

The *GDP* variable was subsequently subjected to a logarithmic transformation to reduce skewness in its distribution and achieve a closer approximation to the normal distribution. To test the hypothesis, a regression model was specified with *Water_stress* as the dependent variable and the log-transformed GDP (*GDP_log*) together with its quadratic term (*GDP_log2*) as independent variables. This approach allowed us to assess whether the relationship between economic development and water stress follows the pattern of an inverted Kuznets curve, i.e., whether a positive linear effect is combined with a negative quadratic effect.

At the same time, we expanded the analytical framework by including additional control variables that, according to the literature, may significantly influence the level of water stress. We incorporated the share of agriculture in GDP, as agriculture is one of the largest consumers of water; the share of manufacturing industry in GDP, reflecting the intensive water demand of heavy and chemical industries; population density as an indicator of demographic pressure on water resources; and the index of government effectiveness, which reflects the capacity of states to implement environmental policies and effectively regulate water use.

The supplementary control variables included in the block regression analysis were obtained from several sources. The share of agriculture in GDP *Agri_share* (Agriculture, forestry, and fishing, value added, % of GDP) and the share of manufacturing *Manufact_share* (Manufacturing, value added, % of GDP) were drawn from the World Development Indicators (WDI) of the World Bank. Population density (*Density*) was taken from the World Population Prospects 2024 (UN Department of Economic and Social Affairs, Population Division). Due to the strong skewness and kurtosis in its original distribution, this variable was subjected to a logarithmic transformation (*Density_log*) to approximate a normal distribution and improve the reliability of regression estimates. Institutional quality (*Gov_Effectiveness*) was captured using the Government Effectiveness indicator from the Worldwide Governance Indicators (WGI) of the World Bank. This index measures perceptions of the quality of public services, the quality of the civil service and its independence from political pressures, the quality of policy formulation and implementation, and the credibility of the government's commitment to such policies. It also covers infrastructure for essential services, including drinking water. The indicator is constructed as a standardized score, ranging approximately from -2.5 to $+2.5$. Since data for 2024 were not yet available, we used the 2023 estimates. Given the low volatility of the index, this temporal shift can be considered methodologically acceptable.

The control variables were not included in the model simultaneously, but sequentially through block regression. This approach allowed us to observe how the explanatory power of the model (R^2) changed and whether it increased with the gradual inclusion of structural, demographic, and institutional factors. In this way, it was possible not only to test the original EKC hypothesis but also to identify which factors most strongly accounted for cross-country differences in water stress. To minimize multicollinearity when including the quadratic term of *GDP_log*, this variable was mean-centered. Model 1 included the dependent variable *Water_stress*, the centered variable *GDP_log* as predictors, testing the linear relationship between economic level and water stress, and the quadratic term *GDP_log2*, which allowed

us to verify whether the relationship has a non-linear shape of an inverted Kuznets curve. We expected the coefficient of the linear term (β_1) to be positive ($\beta_1 > 0$), indicating that water stress initially increases with rising GDP, while the coefficient of the quadratic term (β_2) was expected to be negative ($\beta_2 < 0$), implying a subsequent decline in water stress at higher levels of economic development. Model 2 extended the baseline specification by including *Agri_share* and *Manufact_share*, representing the sectoral structure of the economy. The aim was to determine the extent to which economic structure mediates or modifies the relationship between GDP per capita and water stress. Model 3 was augmented with *Density_log*, i.e., population density after logarithmic transformation, serving as an indicator of the intensity of potential water demand given the spatial concentration of population. Finally, Model 4 incorporated the institutional variable *Gov_Effectiveness*, which reflects differences in state regulatory capacity and the quality of public policies.

The regression models can be formally expressed as follows:

$$\text{Model 1: } WaterStress_i = \beta_0 + \beta_1 \cdot GDPlog_i + \beta_2 \cdot (GDPlog_i)^2 + \varepsilon_i$$

$$\text{Model 2: } WaterStress_i = \beta_0 + \beta_1 \cdot GDPlog_i + \beta_2 \cdot (GDPlog_i)^2 + \beta_3 \cdot AgriShare_i + \beta_4 \cdot ManufactShare_i + \varepsilon_i$$

$$\text{Model 3: } WaterStress_i = \beta_0 + \beta_1 \cdot GDPlog_i + \beta_2 \cdot (GDPlog_i)^2 + \beta_3 \cdot AgriShare_i + \beta_4 \cdot ManufactShare_i + \beta_5 \cdot Densitylog_i + \varepsilon_i$$

$$\text{Model 4: } WaterStress_i = \beta_0 + \beta_1 \cdot GDPlog_i + \beta_2 \cdot (GDPlog_i)^2 + \beta_3 \cdot AgriShare_i + \beta_4 \cdot ManufactShare_i + \beta_5 \cdot Densitylog_i + \beta_6 \cdot GovEffectiveness_i + \varepsilon_i$$

where:

- *WaterStress_i* is the level of water stress in country *i*,
- *GDPlog_i* represents the logarithm of gross domestic product per capita (PPP) in country *i*,
- *AgriShare_i* is the share of agriculture, forestry, and fishing as a percentage of GDP of country *i*,
- *ManufactShare_i* is the share of manufacturing industry as a percentage of GDP of country *i*,
- *Densitylog_i* is the population density expressed in country *i*, measured as the number of persons per square kilometre.
- *GovEffectiveness_i* captures perceptions of the government effectiveness in country *i*,
- ε_i is the error term.

3 Results

The descriptive statistics (Table 2) of the dependent variable *Water_stress* indicate that the average value of the index was 13.7%, with a minimum of 0.39% and a maximum of 45.7%. Gross domestic product per capita within the sample ranged from USD 1,636 to over USD 128,000, with a mean of approximately USD 30,000. The substantial variability of this indicator required its logarithmic transformation. Population density exhibited extreme values (ranging from 2 to 1,317 persons per km²) and was likewise subjected to logarithmic transformation to reduce skewness and kurtosis in its distribution.

The results of the block regression analysis are presented in Table 3. The Model 1 did not demonstrate a significant overall fit, $F(2, 81) = 1.358$, $p = 0.263$. The R^2 was 0.032, indicating that *GDP_log* and *GDP_log2* explained approximately 3.2% of the variance in *Water_stress*, which represents a negligible effect size. The linear term was positive ($B = 2.503$, 95% CI $[-0.597, 5.603]$, $p = 0.112$) and the quadratic term was also positive ($B = 0.428$, 95% CI $[-2.300, 3.155]$, $p = 0.756$). This result is inconsistent with the expected inverted U-shape of the EKC, and both coefficients were statistically non-significant. Overall, the analysis provided no evidence supporting the existence of an EKC-type relationship between GDP per capita and water stress in the sample of 84 countries. On the contrary,

the positive sign of both coefficients suggests that in the analysed sample the association may follow a simple linear pattern, rather than the hypothesized inverted U-shape.

Table 2: Descriptive statistics

	N	Minimum	Maximum	Mean	Std. Deviation	Skewness	Kurtosis
Water_stress	84	0.39	45.71	13.67	13.04	1.00	-0.24
GDP	84	1635.86	128181.70	30336.73	25327.09	1.37	2.52
GDP_log	84	7.40	11.76	9.91	1.00	-0.47	-0.66
Agri_share	84	0.17	33.45	8.03	7.83	1.38	1.29
Manufact_share	84	3.43	27.81	12.88	5.34	0.75	0.38
Density	84	2.20	1317.25	134.95	177.89	4.21	23.90
Density_log	84	0.79	7.18	4.32	1.21	-0.76	1.09
Gov_effectiveness	84	-1.17	2.13	0.24	0.84	0.27	-0.73

Source: Own compilation

Model 2 significantly improved the model fit compared to Model 1, $F(4, 79) = 3.036$, $p = 0.022$. The R^2 was 0.133, indicating that *GDP_log*, *GDP_log2*, *Agri_share*, and *Manufact_share* explained approximately 13.3% of the variance in *Water_stress*. Neither the linear ($B = 1.291$, 95% CI $[-3.967, 6.549]$, $p = 0.626$) nor the quadratic GDP term ($B = 1.259$, 95% CI $[-1.551, 4.069]$, $p = .375$) were statistically significant. *Agri_share* had a negative and non-significant effect ($B = -0.204$, $p = 0.571$), whereas *Manufact_share* showed a significant positive relationship ($B = 0.768$, 95% CI $[0.253, 1.284]$, $p = 0.004$) indicating that a one-percentage-point increase in manufacturing share is associated with an average increase of 0.77 percentage points in water stress. Thus, higher shares of manufacturing in GDP were robustly linked to higher water stress, while other predictors remained non-significant.

The Model 3 demonstrated a significant overall fit, $F(5, 78) = 3.444$, $p = 0.007$. The R^2 was 0.181, indicating that *GDP_log*, *GDP_log2*, *Agri_share*, *Manufact_share*, and *Density_log* explained approximately 18.1% of the variance in *Water_stress*. Neither the linear GDP term ($B = 0.871$, 95% CI $[-4.289, 6.031]$, $p = 0.738$) nor the quadratic GDP term ($B = 0.854$, 95% CI $[-1.922, 3.630]$, $p = 0.542$) were statistically significant. *Agri_share* remained non-significant ($B = -0.280$, $p = 0.430$), while *Manufact_share* ($B = 0.604$, 95% CI $[0.076, 1.131]$, $p = 0.025$) and *Density_log* ($B = 2.508$, 95% CI $[0.163, 4.853]$, $p = 0.036$) emerged as significant predictors. This indicates that both a stronger industrialization and higher population density are associated with greater water stress.

Table 3: Regression summary output

Model Summary									
Model	R	R Square	Adjusted R Square	Std. Error of the Estimate	R Square Change	F Change	df1	df2	Sig. F Change
1	.180	0.032	0.009	12.988	0.032	1.358	2	81	0.263
2	.365	0.133	0.089	12.447	0.101	4.593	2	79	0.013
3	.425	0.181	0.128	12.178	0.048	4.534	1	78	0.036
4	.429	0.184	0.120	12.234	0.003	0.289	1	77	0.593

ANOVA

Model		Sum of Squares	df	Mean Square	F	Sig.
1	Regression	458.265	2	229.132	1.358	0.263
	Residual	13662.867	81	168.677		
	Total	14121.132	83			
2	Regression	1881.579	4	470.395	3.036	0.022*
	Residual	12239.552	79	154.931		
	Total	14121.132	83			
3	Regression	2553.974	5	510.795	3.444	0.007**
	Residual	11567.157	78	148.297		
	Total	14121.132	83			
4	Regression	2597.157	6	432.859	2.892	0.014*
	Residual	11523.975	77	149.662		
	Total	14121.132	83			

Coefficients

Model		Unstandardized Coefficients		Standardized Coefficients	t	Sig.	95.0% Confidence Interval for B		Collinearity Statistics	
		B	Std. Error				Lower Bound	Upper Bound	Tolerance	VIF
1	(Constant)	13.245	1.960		6.756	0.000	9.345	17.145		
	GDP_log	2.503	1.558	0.192	1.607	0.112	-0.597	5.603	0.837	1.194
	GDP_log2	0.428	1.371	0.037	0.312	0.756	-2.300	3.155	0.837	1.194
2	(Constant)	4.166	4.682		0.890	0.376	-5.154	13.486		
	GDP_log	1.291	2.642	0.099	0.489	0.626	-3.967	6.549	0.267	3.739
	GDP_log2	1.259	1.412	0.110	0.892	0.375	-1.551	4.069	0.725	1.379
	Agri_share	-0.204	0.359	-0.123	-0.569	0.571	-0.918	0.510	0.237	4.225
	Manufact_share	0.768	0.259	0.315	2.969	0.004**	0.253	1.284	0.977	1.024
3	(Constant)	-3.530	5.835		-0.605	0.547	-15.147	8.087		
	GDP_log	0.871	2.592	0.067	0.336	0.738	-4.289	6.031	0.266	3.760
	GDP_log2	0.854	1.394	0.074	0.612	0.542	-1.922	3.630	0.712	1.405
	Agri_share	-0.280	0.353	-0.168	-0.794	0.430	-0.983	0.422	0.234	4.269
	Manufact_share	0.604	0.265	0.247	2.279	0.025*	0.076	1.131	0.893	1.119
	Density_log	2.508	1.178	0.232	2.129	0.036*	0.163	4.853	0.885	1.129
4	(Constant)	-3.819	5.887		-0.649	0.518	-15.541	7.902		
	GDP_log	2.247	3.653	0.172	0.615	0.540	-5.027	9.521	0.135	7.400
	GDP_log2	1.194	1.537	0.104	0.777	0.440	-1.867	4.255	0.591	1.692
	Agri_share	-0.268	0.355	-0.161	-0.754	0.453	-0.975	0.439	0.233	4.286
	Manufact_share	0.600	0.266	0.246	2.256	0.027*	0.071	1.130	0.893	1.120
	Density_log	2.578	1.190	0.238	2.166	0.033*	0.208	4.948	0.875	1.143

Gov_effectiveness	-1.662	3.094	-0.107	-0.537	0.593	-7.822	4.499	0.266	3.763

Source: Own compilation

The Model 4 demonstrated a significant overall fit, $F(6, 77) = 2.892$, $p = 0.014$. The R^2 was 0.184, indicating that *GDP_log*, *GDP_log2*, *Agri_share*, *Manufact_share*, *Density_log*, and *Gov_effectiveness* explained approximately 18.4% of the variance in *Water_stress*. The GDP variables remained non-significant (*GDP_log*: $B = 2.247$, $p = 0.540$; *GDP_log2*: $B = 1.194$, $p = 0.440$), as did *Agri_share* ($B = -0.268$, $p = 0.453$) and *Gov_effectiveness* ($B = -1.662$, $p = 0.593$). *Manufact_share* ($B = 0.600$, 95% CI [0.071, 1.130], $p = 0.027$) and *Density_log* ($B = 2.578$, 95% CI [0.208, 4.948], $p = 0.033$) remained significant positive predictors of water stress. The inclusion of *Gov_effectiveness* did not significantly increase the explanatory power of the model. Moreover, its coefficient was negative, suggesting that more effective governance may be associated with lower levels of water stress, although this relationship was not statistically significant.

The regression assumptions were adequately met. Multicollinearity did not represent a major concern, as all VIF values remained below the critical threshold of 10. Residuals were approximately normally distributed, and their dispersion showed no systematic patterns, suggesting the assumption of homoscedasticity was satisfied. Finally, diagnostic tests based on Cook's Distance and leverage values confirmed that no single country had an undue influence on the regression estimates.

Overall, the results demonstrate that the EKC hypothesis was not confirmed, as GDP per capita and its quadratic term did not have any significant effect. The explanatory power of the models gradually increased as additional predictors were included, indicating that structural and demographic factors provide meaningful contributions beyond economic development. The key determinants of water stress proved to be the share of manufacturing industry and population density, both of which increased pressure on water resources. Institutional quality, measured by the Government Effectiveness indicator, showed no significant effect. The best-performing model explained approximately 18.4% of the variance in water stress across countries.

4 Discussion

The empirical results reveal that the Environmental Kuznets Curve hypothesis was not confirmed for the relationship between economic development and water stress. Neither GDP per capita nor its quadratic term had a statistically significant effect, indicating that rising income does not systematically reduce pressures on water resources. Therefore, H1 was not supported. This finding aligns with previous studies by Miglietta et al. (2017), Lee et al. (2019), Esen et al. (2020), and Agustín and Nagy (2025), who similarly observed that the EKC framework has limited explanatory power when applied to water-related indicators. The implication is that economic growth and GDP alone is insufficient to mitigate water stress and that structural and institutional contexts play a more decisive role.

In contrast, the share of manufacturing industry in GDP proved to be a significant and positive predictor of water stress, suggesting that a higher industrial output increases the demand for water resources. Consequently, this provides partial confirmation of H2, which assumed that structural factors, particularly the industrial composition of the economy (namely manufacturing industry), contribute to higher levels of water stress. This outcome supports previous findings by Dalstein and Naqvi (2022) and Karki and Rao (2023), who argue that despite technological progress, industrial expansion continues to intensify water withdrawals. The share of agriculture, however, did not show a statistically significant relationship with water stress, which may reflect its declining role in the economic structures of many countries in the sample.

Population density emerged as another significant positive determinant, supporting H3. Countries with higher population density tend to experience greater pressure on freshwater resources, confirming the findings of Liu et al. (2024) and Tong et al. (2024). This association illustrates that demographic concentration amplifies both direct and indirect water demand, especially in urban and semi-arid regions.

Finally, government effectiveness had a negative but statistically insignificant effect, implying that better institutional quality may be associated with lower water stress, but this relationship was not strong enough to reach significance. Therefore, H4 was not supported. However, this result is consistent with studies by Handoyo (2024) and Mahadevan and Shenoy (2023), which demonstrate that institutional effectiveness reduces environmental risks primarily when supported by coherent policy implementation and enforcement mechanisms.

Overall, the results indicate that structural and demographic variables explain variations in water stress more effectively than economic development alone. The absence of an EKC-type relationship suggests that water stress cannot be mitigated automatically through rising income. Instead, it reflects the cumulative impact of other variables.

Conclusion

The primary objective of this study was to empirically test whether the Environmental Kuznets Curve hypothesis is valid for water stress, and to determine how structural, demographic, and institutional factors shape this relationship. Using a cross-sectional regression model for 84 countries, we examined the effects of GDP per capita, the shares of agriculture and manufacturing in GDP, population density, and government effectiveness on the level of water stress.

The results provide no statistically significant relationship in support of the EKC hypothesis. Neither GDP per capita nor its quadratic term exhibited a statistically significant effect, suggesting that economic growth alone does not lead to a systematic reduction in water stress. Instead, the analysis identified two key factors: the share of the manufacturing sector in GDP and population density, both of which showed positive and significant associations with water stress. These findings indicate that industrial structure and demographic concentration are more influential than income in explaining cross-country variation in freshwater pressures.

Institutional quality, captured by government effectiveness, displayed a negative but statistically insignificant relationship with water stress, implying that while effective governance may contribute to mitigation, its independent impact is not robust across countries. Likewise, the agricultural share of GDP did not show a significant effect, reflecting its relatively smaller role in many economies within the sample.

In conclusion, the results confirm that H1 was not supported, H2 was supported partially, H3 were supported, and H4 was not supported. This pattern indicates that the EKC hypothesis provides only limited insight into water-related sustainability issues, which are primarily driven by industrial structure and demographic concentration rather than by income growth itself.

The potential limitations of the study lie in its cross-sectional design, which may limit causal inference and does not capture potential time-lag effects between economic development and improvements in water efficiency. Future research should employ longitudinal and spatial analyses to assess whether structural transformation and institutional evolution lead to delayed reductions in water stress. Another potential limitation concerns the sample itself. Although the dataset covers a wide range of countries, the exclusion of extreme outliers and the uneven regional representation may affect the generalizability of the results. Future research could expand this analysis by employing panel data to capture temporal dynamics and by examining regional differences that may shape the interaction between economic development, water stress, and related factors.

References:

- Alola, A. A., & Ozturk, I. (2021). Mirroring risk to investment within the EKC hypothesis in the United States. *Journal of Environmental Management*, 293, 112890. <https://doi.org/10.1016/j.jenvman.2021.112890>
- Augustin, M., & Nagy, N. (2025). Economic Development and Water Stress: Testing the Environmental Kuznets Curve Hypothesis. *Providing sustainability of public authority and administration systems in the conditions of special governance modes and recovery of Ukraine. Proceedings of the International Scientific and Practical Conference October 17, 2025*. Odesa: Odesa Polytechnic Institute, 526–535. <https://op.edu.ua/3535-22590>.
- Boretti, A., & Rosa, L. (2019). Reassessing the projections of the World Water Development Report. *Npj Clean Water*, 2(1), 15. <https://doi.org/10.1038/s41545-019-0039-9>
- Dalstein, F., & Naqvi, A. (2022). 21st Century water withdrawal decoupling: A pathway to a more water-wise world? *Water Resources and Economics*, 38, 100197. <https://doi.org/10.1016/j.wre.2022.100197>
- Danish, Zhang, B., Wang, B., & Wang, Z. (2017). Role of renewable energy and non-renewable energy consumption on EKC: Evidence from Pakistan. *Journal of Cleaner Production*, 156, 855–864. <https://doi.org/10.1016/j.jclepro.2017.03.203>
- Deng, C., Zhu, D., Nie, X., Liu, C., Zhang, G., Liu, Y., Li, Z., Wang, S., & Ma, Y. (2021). Precipitation and urban expansion caused jointly the spatiotemporal dislocation between supply and demand of water provision service. *Journal of Environmental Management*, 299, 113660. <https://doi.org/10.1016/j.jenvman.2021.113660>
- Dinda, S. (2004). Environmental Kuznets Curve Hypothesis: A Survey. *Ecological Economics*, 49(4), 431–455. <https://doi.org/10.1016/j.ecolecon.2004.02.011>
- Dinov, V., Henao, J. P., Sala, P., & Vracholi, M. (2025). Environmental Kuznets Curve Applications for Water Pollution in the European Union. *SSRN*. <http://dx.doi.org/10.2139/ssrn.5312469>
- Doungmanee, P. (2016). The nexus of agricultural water use and economic development level. *Kasetsart Journal of Social Sciences*, 37(1), 38–45. <https://doi.org/10.1016/j.kjss.2016.01.008>
- Dudgeon, D. (2019). Multiple threats imperil freshwater biodiversity in the Anthropocene. *Current Biology*, 29(19), R960–R967. <https://doi.org/10.1016/j.cub.2019.08.002>
- Esen, Ö., Yıldırım, D. Ç., & Yıldırım, S. (2020). Threshold effects of economic growth on water stress in the Eurozone. *Environmental Science and Pollution Research*, 27(25), 31427–31438. <https://doi.org/10.1007/s11356-020-09383-y>
- Grossman, G., & Krueger, A. (1991). *Environmental Impacts of a North American Free Trade Agreement* (No. w3914; p. w3914). National Bureau of Economic Research. <https://doi.org/10.3386/w3914>
- Handoyo, S. (2024). Public governance and national environmental performance nexus: Evidence from cross-country studies. *Heliyon*, 10(23), e40637. <https://doi.org/10.1016/j.heliyon.2024.e40637>
- Hao, Y., Hu, X., & Chen, H. (2019). On the relationship between water use and economic growth in China: New evidence from simultaneous equation model analysis. *Journal of Cleaner Production*, 235, 953–965. <https://doi.org/10.1016/j.jclepro.2019.07.024>
- Hosseinzadeh, M., Saghaian, S. H., Nematollahi, Z., & Shahnoushi Foroushani, N. (2022). Water consumption and economic growth: Evidence for the environmental Kuznets

- curve. *Water International*, 47(8), 1333–1348. <https://doi.org/10.1080/02508060.2022.2091398>
- Hubbard, J. (2024). *An Empirical and Theoretical Review of the Applicability of the Environmental Kuznets Curve*. Economic Development: New Directions. <https://econ310.sewanee.edu/2025/01/08/an-empirical-and-theoretical-review-of-the-applicability-of-the-environmental-kuznets-curve/>
- Ingrao, C., Strippoli, R., Lagioia, G., & Huisingh, D. (2023). Water scarcity in agriculture: An overview of causes, impacts and approaches for reducing the risks. *Heliyon*, 9(8), e18507. <https://doi.org/10.1016/j.heliyon.2023.e18507>
- Karki, U., & Rao, P. (2023). Techno-economic analysis of the water, energy, and greenhouse gas emissions impacts from the adoption of water efficiency practices in the U.S. manufacturing sector. *Resources, Conservation and Recycling*, 196, 107054. <https://doi.org/10.1016/j.resconrec.2023.107054>
- Kuang, X., Liu, J., Scanlon, B. R., Jiao, J. J., Jasechko, S., Lancia, M., Biskaborn, B. K., Wada, Y., Li, H., Zeng, Z., Guo, Z., Yao, Y., Gleeson, T., Nicot, J.-P., Luo, X., Zou, Y., & Zheng, C. (2024). The changing nature of groundwater in the global water cycle. *Science*, 383(6686). <https://doi.org/10.1126/science.adf0630>
- Le Blanc, D., & Perez, R. (2008). The relationship between rainfall and human density and its implications for future water stress in Sub-Saharan Africa. *Ecological Economics*, 66(2), 319–336. <https://doi.org/10.1016/j.ecolecon.2007.09.009>
- Lee, U., Xu, H., Daystar, J., Elgowainy, A., & Wang, M. (2019). AWARE-US: Quantifying water stress impacts of energy systems in the United States. *Science of The Total Environment*, 648, 1313–1322. <https://doi.org/10.1016/j.scitotenv.2018.08.250>
- Liu, Y., Han, B., Lu, F., Gong, C., Ouyang, Z., Jiang, C. Q., & Zhang, X. (2024). Improving water efficiency is more effective in mitigating water stress than water transfer in Chinese cities. *iScience*, 27(3), 109195. <https://doi.org/10.1016/j.isci.2024.109195>
- Mahadevan, M., & Shenoy, A. (2023). The political consequences of resource scarcity: Targeted spending in a water-stressed democracy. *Journal of Public Economics*, 220, 104842. <https://doi.org/10.1016/j.jpubeco.2023.104842>
- Miglietta, P., De Leo, F., & Toma, P. (2017). Environmental Kuznets curve and the water footprint: An empirical analysis. *Water and Environment Journal*, 31(1), 20–30. <https://doi.org/10.1111/wej.12211>
- Naveed, A., Ahmad, N., Fathollahzadeh Aghdam, R., & Menegaki, A. N. (2022). What have we learned from Environmental Kuznets Curve hypothesis? A citation-based systematic literature review and content analysis. *Energy Strategy Reviews*, 44, 100946. <https://doi.org/10.1016/j.esr.2022.100946>
- Rafindadi, A. A., & Usman, O. (2019). Globalization, energy use, and environmental degradation in South Africa: Startling empirical evidence from the Maki-cointegration test. *Journal of Environmental Management*, 244, 265–275. <https://doi.org/10.1016/j.jenvman.2019.05.048>
- Rodell, M., Famiglietti, J. S., Wiese, D. N., Reager, J. T., Beaudoin, H. K., Landerer, F. W., & Lo, M.-H. (2018). Emerging trends in global freshwater availability. *Nature*, 557(7707), 651–659. <https://doi.org/10.1038/s41586-018-0123-1>
- Tong, S., Xia, R., Chen, J., Li, W., Chen, Y., & Xu, C.-Y. (2024). A diagnostic framework to reveal future clean water scarcity in a changing climate. *Journal of Hydrology: Regional Studies*, 56, 102040. <https://doi.org/10.1016/j.ejrh.2024.102040>
- United Nations. (2019). Clean Water and Sanitation. *Progress on level of water stress: SDG 6 indicator 6.4.2* https://www.unwater.org/sites/default/files/app/uploads/2019/06/SDG6_Indicator_Report_642_Progress-on-Level-of-Water-Stress_2018_ENGLISH_LR.pdf

- Wikimedia. (2015, June 19). English: The modified Kuznets curve, which represents the application of the Kuznets curve in Environmental Studies. https://commons.wikimedia.org/wiki/File:Environmental_Kuznets_Curve.
- Wang, D., Hubacek, K., Shan, Y., Gerbens-Leenes, W., & Liu, J. (2021). A Review of Water Stress and Water Footprint Accounting. *Water*, 13(2), 201. <https://doi.org/10.3390/w13020201>
- Wang, J., & Zhao, X. (2025). Goal orientation and effectiveness of water environment governance in China. *Ecohydrology & Hydrobiology*, 100673. <https://doi.org/10.1016/j.ecohyd.2025.100673>

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INSIGHT INTO WASTEWATER MANAGEMENT IN SLOVAKIA

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Abstract: The article deals with the perspective of wastewater management in Slovakia in the context of the requirements of European legislation. It discusses the legislative framework that regulates wastewater management, especially the European directive, with which Slovakia faced several problems in transposing. It analyses the basic wastewater treatment processes in Slovakia and identifies the main challenges that Slovakia faces. Finally, it proposes solutions that will need to be considered in further development.

Keywords: wastewater, treatment plants, Urban Wastewater Treatment Directive (UWTD)

JEL: Q53, Q58

Introduction

A key element of the water policy, wastewater management has an impact on public health, water resource quality, and the country's compliance with EU regulations. Slovakia still faces several issues despite recent decades of progress, such as inadequate sewage network coverage, outdated wastewater treatment plants (WWTPs), and the requirement to adopt cutting-edge technologies. EU regulations have a big impact on Slovak law, particularly when it comes to water management and wastewater treatment. There have been notable advancements in the fields of sewage and water supply networks. However, the development of sewage systems lagged the construction of water supply networks, which was one of the problems that had to be addressed within the framework of EU integration.

The implementation of these regulations has encountered various challenges, particularly when it comes to enhancing infrastructure and introducing new technology. To maintain the requisite level of water quality in compliance with EU regulatory criteria, it was necessary to upgrade or construct new wastewater treatment plants in various parts of Slovakia. Due to budgetary requirements and the requirement to train specialists in the field of water management, this process has not always been easy.

A major environmental and infrastructure issue is that the Slovak Republic's sewage disposal system has long trailed behind the population's access to drinking water. Only 71.5% of people were linked to the public sewage system in 2023, compared to about 90.5% who were connected to the public water supply (Štatistický úrad Slovenskej republiky, 2023). When compared to drinking water distribution networks, this discrepancy suggests a systematic underestimating of the building and upgrading of sewage systems. Surface water quality, especially transboundary flows, deteriorates because of the low percentage of treated wastewater. The water quality in nearby nations, especially Hungary and Poland, is impacted by Slovak flows. For this reason, improving wastewater treatment is also part of the international obligations of the Slovak Republic under the Water Framework Directive (2000/60/EC) (Derco, Drtíl & Bodík, 2005).

1 Legislative framework and implementation of the EU directive

Urban wastewater is one of the main sources of EU waters' pollution (EC, 2025). One of the key legislative acts for radical improvement of water quality is the Urban Wastewater

Treatment Directive (UWTD) originally adopted in 1991 as Council Directive 91/271/EEC. Over 30 years later, the revised version was adopted in January 2025 (EC, 2025). This Directive set standards for the discharge and treatment of urban wastewater, as well as for the management of sludge. The revised version aimed to strengthen water treatment standard with the polluter-pays system and the reduction of GHG emission. Slovakia had several problems with the transposition of the requirements of original Council Directive 91/271/EEC. The implementation of this Directive required significant investments in the construction and reconstruction of WWTPs and sewerage networks. As part of the accession negotiations, Slovakia was allowed to postpone the final implementation date to 31 December 2015 (Derco, Drtil & Bodík, 2005). According to the estimates provided in the study, the financial requirements for full compliance with the Directive were estimated at more than one billion euros. However, the implementation of these investments faced several barriers, including insufficient financial resources in local governments, complex administrative processes for drawing down European Union funds and problematic ownership relations in the construction of infrastructure. The European Commission therefore referred Slovakia to the Court of Justice of the EU in 2024 for failure to fulfil its obligations in the field of urban wastewater treatment in agglomerations of more than 2,000 inhabitants. Despite the deadline in 2015, several agglomerations remain without adequate infrastructure (Smart Water Magazine, 2024).

As for the revised version, EU countries are required to implement the UWTD until 2028. Under the new law, Slovakia will be required to treat wastewater in all urban areas of more than 1000 inhabitants, eliminate additional nutrients that would otherwise result in detrimental eutrophication; eliminate micropollutants using quaternary treatment, funded by extended producer responsibility from the polluting sectors, make treatment facilities energy-neutral, and monitor wastewater for health indicators like antibiotic resistance and SARS-Covid (EC, 2025).

Despite the problems, Slovakia has made significant progress in wastewater management process. According to available data, a high percentage of urban wastewater in the country is treated in accordance with the UWWTD requirements, indicating the effective functioning of the existing infrastructure (Štatistický úrad Slovenskej republiky, 2023). Between 2020 and the present, Slovakia has maintained a high level of compliance with the European Urban Waste Water Treatment Directive (UWWTD), with most wastewater being properly collected and treated, including biological treatment with nitrogen and phosphorus removal in sensitive areas. However, progress is hampered by the need for additional infrastructure in smaller agglomerations. (EEA, 2024). Since information on the quantity and kind of public and private WWTPs with a capacity of less than 2000 PE is typically few and dispersed across local water utilities and authorities, it is challenging to evaluate the relationship between the rural population and WWTP. (Langergraber, 2018).

The core Slovak legislative act regulating wastewater management is the Water Act 364/2004 as amended on 25 October 2024. The amount of pollution discharged in Slovak wastewater has a decreasing trend, which is related to the gradual completion of networks of municipal wastewater treatment plants (WWTPs), as well as to a decrease in production in some industrial areas. A decrease was also recorded in the number of discharged pollutants contained in wastewater, mainly biochemical substances (SHMÚ, 2024).

In conclusion, Slovakia has undergone significant reforms in the field of sewerage and wastewater treatment, which were conditioned by EU legislation. Despite the progress, however, many challenges remain, especially in expanding the system to small municipalities, modernizing existing facilities, and increasing the technical efficiency of the entire system.

2 Wastewater treatment – technologies and procedures

Slovakia uses various wastewater treatment technologies, including mechanical, biological and chemical treatment. In recent years, there has been increasing interest in nature-based solutions, such as constructed wetlands, which are particularly suitable for rural areas. Nature based solution are referred to be regenerative, recyclable, and applicable to the circular economy (Adeoba, Odjegba Pandelani, 2025). However, the implementation of these systems faces legislative, administrative and financial obstacles (Dang et al., 2022). In the field of wastewater treatment, Slovakia has invested in modernizing technologies in recent years to improve treatment efficiency. These technologies include biological and mechanical processes to treat wastewater and improve water quality before it is discharged into nature.

The main technologies currently used include:

- *Aerobic treatment: Modern biological treatment plants that use microorganisms to break down organic matter in wastewater.*
- *Membrane filtration technologies: This process is becoming increasingly popular because it allows for effective wastewater treatment at the microscopic level and the removal of heavy metals, toxic substances and other pollutants (Istenič et al., 2023).*

An example of an innovative solution is the AS-iNutricut home wastewater treatment plant, which automatically regulates the amount of activated sludge and effectively removes nitrogen and phosphorus, thereby protecting recipients from eutrophication.

Most existing sewage systems are based on the gravity principle. These networks are often in poor technical condition, which causes not only losses and infiltration of ballast water, but also increased hydraulic load on wastewater treatment plants (WWTP) during rain events. Insufficient technical condition represents a serious obstacle to the effective operation of the entire municipal wastewater management system.

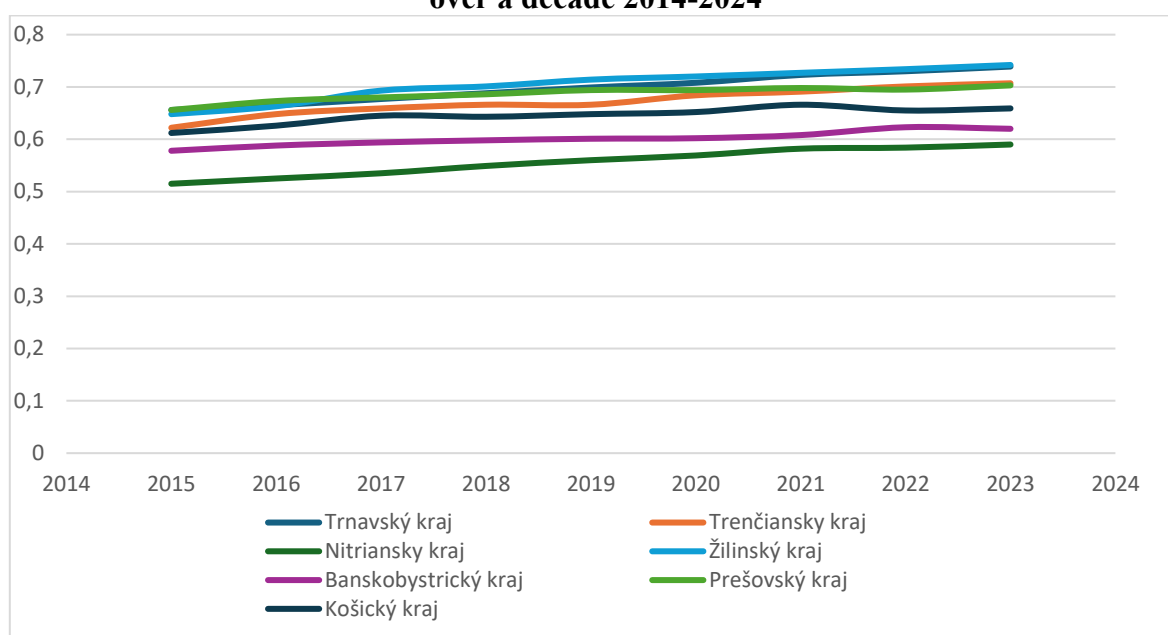
In 2022, Mondi invested in a new anaerobic wastewater pretreatment plant at its paper and pulp mill in Ružomberok, Slovakia. This process is designed to treat wastewater with a high organic matter (COD) content and produces biogas, which is then used to generate energy. Excess anaerobic biosludge is transformed into anaerobic pellets, which are then sold as secondary raw materials. In total, Mondi used 215 million m³ of water in its operations, and 92% of this water was re-discharged to oceans or rivers in 2022. All wastewater generated during production processes is properly treated in internal or external treatment facilities before discharge, ensuring compliance with regulatory requirements regarding wastewater quality. (Mondi, 2023).

One of the new technological innovations in the field of environmental wastewater management in Slovakia is mobile technology for treating leachate directly at the landfill site. The technology is widely used abroad, but innovative in Slovakia. Leachate is generated because of infiltration of rainwater into the landfill body and poses a significant risk to the quality of groundwater and surface water, as it contains high concentrations of organic and inorganic pollutants. In Slovakia, this technology was first applied at the VEPOS – SKALICA landfill, in cooperation with the Slovak Eco Treatment company. The mobile equipment used enables on-site treatment with an efficiency of 70–75%, while the process is based on reverse osmosis. The purified water (so-called permeate) is then safe for discharge or further use, for example in technological processes or irrigation. The main advantage of this solution is its economic and ecological efficiency compared to conventional transportation of leachate to central treatment plants. The mobile equipment minimizes the environmental burden caused by transport, reduces costs and at the same time contributes to the stabilization of the landfill through its gradual drainage. This technology represents a significant step towards sustainable wastewater management in the municipal waste sector (CVTI, 2025).

3 Challenges and perspectives

Over the last decade, the share of households connected to WWTP has increased in all regions of Slovakia, most noticeably in the Nitra Region by almost 10% as shown of Figure1. The total increase in wastewater treatment from 2002 to 2024 is up to 20% (Derco, Drtil & Boík, 2005, Štatistický úrad Slovenskej republiky, 2023).

Figure 1: Share of residents connected to a public sewerage network with WWTP over a decade 2014-2024



Source: Adapted from Štatistický úrad Slovenskej republiky. 7.2 Vodné hospodárstvo.
https://datacube.statistics.sk/#!/view/sk/VBD_SK_WIN/vh3001rr/v_vh3001rr_00_00_00_sk

Despite significant progress in building wastewater treatment plants, reducing waste, and transposing European legislation, several shortcomings can be identified in the field of wastewater management in Slovakia:

- Low population connection to public sewage in some regions
- Outdated infrastructure and the need for its modernization
- Insufficient coverage of the sewage network in small municipalities
- Outdated and inefficient WWTPs
- Lack of investment and infrastructure debt
- Legislative and administrative obstacles to the implementation of innovative technologies
- Insufficient sludge recovery

Slovakian water service tariffs, including wastewater treatment tariffs, are deemed insufficient to pay the operational expenses of service providers, particularly in small municipalities. The viability of water services is threatened by this circumstance. In order to increase the sector's operational effectiveness and financial sustainability and to make the required investments in wastewater treatment facilities, the OECD research suggests combining water services at the local level (OECD, 2024).

There are approximately 20,000 individual wastewater treatment plants in the country and around 1/3 of the inhabitants are still not connected to public sewerage (DATAcube, 2023). Wastewater from certain homes is unlawfully released into the environment, polluting ecosystems and soil and perhaps spreading illness. To construct sewage networks, wastewater treatment facilities, and decentralized municipal wastewater management systems

in agglomerations with up to 2,000 comparable residents, the Slovak Ministry of Environment has issued multiple calls for proposals. The European Regional Development Fund is funding these calls, which are intended to enhance infrastructure in places with poor connectivity. Bratislava has received funding from the European Investment Bank (EIB) to update its wastewater treatment and water delivery systems. The project will increase the efficiency of the water utility Bratislavská vodárenská spoločnosť (BVS) by lowering energy costs and enhancing Danube preservation.

Supporting decentralized wastewater treatment systems is crucial since small communities typically have inadequate sewer connections (less than 2,000 people). Wetlands and root treatment plants are examples of nature-based technologies that offer practical and long-lasting solutions for these problems. According to a 2023 study, these systems are becoming increasingly significant in Slovakia and other Central and Eastern European countries. In the context of climate change and increasing pressure on water resources, it is important to support the reuse of treated wastewater, in agriculture and industry. This approach contributes to sustainable water management and reduces dependence on primary water resources (Istenič et al., 2023).

Conclusion

The development of the share of wastewater management in Slovakia has improved significantly after the adoption of the UWWTD, but challenges remain, which will be mainly associated with the transposition of the new rules of the revised text from January 2025. It will be necessary to deal with the solution of wastewater treatment in municipalities with 1,000 inhabitants or more, which is problematic, given the problems even at the 2,000 population threshold. Slovakia will also have to deal with modernizing its cleaning technologies and aging infrastructure, with finance being the biggest obstacle in this process.

References:

- Adeoba, M. I., Odjegba, E. E., Pandelani, T. (2023). Chapter 23 - Nature-based solutions: Opportunities and challenges for water treatment. *Smart Nanomaterials for Environmental Applications. Micro and Nano Technologies*. 575-596. <https://doi.org/10.1016/B978-0-443-21794-4.00011-9>
- Council Directive 91/271/EEC. (1991). <https://eur-lex.europa.eu/eli/dir/1991/271/oj/eng>
- CVTI (2025). Inovatívna metóda v čistení odpadových vôd prináša ekologické riešenie aj na Slovensko. In *Veda na Dosah*, 04/2025. <https://vedanadosah.cvtisr.sk/priroda/zivotne-prostredie/inovativna-metoda-v-cistení-odpadovych-vod-prinasa-ekologicke-riesenie-aj-na-slovensko/>
- Dang, BT. et al. (2022). Wastewater Pollution in Urban Canals of Vietnam: Restoration Using Nature-Based Solutions. In: Pachova, N., Velasco, P., Torrens, A., Jegatheesan, V. (eds) *Regional Perspectives of Nature-based Solutions for Water: Benefits and Challenges. Applied Environmental Science and Engineering for a Sustainable Future*. Springer, Cham. https://doi.org/10.1007/978-3-031-18412-3_6
- Derco, J., Drtil, M., Bodík, I. (2005). Slovak Experience with Approaching the EU Legislation for Wastewater Treatment. Conference: *13th European Water, Wastewater and Solid Waste Symposium. Water/Wastewater Volume: 13*, p. 185 – 204, ISBN 3-937758-58-5.
- Directive (EU) 2024/3019 of the European Parliament and of the Council of 27 November 2024 concerning urban wastewater treatment (recast). (2024). <https://eur-lex.europa.eu/eli/dir/2024/3019/oj>
- EC. (2025). *Urban wastewater*. https://environment.ec.europa.eu/topics/water/urban-wastewater_en

- EEA (2024). *Waterbase - UWWTD: Urban Waste Water Treatment Directive – reported data*.
<https://www.eea.europa.eu/en/datahub/datahubitem-view/6244937d-1c2c-47f5-bdf1-33ca01ff1715>
- Istenič, D., Bodík, I., Merisaar, M., Gajewska, M., Šereš, M., & Griessler Bulc, T. (2023). Challenges and Perspectives of Nature-Based Wastewater Treatment and Reuse in Rural Areas of Central and Eastern Europe. *Sustainability*, 15(10), 8145.
<https://doi.org/10.3390/su15108145>
- Langergraber, G., Pressl, A., Kretschmer, F., and Weissenbacher, N. (2018). Small Wastewater Treatment Plants in Austria - Technologies, Management and Training of Operators. *Ecol. Eng.* 120, 164–169. doi: 10.1016/j.ecoleng.2018.05.030
- Mondi (2023). *Modernising our wastewater treatment plant in Slovakia*.
<https://www.mondigroup.com/news-and-insight/2023/modernising-our-wastewater-treatment-plant-in-slovakia>
- OECD (2024). OECD Environmental Performance Reviews: Slovak Republic 2024. *OECD Environmental Performance Reviews*. OECD Publishing, Paris,
<https://doi.org/10.1787/108238e8-en>.
- SHMÚ (2024). *Vodohospodárska bilancia kvality povrchovej vody SR v roku 2023*.
<https://www.shmu.sk/sk/?page=1834>
- Smartwater magazine. (2024). *Slovakia referred to EU Court for urban wastewater failures*.
<https://smartwatermagazine.com/news/european-commission/slovakia-referred-eu-court-urban-wastewater-failures>
- Štatistický úrad Slovenskej republiky. (2023). 7.2 *Vodné hospodárstvo*.
https://datacube.statistics.sk/#!/view/sk/VBD_SK_WIN/vh3001rr/v_vh3001rr_00_00_00_sk

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INNOVATIONS IN GREEN HYDROGEN PRODUCTION AND STORAGE TECHNOLOGIES IN THE VISEGRAD GROUP IN A COMPARATIVE PERSPECTIVE¹

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Abstract: Green hydrogen, produced through the electrolysis of water utilizing renewable sources, represents an important solution for reducing greenhouse gas emissions and supporting the transition to sustainable energy systems. This article explores innovative methods for the production and utilization of green hydrogen, focusing on initiatives in the Visegrad Group countries. It evaluates their contributions to decarbonization and energy security. To achieve a competitive market for green hydrogen, investment support and EU-level policies are essential.

Keywords: green hydrogen, electrolysis, renewable resources, Visegrad Group

JEL: F64

Introduction

Green hydrogen, produced through the electrolysis of water using renewable energy sources, represents a significant ally in the fight against climate change and air pollution. Due to its emissions-free characteristics, it has the potential to drastically reduce greenhouse gas emissions and support the transition to more sustainable energy systems. Technologies like electrolysis and Power-to-Gas (P2G) are innovative approaches that provide effective solutions for storing and utilizing surplus energy generated from renewable sources, ensuring flexibility and stability in energy grids.

This article focuses on technological advancements in green hydrogen production and its implementation in the Visegrad Group countries. It examines initiatives aimed at utilizing green hydrogen across various sectors, such as transportation, industry, and energy, and assesses their contributions to decarbonization and energy security. Emphasis is placed on the potential of these technologies in integrating renewable resources into existing energy systems, enabling effective responses to the variability of their production and reducing dependency on fossil fuels. Green hydrogen thus becomes a key component of the energy transformation through which we can achieve ambitious climate goals and strengthen the region's competitiveness in the global energy market.

1 Innovative methods for the production and utilization of green hydrogen

The conversion of energy from fossil fuels to renewable sources is crucial for decarbonizing the global economy and preventing irreversible climate change. Nevertheless, in the coming years, most of the energy will still be produced from fossil fuels, although the highest growth will be seen in renewable sources. According to the IEA report 2022, in the „Stated Policies“ scenario, the share of fossil fuels is projected to decrease from 78% to approximately 60% by 2040 (IEA, 2022). According to the scenario „Announced Pledges Scenario“ global energy demand is expected to increase by only 0.2% per year until

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2030, compared to 0.8% in the „Stated Policies Scenario“, accompanied by a significant shift towards low-emission energy sources.

In this energy transformation and decarbonization, green hydrogen plays an important role. By 2050, hydrogen could cover up to 12% of global energy demand. Its production involves electrolysis using renewable energy. Green hydrogen, which has zero carbon costs, has the potential to reduce emissions and support electricity generation, particularly during times and in locations with abundant renewable resources (Notteboom & Haralambides, 2023).

In addition, green hydrogen plays a crucial role in the EU's energy transformation strategy towards clean and sustainable energy sources. The Union has launched a number of support programs and initiatives to promote the development of green hydrogen technologies and infrastructures, as well as its widespread utilization. The role of this type of hydrogen in the energy industry is expected to increase in the future. Prices are anticipated to decline with the growing penetration of new technologies and mass production, making green hydrogen more competitive against conventional energy sources. Increasing interest and investment in research and development of green hydrogen may lead to further technological advancements and improvements in efficiency.

On July 8, 2025, the European Union adopted a delegated act on the methodology for renewable non-biological fuels, introducing a comprehensive methodology for assessing greenhouse gas emissions for low-carbon hydrogen and related fuels, in accordance with the standards of the Hydrogen and Gas Market Directive. For hydrogen and its fuels to be considered low carbon, they must achieve a minimum of 70% greenhouse gas emission savings compared to the use of unabated fossil fuels (European Commission a). According to this delegated act, two types of criteria are distinguished to ensure that hydrogen is renewable:

- Additionality ensures that increased hydrogen production goes hand in hand with new renewable electricity generation capacity. Therefore, hydrogen producers must enter into power purchase agreements with new and unsupported renewable electricity generation capacity.
- Temporal and geographical correlation.

These criteria indicate that hydrogen is produced when and where renewable electricity is available to avoid demand for renewable electricity for hydrogen production, which stimulates greater electricity generation from fossil fuels. To support accelerated development, renewable hydrogen producers may sign long-term power purchase agreements with existing renewable energy generation facilities by January 1, 2028 (European Commission b).

In practice, various technologies are used for performing water electrolysis, including alkaline, polymer electrolyte membrane (PEM), and solid oxide electrolysis. Each technology differs in operating conditions, efficiency, and costs, which affect its suitability for different types of applications. For example, PEM electrolysis is ideal for use in smaller, flexible systems with fast response times, while alkaline electrolysis is more common in large industrial facilities due to lower production costs and higher reliability in large-scale operations (Shiva & Himabindu, 2019).

Table 1 illustrates water electrolysis as the main method for producing green hydrogen, utilizing renewable electrical energy from solar (ws) and wind (we) sources. This process involves passing an electric current through an aqueous solution containing hydrogen (H^+) and hydroxyl (OH^-) ions, resulting in the production of hydrogen gas (H_2) at the negative electrode and oxygen gas (O_2) at the positive electrode. The produced green hydrogen is captured and stored in special tanks for later use as an energy carrier, while the oxygen is safely released into the atmosphere without negative environmental impacts.

Table 1: Inputs and outputs of water electrolysis to produce hydrogen and the absence of greenhouse gases

Newer Hydrogen Production Method No Greenhouse Gas Pollution			
Ws We 1.1 ton H2 \$1,497 (Wholesale Electricity USEIA 2019)	Electricity	Electrolysis	Oxygen: 8 ton
	Water: 9.1 ton		Hydrogen: 1.1 ton

Source: Own compilation based on RENEE, C. (2021). Report of Energy: Why We Need Green Hydrogen? State of the Planet; Columbia Climate School: New York, NY, USA.

Producing green hydrogen using this method is environmentally advantageous as it does not generate emissions of harmful or greenhouse gases. It is considered a sustainable and eco-friendly energy alternative that contributes to reducing carbon emissions and mitigating climate change. Electrolysis utilizing renewable energy thus enables the production of clean, sustainable energy in the form of green hydrogen for various applications in the energy sector (Renee, 2021). In addition to the basic technology for the production and use of green hydrogen mentioned above, other innovative methods for obtaining green hydrogen are also applied in practice:

1. **Power-to-Gas (P2G):** Power2Gas (P2G) utilizes excess energy from renewable sources to convert water into green hydrogen via electrolysis, which is the first step in the P2G process. The gas can subsequently undergo methanation, resulting in synthetic natural gas (bio-SNG – “green methane”). This gas is used for energy storage in transportation, industry, the chemical sector, and other fields. Since P2G uses electricity to produce gaseous fuels, the resulting fuels are sometimes referred to as electro fuels (e-fuels). E-fuels are synthesized from CO₂ removal through direct air capture (DAC) and water via electrolysis, powered by solar or wind electricity (Green city times).
2. **Biomass Conversion:** Biomass can be converted into hydrogen through gasification or pyrolysis processes. Gasification involves heating biomass in a controlled environment to produce synthetic gas composed of hydrogen, carbon monoxide, and other gases. The synthetic gas can then be further processed to extract hydrogen. Pyrolysis, on the other hand, involves heating biomass in the absence of oxygen, resulting in the production of bio-oil, synthetic gas, and charcoal. Hydrogen can be extracted from the synthetic gas component (Marouani, et al., 2023).
3. **Photoelectrochemical (PEC) Water Splitting:** Water splitting using PEC technology utilizes special semiconductor materials for the direct conversion of sunlight into hydrogen. These materials absorb sunlight and trigger a water-splitting reaction in the cell, resulting in the production of hydrogen and oxygen. PEC offers the potential for efficient and straightforward hydrogen production from solar energy, eliminating the need for external sources of electrical power (Ossila enabling science).
4. **Hydrogen Fuel Cells:** Hydrogen fuel cells are devices that convert the chemical energy of hydrogen and oxygen into electrical energy through an electrochemical reaction. Hydrogen is supplied to the anode, while oxygen (usually from the air) is fed to the cathode. This reaction generates electrical energy, heat, and produces water as a byproduct (Marouani, et al., 2023). Fuel cells have a wide range of applications in various sectors, including transportation, industrial, commercial, and residential buildings, as well as in long-term energy storage systems in reversible grid systems (US Department of Energy).

The above-mentioned are just a few innovative methods being explored for the production and utilization of green hydrogen. Research and scientific institutions around the world are working intensively on developing new technologies, materials, and processes aimed at improving the efficiency, scalability, and cost-effectiveness of the production, storage, and utilization of green hydrogen. The goal of these ongoing innovations is to promote the widespread adoption of hydrogen as a sustainable and competitive energy source.

2 Innovations in green hydrogen production and storage technologies in the Visegrad Group countries from a comparative perspective

The production and storage of green hydrogen in the Visegrad Group countries is still in the testing phase; however, its more widespread utilization will depend on public support and the reduction of production costs. The Commission approved the IPCEI Hy2Tech project in accordance with EU state aid rules to support research, innovation, and industrial deployment in hydrogen technology. Fifteen member states (including Poland, the Czech Republic, and Slovakia) will receive public funding of up to €5.4 billion, which is expected to mobilize an additional €8.8 billion in private investments. Thirty-five companies are involved in the project, collaborating on 41 projects in the hydrogen production, storage, transport, and utilization sectors, with a focus on mobility and technological innovations. This support will strengthen the industry and contribute to enhancing European competitiveness in the hydrogen economy (European Commission, 2022). The development in individual countries depends on the industrial structure, the volume of grey and turquoise hydrogen production, and the advancement of renewable energy sources. Market expansion will strengthen the economy, create new jobs, increase GDP, enable the integration of green energy, and contribute to reducing the carbon footprint (Kochanek, 2022). Green hydrogen is an emissions-free energy carrier produced through the electrolysis of water using renewable energy, and it can serve in many areas. In transportation, it is used in fuel cells to power cars, buses, or trains. Hydrogen vehicles produce only water vapor as a waste product. In industry, it serves as fuel for high-temperature processes. Hydrogen can also be stored and later used to generate electricity or heat during periods of renewable energy shortages (Ministerstvo životního prostředí, 2025). The transition to sustainable transportation is key to mitigating climate change and improving air quality. Electromobility, which includes various electrified vehicles and related infrastructure, has become a major challenge that offers significant environmental benefits (Richnák, 2025).

Poland is currently one of the largest producers of hydrogen in the EU, with an annual production of approximately 1.3 million tons of green hydrogen (Ministerstwo Klimatu i Środowiska, 2021). Hydrogen is traditionally produced mainly from natural gas, which involves greenhouse gas emissions and is used in industry. In accordance with Poland's Hydrogen Strategy for 2030, with a perspective toward 2040, and existing regulations, it is essential to introduce new technologies to produce clean hydrogen that can be utilized in various sectors of the economy. Given the current political situation, the need to diversify energy sources, and reduce dependence on the import of fossil fuels, the development of the hydrogen economy in Poland has particular significance (Giza, et al., 2024). It is important to note that the rise in CO₂ emission allowance prices and the decline in infrastructure costs should reduce the costs of hydrogen production through water electrolysis using electricity from renewable energy sources (European Commission, 2014).

The primary process for producing green hydrogen is water electrolysis powered by electricity from renewable energy sources. This process represents a simple electrochemical reaction that does not require complex equipment and does not produce greenhouse gas emissions. As a result, we obtain highly pure hydrogen (>99.99%) (Esposito, et al., 2022). However, with a higher share of renewable energy from wind turbines and photovoltaic

systems, it is expected that the production of 'green hydrogen' will become more economically viable (Tatarewicz, et al., 2023). According to the EU strategy to support hydrogen technology in the version adopted in Poland, electrolyzers are to be powered by excess capacity from offshore wind farms. This strategy may lead to overloads in high-voltage transmission lines, especially if the planned location of a nuclear power plant in the coastal village of Lubiatowo-Kopalino in the municipality of Choczewo proceeds.

The Power-to-Gas (P2G) method in Poland is making significant progress as a promising way to produce and utilize green hydrogen from excess renewable electricity, mainly from solar and wind sources. This technology utilizes abandoned mines and rehabilitated water bodies as sites for the production, storage, and distribution of hydrogen, thereby supporting the decarbonization and flexibility of the energy system. By using geographic information systems and geospatial data, suitable locations for decentralized P2G units are identified, which will be connected to local transportation and industry, while minimizing environmental risks and reducing the need for central infrastructure expansion. This strategic step aligns with the goals of climate neutrality and is expected to contribute to sustainable energy transformation, landscape restoration, and reducing dependence on fossil fuels (Sikora & Kochanowski, 2024).

An effective method of energy storage is underground hydrogen storage, which involves injecting hydrogen into geological formations during periods of energy surplus and releasing and utilizing it in the event of increased energy demand. For example, the suitability of geological structures for hydrogen storage in salt deposits, hydrocarbon reservoirs, and aquifers is determined by natural conditions. Smaller amounts of hydrogen can be stored in surface facilities. The choice of hydrogen storage form (e.g., compressed gas, liquid, or ammonia) is particularly complex and is influenced by various factors: geographical constraints, safety regulations, costs and installation hurdles, volume, logistics, and methods of transport and final use. Ammonia is considered a potential choice for storing vast quantities of energy over longer periods, but it has its limitations, as dynamic operations could damage the ammonia synthesis catalysts (Ligeża & Narloch & Wnęk, 2024).

The European Commission has approved a Czech scheme amounting to €960 million to support strategic investments aimed at the transition to zero emissions. This scheme is in line with EU policies for 2024-2029, focused on supporting clean energy and technologies, and contributes to the goals of the Clean Industry Package. The approval was conducted under the temporary state aid framework „TCTF“, which was approved in March 2023 and later amended (European Commission, 2025). For the Visegrad Group countries, the production of green hydrogen is seen as a cost-effective flexibility technology. The V4 strategic documents highlight the potential of electrolysis, with the Czech Republic setting a target of 400 MW by 2030 (Theisen, 2023).

In the Czech Republic and Poland, the development of photovoltaic technologies will be supported by the potential for green hydrogen production. This method of energy storage can help reduce the number of outages in photovoltaic systems, which particularly occur during sunny spring and summer days when energy consumption is lower due to holidays. At the end of 2023, the first electrolyser for green hydrogen production with a capacity of 230 kW was put into operation in the Czech Republic, powered by a photovoltaic plant with a capacity of 611 kWp. The green hydrogen is stored in a pressure balancing tank with a volume of 640 litres. This electrolyser was implemented in Napajedla in the Zlín Region, with investment costs around 1.5 euros million. As of the beginning of 2024, there were no similar installations in Poland (Dzikuć et al., 2025).

In Slovakia, a pilot project is being launched near Jaslovské komíny, aimed at producing green hydrogen as fuel for buses and freight transportation. The project, implemented by JESS, utilizes energy from the largest photovoltaic park in Slovakia. The goal of the project

is to generate energy from photovoltaics and produce green hydrogen, including the technology for its refuelling and storage for medium and heavy transport. The project is currently in a trial phase and plans to start commercial operations soon. For its implementation, the company received a non-repayable financial grant of €7 million from European sources through the Operational Program for Environmental Quality, which aims to increase the share of renewable energy utilization and incorporate hydrogen technology.

The full-scale launch of the hydrogen production station took place on December 27, 2024. The station is equipped with facilities for the production, storage, and dispensing of hydrogen, which is produced through electrolysis. In the pilot phase, there is one electrolyser with a maximum capacity of 0.45 tons of hydrogen per day, which is sufficient to refuel a minimum of five buses at standard half-production, while at maximum output, the station could provide refuelling for up to 25 buses per day.

Among the benefits of the station is the ability for short-term storage and hydrogen filling directly at the production site. JESS states that, if there is interest from transport companies, hydrogen can also be utilized by freight vehicles. The goal of the project is to test all parameters associated with the production of green hydrogen and its application in transportation. Additionally, the station is also testing the usability of the PEM (Proton Exchange Membrane) electrolyser to provide ancillary services for the transmission system operator (Lauková, 2025).

In Slovakia, the production of green hydrogen through electrolysis has the greatest potential, as the conditions for photo electrolysis are not sufficiently favourable. This method of hydrogen production requires a significant amount of electricity in steady supplies, which is difficult to achieve through solar and wind resources in Slovakia. Another source for producing green hydrogen is nuclear energy, which is well-developed in the Czech Republic and Slovakia and has strong political and public support, representing an ideal source for hydrogen production due to its ability to provide a high amount of energy for continuous supply. Fluctuations in consumption and production could be covered by existing hydropower and pumped-storage plants.

Nuclear energy would also allow to produce electricity at low prices, making hydrogen competitively priced in the European market. Such production could bring significant profits for investors and long-term revenues for the state budget, as well as create jobs in a technologically advanced industry and contracts for domestic companies (Čermák, 2022).

In 2024, the MOL petrochemical group launched the largest hydrogen production electrolyzer in the region, with a capacity of 10 megawatts, at the Duna refinery in Százhalombatta, Hungary. This plant is the largest in Central and Eastern Europe and will produce 1,600 tons of clean, carbon-neutral green hydrogen annually, which MOL will use to produce motor fuels. The electrolyzer uses electricity from renewable sources to break down water into hydrogen and oxygen, producing eight to nine tons of pure oxygen per ton of hydrogen. Green hydrogen will serve as a versatile energy source to reduce the company's carbon footprint and will soon be used directly in the transport sector.

The MOL Group plans to construct similar facilities in Rijeka and Bratislava, with the plant in Bratislava expected to start operations in 2026. The new plant requires an investment of €22 million and is anticipated to reduce the carbon footprint of the Duna refinery by more than 25,000 tons of carbon dioxide per year. The new technology will gradually replace the production process based on natural gas, which currently accounts for one-sixth of the total carbon dioxide emissions of the MOL Group (TASR, 2024).

According to Minister Lantos, in 2024, a plant was launched into trial operation that produces hydrogen from renewable energy generated by a local solar park. The advantage of this facility is that it is built on a 32-hectare site that was revitalized by rehabilitating

the former lignite surface mine of the Mátra power plant and actively contributes to promoting sustainable energy sources (HUNGARY TODAY, 2024).

The production and storage of green hydrogen in the Visegrad Group countries are currently in the testing phase, with broader utilization depending on public support and a reduction in production costs. Based on the above, in Poland, as the largest producer of hydrogen in the EU, there is a need to transition to clean production technologies to reduce emissions. In the Czech Republic, a financing scheme of €960 million aimed at the transition to zero emissions has been approved, with plans to increase electrolyser capacity. In Slovakia, a pilot project for hydrogen production for transportation is being developed, utilizing energy from photovoltaics. In Hungary, the MOL Group has launched the largest electrolyser in the region, with the aim of reducing the carbon footprint in motor fuel production. These initiatives highlight the importance of green hydrogen in the transition to sustainable energy systems and the reduction of greenhouse gas emissions.

Conclusion

In the current energy transformation, green hydrogen plays a key role in reducing greenhouse gas emissions and supporting the transition to more sustainable energy systems. Innovative production methods, such as electrolysis and Power-to-Gas technologies, provide effective solutions for storing and utilizing renewable energy, thereby contributing to the flexibility and stability of energy grids. The Visegrad Group countries, including Poland, the Czech Republic, Slovakia, and Hungary, are actively implementing various initiatives and projects focused on the development of the hydrogen economy, with an emphasis on technological advancement and increasing production capacity.

In the context of the growing importance of decarbonization and aiming for the EU's climate goals, it is essential for these countries to continue research and development of innovative technologies and ensure the necessary investments and policies to support hydrogen infrastructure. Green hydrogen has the potential not only to reduce the carbon footprint but also to stimulate economic growth and job creation, contributing to the overall sustainability and competitiveness of the region. If the prerequisites are met and effective strategies for its mass utilization are developed, green hydrogen could truly define a new era of energy transformation in the Visegrad Group countries and in a broader European context.

References:

- Dzikuć, M., Piwowar, A. & Dzikuć, M. (2025). The Development of Photovoltaics in the Countries of Central and Eastern Europe in the Context of Regulatory Changes: A Case Study of the Czech Republic and Poland. *Energies* 2025, 18, 817. <https://doi.org/10.3390/en18040817>
- Čermák, A. (2022). Aké sú možnosti výroby zeleného vodíka na Slovensku? *SFPA*. <https://www.sfpa.sk/zppost/ake-su-moznosti-vyroby-zeleneho-vodika-na-slovensku/>
- Esposito, E., Minotti, A., Fontananova, E., Longo, M., Jansen, J.C. & Figoli, A. (2022). Green H₂ Production by Water Electrolysis Using Cation Exchange Membrane: Insights on Activation and Ohmic Polarization Phenomena. *Membranes* 2022, 12, 15. <https://doi.org/10.3390/membranes12010015>
- European Commission (a). Hydrogen. https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen_en
- European Commission (b). Renewable hydrogen. https://energy.ec.europa.eu/topics/eus-energy-system/hydrogen/renewable-hydrogen_en
- European Commission (2014). Interim report provides first full dataset on energy costs and subsidies for EU28 across power generation technologies. https://ec.europa.eu/commission/presscorner/detail/en/ip_14_1131

- European Commission (2022). State Aid: Commission approves up to €5.4 billion of public support by fifteen Member States for an Important Project of Common European Interest in the hydrogen technology value chain. https://ec.europa.eu/commission/presscorner/detail/en/ip_22_4544
- European Commission (2025). Commission approves €960 million Czech State aid scheme to support investments in strategic sectors. https://ec.europa.eu/commission/presscorner/detail/en/ip_25_781
- Giza, K., Owczarek, E., Piotrowska-Woroniak, J. & Woroniak, G. (2024). Hydrogen Materials and Technologies in the Aspect of Utilization in the Polish Energy Sector. *Appl. Sci.* 14, 10024. p. 2. <https://doi.org/10.3390/app142110024>
- Green city times. Power2Gas - skladovanie energie a palivo pre sieť. *Online časopis*. <https://www.greencitytimes.com/power2gas/>
- Hadj Abdallah, H. (2023). Integration of Renewable-Energy-Based Green Hydrogen into the Energy Future. *Processes* 2023, 11, 2685. <https://doi.org/10.3390/pr11092685>. p. 19
- HUNGARY TODAY (2024). Prvá elektrárň na výrobu zeleného vodíka začína skúšobnú prevádzku. <https://hungarytoday.hu/first-green-hydrogen-plant-starts-trial-operation/#:~:text=One%20of%20Hungary's%20largest%20solar%20parks%20is,its%20kind%20in%20Hungary%20and%20is%20closely>
- IEA (2022). World Energy Outlook 2022a (WEO). International Energy Agency. <https://iea.blob.core.windows.net/assets/830fe099-5530-48f2-a7c1-11f35d510983/WorldEnergyOutlook2022.pdf>
- Kochanek, E. (2022). The Role of Hydrogen in the Visegrad Group Approach to Energy Transition. *Energies*, 2022, Vol. 15, 7235. <https://doi.org/10.3390/en15197235>.
- Lauková, L. (2025). Pod jaslovskými komínmi vyrástla unikátna výroba vodíka s najväčšou fotovoltaiťou na Slovensku. *Euractiv.sk*. <https://euractiv.sk/section/ekonomika-a-euro/news/pod-jaslovskymi-kominmi-vyrastla-unikatna-vyroba-vodika-s-najvacsou-fotovoltaiťou-na-slovensku/>
- Ligęza, K., Narloch, P. & Wnęk, P. (2024). Prospects for a large-scale green hydrogen storage methods development in Poland – a review. *GAZ, WODA I TECHNIKA SANITARNA WRZESIEŃ*. DOI: 10.15199/17.2024.9.1
- Marouani, I., Guesmi, T., Alshammari, B.M., Alqunun, K., Alzamil, A., Alturki, M. & Hadj Abdallah, H. (2023). Integration of Renewable-Energy-Based Green Hydrogen into the Energy Future. *Processes* 2023, 11, 2685. <https://doi.org/10.3390/pr11092685>. p. 19
- Ministerstwo Klimatu i Środowiska (2021). Analiza potencjału technologii wodorowych w Polsce do roku 2030 z perspektywą do 2040 roku. p. 86. <https://www.gov.pl/attachment/1b590d54-fa1e-49fe-9096-b2d0c6a4fe59>.
- Ministerstvo životního prostředí (2025). Vodík má zelenou, na budování elektrolyzérů dáme z Modernizačního fondu tři miliardy korun, oznámil ministr Hladík. <https://mzp.gov.cz/cz/pro-media-a-verejnost/aktuality/archiv-tiskovych-zprav/vodik-ma-zelenou-na-budovani-elektrolyzeru>
- Notteboom, T. & Haralambides, H. (2023). Seaports as green hydrogen hubs: advances, opportunities and challenges in Europe. *Maritime Economics & Logistics* (2023) 25:1–27 p. 1. <https://doi.org/10.1057/s41278-023-00253-1>
- Ossila enabling science. Čo je fotoelektrochemický článok? <https://www.ossila.com/pages/photoelectrochemical-cell>
- Richnák, P. (2025). “Shaping the Future of Sustainable Transport: The Role of University Students in the Study Field of Economics and Management in the Adoption of Electromobility.” *KNOWCON 2025: Knowledge on Economics and Management: Conference Proceedings*.

- Renee, C. (2021). Report of Energy: Why We Need Green Hydrogen? State of the Planet; Columbia Climate School: New York, NY, USA.
- Shiva, K.S. & Himabindu, V. (2019). Hydrogen production by PEM water electrolysis - A review. *Mater. Sci. Energy Technol.* pp. 442–454.
- Sikora, M. & Kochanowski, D. (2024). Potentials of Green Hydrogen Production in P2G Systems Based on FPV Installations Deployed on Pit Lakes in Former Mining Sites by 2050 in Poland. *Energies* 2024, 17, 4660. <https://doi.org/10.3390/en17184660>
- Tatarewicz, I., Skwierz, S., Lewarski, M., Jeszke, R., Pyrka, M. & Sekuła, M. (2023). Mapping the Future of Green Hydrogen: Integrated Analysis of Poland and the EU's Development Pathways to 2050. *Energies* 2023, 16, 6261. <https://doi.org/10.3390/en16176261>
- Theisen, N. (2023). Outlook for res integration in Visegrad Countries. *SFPA*. https://rekk.hu/downloads/academic_publications/V4ETTP_Outlook%20for%20RES%20integration_2023.pdf. p. 18
- TASR (2024). MOL spustil v Maďarsku najväčší elektrolyzér na výrobu vodíka v regióne. <https://nvas.sk/mol-spustil-v-madarsku-najvacsi-elektrolyzer-na-vyrobu-vodika-v-regione-10888/#:~:text=Petrochemick>
- US Department of Energy. Fuel cells. <https://www.energy.gov/eere/fuelcells/fuel-cells>

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CLIMATE CHANGE AND THE POLITICS OF LOW-HANGING FRUIT: GREAT BRITAIN AS A CASE STUDY

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Abstract: This paper examines the climate policies of the United Kingdom with a focus on so-called “low-hanging fruit” measures, meaning easily attainable and cost-effective steps toward emission reduction. The theoretical part outlines the characteristics, benefits, and limitations of such policies, stressing the risk that their overuse may hinder deeper systemic transformation. The empirical section evaluates the UK’s approach across energy, industry, buildings, transport, and agriculture. The most significant progress has been achieved in the energy sector, where reforms and price mechanisms drove rapid emission cuts. Other sectors, however, show slower advancement, often relying on low-cost measures without transformative impact. The conclusion highlights that if the United Kingdom aims to achieve climate neutrality by 2050, it must move beyond “easily available” policies and adopt more demanding, innovative, and long-term strategies.

Keywords: Climate Change, Low-Hanging Fruit, Great Britain, Case Study

JEL: Q54, Q57, P28

Introduction

Climate change and its manifestations represent one of the greatest current challenges for the global community. The question of how to address the fight against the climate crisis is dealt with by states within their autonomous policies, but also collectively in international groupings and initiatives. The specifics of today’s challenges stem from the very nature of the climate crisis, which requires joint efforts to be averted. However, this must be firmly anchored in national goals and supported by an ambitious and effective framework of climate measures.

This paper focuses on the relatively underexplored area of “low-hanging fruit” policies which is a popular category of measures introduced in efforts to protect the environment. We outline the characteristics of these policies and attempt to provide different perspectives on their application within the state climate program. We then present an overview and analysis of the climate agenda of the United Kingdom of Great Britain and Northern Ireland, not only in terms of the application of the aforementioned policies, but also through the lens of its achievements, the initiatives that drove them, and the effectiveness of the goals achieved. The aim is to evaluate the policies of the United Kingdom in the sectors of energy, industry, buildings, transport, and agriculture. The main criterion for assessing climate policies was whether they deliver long-term and transformative solutions within the sector in question, or whether their content consists merely of the simplest measures to implement.

The empirical part of this paper draws on documents published by the governments of the United Kingdom, most often from various sectoral strategies and plans, including reports of the UK Climate Change Committee (CCC), an independent body that critically assesses policies and progress in the climate agenda.

1 Low-hanging fruits of the climate policies

The term “low-hanging fruit” is used metaphorically to describe something that is easy to achieve or utilize. It can refer to the most easily attainable measures, goals, or benefits. When “picking low-hanging fruit,” the focus is on readily available opportunities to achieve our goal without making additional efforts to “reach the higher branches.” Moreover, if the low-hanging fruit is “sweet” (bringing significant results, success, or improvement), the motivation to move forward and search for further opportunities for progress decreases. Implementing policies that fall under the definition of low-hanging fruit is a simple and often obviously most suitable solution. The next set of measures then becomes a challenge requiring answers to more complicated questions (Galbraith 2007).

Vandenbergh et al. (2008) examined common characteristics of government emission-reduction measures that fall under the low-hanging fruit category. In general, environmental policymakers aim for the least unpopular changes with minimal political costs. Their goal is short-term or long-term emission reduction. Low-hanging fruit policies typically share several common factors, including: the scope of the measure (emission reductions correspond to the resources invested in its implementation); economic costs (equal to or lower than potential costs of alternative measures); government costs (not exceeding a reasonable level in the given political situation); personal economic costs (equivalent to the personal benefit of the individual targeted by the policy); and other personal barriers (no additional obligations placed on individuals, e.g., the need for an upfront investment).

The authors focused on low-hanging fruit policies in the household and individual sector. This is an area of the national economy where there is vast potential for emission reduction through simple measures aimed at efficiency in everyday life. Although these policies are not considered a suitable long-term strategy if not complemented by more effective policies with broader impact, the authors point out that at the individual and household level, there are ample opportunities to implement small positive changes.

Narain and van’t Veld (2008) point out the negative aspects of low-hanging fruit policies at the state level. These are emission-reduction policies aimed at the simplest achievable goals. If countries quickly exhaust all the cheap ways of reducing emissions, they will find themselves in a situation where making further progress in this area becomes very difficult. To cut emissions, they will then need to implement costly measures requiring large upfront investments or unpopular steps—potentially at a time when it is already too late to preserve a certain standard of living on Earth.

“No brainers”—that is, measures that should be applied at the state level first, as they offer themselves as the most natural solution—are systemic changes targeting the most significant environmental shortcomings of the domestic economy. Their potential lies in eliminating the most obvious problem a country faces in its climate policy. The authors illustrate this with examples from different countries around the world. In Argentina, a country marked by high poverty and inequality, one recommended measure is the removal of subsidies for energy derived from fossil fuel combustion, followed by the redistribution of the saved resources to the poorest segments of the population. The government should also introduce a more efficient system of collecting carbon taxes, which would further help reduce inequalities among citizens. For climate-neutral Brazil, it is necessary to stop deforestation in its vast tropical forests and to establish environmental policies that are not subject to political power. India’s most pressing climate issue is its dependence on coal energy, which accounted for 64% of its emissions in 2021. A ban on the construction of new coal-fired power plants combined with an increase in the carbon tax could bring change. The resulting revenue could be used to support the transition to renewable energy sources. Australia’s opportunity lies in creating

an emissions trading system and drafting a national plan in which it establishes long-term climate commitments (Caselli et al. 2021).

The literature on low-hanging fruit in relation to climate policies does not clearly specify which measures fall into this category. Caselli et al. (2021) include in it structural changes that fundamentally affect a particular area of the economy, with the most important criterion being whether the country has the greatest potential to reduce its climate footprint in that area.

For Yanarella (2008), low-hanging fruit policies represent minor changes that bring quick and substantial benefits to both consumers and producers. He includes among them, for example, building insulation or replacing fluorescent lamps with more efficient LED versions. He argues that such policies do not represent a genuine step forward in the green transformation of a country and that more sophisticated measures are needed.

Low-hanging fruit policies are most often associated with the field of energy efficiency. In efforts to decarbonize the economy, reducing the energy intensity of its individual sectors appears to be the most appropriate first step. Energy efficiency measures can be implemented across the entire economy and often deliver the fastest results (IEA, 2024; Franhauser and Jotzo, 2017; Achmadi, 2022).

The reason lies in several characteristics of the power sector, which usually stands at the beginning of decarbonization efforts in national programs. The first feature of the energy sector that makes it suitable for applying low-hanging fruit measures is that it accounts for the highest share of greenhouse gas emissions (globally around two-thirds). This offers numerous opportunities and measures to increase its sustainability. Another reason is the progress already achieved in improving energy efficiency. There are many well-known techniques that can be implemented at the national level without significant investment in research or in the method of implementation. A further factor is the influence of decarbonized electricity on other sectors of the economy. If low-carbon electricity is used in the transport sector and in households, more of it will be produced compared to a scenario without electrification of these areas, but overall emissions will be significantly reduced (Franhauser and Jotzo, 2017).

Measures characteristic of increasing energy efficiency include improving technical efficiency in the industrial sector, enhancing vehicle fuel economy (including the shift to electric vehicles), building insulation, electrification of heating, and more. Among the low-hanging fruit often used to make progress in these areas are various efficiency standards, energy efficiency directives, and rules that set limits for specific emission sectors. These frameworks can achieve progress and reduce greenhouse gases in transport (for example, by setting fuel economy standards or introducing schemes to replace combustion-engine vehicles with electric ones), buildings (through legislation defining maximum building energy intensity), industry, and households (via electrification and stricter appliance standards). Technical measures, such as tightening fuel efficiency requirements for freight vehicles, account for roughly 25% of achieved emission reductions, while measures influencing consumer behaviour (such as promoting public transport and cycling) deliver around 15% effectiveness (IEA, 2024a).

Specific measures that can be classified as low-hanging fruit include, for example: the creation of digital platforms for logistics systems, lowering highway speed limits, support frameworks for shifting from road to rail transport, sustainable logistics programs, and various types of tax incentives that encourage both producers and consumers to reduce their carbon footprint (Achmadi, 2022). Tax incentives and similar fiscal stimuli, such as accelerated depreciation, are most often used by wealthy countries. They can be applied across various sectors, for example in waste management, transport, and industry. They work best during periods of economic prosperity and not in times of recession. Another way to improve energy efficiency is to raise consumer awareness of the issue. This includes information campaigns, conducting audits, as well as labelling appliances and buildings based on their energy performance, which also has a psychological effect. Other effective measures include so-called

ecological taxes—for example, a purchase or vehicle tax based on energy consumption, or an annual CO₂ emissions tax.

An analysis of the climate policies of individual countries shows that low-hanging fruit in the form of regulations and standards is used primarily in the building sector and in the regulation of electrical appliances. In European countries, such measures account for up to 40% of policies targeted at the household sector (World Energy Council, 2008).

2 Low-hanging fruit in the United Kingdom?

In the context of the United Kingdom's fight against the climate crisis, low-hanging fruit policies are most often associated with the reform of the energy sector, specifically electricity generation (Grubb & Newbery, 2018). These associations relate primarily to the very rapid progress the country has achieved in this sector. The rate of emission reductions from electricity exceeded expectations and accounted for most of the progress in the overall decarbonization

of the economy since the introduction of climate legislation in 2008 (CCC, 2024). However, rapid achievement of emission reductions is not the only criterion for determining whether a policy falls under low-hanging fruit. In this case, the energy sector is linked to this characteristic also because of its potential for implementing energy-efficiency measures. Such reform is considered relatively easy to carry out, carries less political risk than other sectors, and targets an area where emission-reduction practices are well known (Bassetti, 2022; Grubb & Newbery, 2018).

From this perspective, the United Kingdom fulfills the assumptions of “implementing” low-hanging fruit and is among the first to pursue measures that appear most effective and practical. A policy measure considered groundbreaking in the UK's emission-reduction efforts was the introduction of a minimum carbon price. In combination with a broader framework of other policies, progress was achieved that can be directly attributed to the impact of these measures. The framework included renewable portfolio standards (RES), air pollution standards, and the announcement of a coal phase-out in power plants. It was complemented by market incentives, such as auctions under the Contracts for Difference (CfD) scheme, which secured revenues for renewable electricity producers despite price fluctuations (Koch & Schwarz, 2024). Decarbonization of electricity was also supported by taxes targeting fossil fuel combustion (Grubb & Newbery, 2018). Since low-hanging fruit policies in energy efficiency are often in the form of standards or taxes—measures with minimal expenditure—the reform of the energy sector can be seen as bearing their characteristics.

The advantage of measures such as carbon taxes lies in the fact that their costs are borne by consumers or the business sector. However, governments often choose to financially support households and companies to help them cope with rising costs and maintain competitiveness (Hirst & Keep, 2018). These indirect expenditures thus weaken the potential for the minimum carbon price to be classified as low-hanging fruit from a financial perspective.

The way the country implemented this policy was also based on an innovative and effective system that brought benefits to consumers while reforming the sector from the ground up (Renewable UK, 2024). Among the next planned steps in the sector is the introduction of changes and improvements to the current functioning of CfDs, the contracts that serve as the main instrument of this policy. The aim is for them to better reflect the upcoming challenges for the country and deliver results in areas that have been less effective than others, such as the development of solar energy (United Kingdom Government, 2022a). In addition, the United Kingdom is focusing on its most promising sector—offshore wind energy—and is introducing innovative technologies in this field to increase its potential (Ambrose, 2024). Since the development of this sector requires significant investment

and a long-time frame for implementing individual steps, finding overlaps with low-hanging fruit policies in this area is more difficult.

In this case, we can conclude that although electricity reform is fundamentally considered a low-hanging fruit policy, a closer look at the United Kingdom reveals in this process not only low-hanging fruit but also innovative approaches and good practices that other countries can follow. Other sectors of the British economy show the opposite phenomenon. Decarbonization and the reduction of greenhouse gas emissions in these sectors have so far not achieved progress comparable to that in energy (CCC, 2024). In its efforts to reduce emissions in industry, agriculture, and the building and transport sectors, the United Kingdom fits the definition of implementing low-hanging fruit policies more prominently.

In 1990, electricity had the largest share of total emissions, and by 2023 this sector also recorded the most significant decline. The second-largest polluter—industry—also dropped substantially, but other sectors did not see comparable progress (CCC, 2024). In industry, success in meeting climate goals can be partly attributed to energy reform, which positively influenced the sector's emission intensity. Further emission cuts were achieved by reducing the share of highly polluting industries in the industrial structure and by measures that improved energy efficiency. Advanced initiatives, such as carbon capture mechanisms and the use of hydrogen fuels, make up a smaller part of implemented measures and are included in strategies for the next period. Only with their application one can expect that the sector will achieve the necessary decarbonization (United Kingdom Government, 2021a; Jackson, n.d.). From this perspective, the sector's activities so far can be more strongly associated with low-hanging fruit policies, which are not sufficiently transformative to secure the desired long-term progress in line with climate goals. They are also linked with measures that may look effective on paper—for example, reducing the production of emission-intensive steel or chemicals—but in practice result in importing those raw materials from abroad. In this respect, it would be more relevant to track the development of consumption-based emissions, although this is a little-used practice.

Of all the examined sectors, agriculture has made the least progress in reducing emissions. Green policies in this area are marked by chaotic design, which complicates farmers' motivation to adopt green changes. Positive changes brought so far by climate measures have resulted from peatland restoration, tree planting, or increasing the efficiency of agricultural processes (CCC, 2024; United Kingdom Government, 2022a). From this perspective, it seems that agriculture in the United Kingdom has not yet made full use of the potential of low-hanging fruit policies. Similar trends are also seen in the European Union, which since 2018 has managed to reduce its agricultural emissions by only 1%. A report by the European Environment Agency states that the United Kingdom and the EU share difficulties in meeting green milestones in the sector and should focus on more effective support for farmers in adopting organic systems (EEA, 2020).

The United Kingdom and the European Union find themselves in a similar situation in the building and transport sectors (EEA, 2020). Both contribute significantly to total emissions, but they lack frameworks of effective measures that would ensure a substantial turnaround from current trends. Progress has come from improvements in energy efficiency, driven by reduced dependence on oil and coal, but also by replacing some existing capacity with another fossil fuel—natural gas—which is a transitional source and does not represent a long-term green solution (CCC, 2024; United Kingdom Government, 2022a).

In the building and transport sectors, the United Kingdom relies on expanding low-carbon solutions such as electric vehicles and heat pumps. However, these efforts are strongly influenced by political changes in the country. Changes of government and the alternation between conservative and liberal approaches to environmental protection have resulted in frequent modifications of the timeline for meeting commitments (Riding, 2023). These shifts

negatively affect the market, as they introduce uncertainty and weaken the motivation of stakeholders to change the status quo.

Another shortcoming of decarbonization efforts in these sectors is the lack of implementation plans and the absence of legislative frameworks for green policies (UKGBC, n.d.). The United Kingdom has ambitious plans to reduce emissions from buildings and transport—for example, strengthening and electrifying public transport or using hydrogen technologies, which require a long implementation timeline and increased investment from both the public and private sectors. However, in some areas, the country has not yet exhausted even the low-hanging fruit. In the building sector, the introduction of unified standards is missing, which is among the simplest and cheapest measures leading to energy efficiency (Greater London Authority, 2023).

3 Conclusion

The fight against the climate crisis at the level of individual states has in recent years gained importance and attracted growing attention from both experts and the public. Nevertheless, there are several areas within this issue that have not yet been significantly explored. One of them is low-hanging fruit policies in relation to climate change. The aim of examining this phenomenon is to shed light on the nature of climate measures implemented by a given country and, by doing so, assess how far the country has gone in terms of its capacity to combat the climate crisis.

The United Kingdom was the first country in the world to introduce ambitious milestones into its climate agenda, including the goal of reducing emissions by 80% compared to 1990 levels. In several areas of its economy, it has managed to achieve significant progress in decarbonization, and territorial greenhouse gas emissions are estimated to have fallen by 52% between 1990 and 2023 (ONS, 2024). Despite these successes and the UK's self-presentation as a leader in the fight against climate change, the trajectory resulting from the regulations implemented so far does not lead to meeting the goals of the Paris Agreement. Unsatisfactory progress in the green transition can be attributed to measures that are not sufficiently innovative, fail to deliver long-term emission reductions across sectors, focus only on a single part of the economy, and lack adequate political will. The United Kingdom also shows shortcomings in applying policies that require long-term implementation and high costs.

The green economic reform since 2013 has been most prominent in the electricity sector, which is most often associated with low-hanging fruit policies. The UK has introduced a wide range of measures aimed at improving energy efficiency, which have made a significant contribution to the overall reduction in emissions. From 2008 to 2022, changes in the energy sector accounted for almost half of the country's total emissions reduction. These included the introduction of standards, taxes, emission limits, and regulations that bore the characteristics of low-hanging fruit.

Similar measures have also been introduced in other sectors of the UK economy—for example, regulations, tax obligations, and reliefs in the residential and transport sectors. However, the progress achieved through these regulations has not been sufficient, which has led the country to set more ambitious goals requiring more demanding policies with higher investment and time requirements. These policies do not qualify as low-hanging fruit, which has also been reflected in the difficulties the country has encountered in attempting to implement them. Effective plans currently cover only about a third of the measures needed to meet the 2030 targets. If the United Kingdom is to achieve climate neutrality by 2050, it must take a number of rapid and concrete steps that will align more closely with the goals it has set.

References:

- Achmadi, F. (2022). *Low-hanging-fruit options for energy efficiency in freight transport*. United Nations ESCAP, Transport Division. <https://repository.unescap.org/handle/20.500.12870/5171>
- Ambrose, J. (2024, August 24). ‘This is the future’: Why turbines that float could be the new wave in British wind power. *The Guardian*. <https://www.theguardian.com/business/article/2024/aug/24/this-is-the-future-why-turbines-that-float-could-be-the-new-wave-in-british-wind-power>
- Bassetti, F. (2022, October 14). Success or failure? The Kyoto Protocol’s troubled legacy. *Climate Foresight*. <https://www.climateforesight.eu/articles/success-or-failure-the-kyoto-protocols-troubled-legacy/>
- CCC. (2024). *Progress in reducing emissions 2024: Report to Parliament*. <https://www.theccc.org.uk/publication/progress-in-reducing-emissions-2024-report-to-parliament/>
- Fankhauser, S., & Jotzo, F. (2017). *Economic growth and development with low-carbon energy*. Centre for Climate Change Economics and Policy. <https://assets.publishing.service.gov.uk/media/5a2532fded915d458b922ee6/Working-paper-267-FankhauserJotzo.pdf>
- Galbraith, P. (2007). Beyond the low hanging fruit. *Modelling and Applications in Mathematics Education*, 10, 79–88. https://link.springer.com/chapter/10.1007/978-0-387-29822-1_6
- Greater London Authority. (2023, November 9). London continues to lead the UK in reducing emissions from new buildings. <https://www.london.gov.uk/London%20continues%20to%20lead%20the%20UK%20in%20reducing%20emissions%20from%20new%20buildings>
- Grubb, M., & Newbery, D. (2018). UK electricity market reform and the energy transition: Emerging lessons. *The Energy Journal*, 39(6), 1–26. <https://doi.org/10.5547/01956574.39.6.mgru>
- Hirst, D., & Keep, M. (2018). *Carbon price floor (CPF) and the price support mechanism*. House of Commons Library. <https://commonslibrary.parliament.uk/research-briefings/sn05927/>
- IEA. (2024). *Tracking energy efficiency*. <https://www.iea.org/energy-system/energy-efficiency-and-demand/energy-efficiency>
- Jackson, G. (n.d.). *A formula to net zero: The chemical industry’s strategy*. Business Wise Solutions. <https://www.businesswisesolutions.co.uk/2024/09/16/formula-to-net-zero-chemical-industry/>
- Koch, N., & Schwarz, M. (2024, February 22). Our climate policy explorer shows which climate policies have succeeded... and which have failed. University of Oxford. <https://www.inet.ox.ac.uk/news/our-climate-policy-explorer-shows-which-climate-policies-have-succeeded-and-which-have-failed>
- Narain, U., & van’t Veld, K. (2008). The Clean Development Mechanism’s low-hanging fruit problem: When might it arise, and how might it be solved? *Environmental and Resource Economics*, 40(3), 445–465. <https://doi.org/10.1007/s10640-007-9164-x>
- ONS: Office for National Statistics. (2024). *Measuring UK greenhouse gas emissions*. <https://www.ons.gov.uk/economy/environmentalaccounts/methodologies/measuringukgreenhousegasemissions>
- RenewableUK. (2024). *UK wind energy database*. <https://www.renewableuk.com/energypulse/ukwed/>
- Riding, J. (2023, September 20). One-fifth of homes to be exempt from gas boiler ban after PM’s net zero shake-up. *Inside Housing*. <https://www.insidehousing.co.uk/news/one-fifth-of-homes-to-be-exempt-from-gas-boiler-ban-after-pms-net-zero-shake-up-83359>

- UKGBC. (n.d.). *Net zero carbon buildings framework*. <https://ukgbc.org/resources/net-zero-carbon-buildings-framework/>
- United Kingdom Government. (2021a). *Industrial decarbonisation strategy*. https://assets.publishing.service.gov.uk/media/6051cd04e90e07527f645f1e/Industrial_Decarbonisation_Strategy_March_2021.pdf
- United Kingdom Government. (2022a). *Reducing emissions across the economy*. Department for Business, Energy & Industrial Strategy. <https://www.gov.uk/government/publications/net-zero-strategy/3-reducing-emissions-across-the-economy#i-power>
- Vandenbergh, M. P., Steinemann, A. C., & Raimi, K. T. (2008). Individual carbon emissions: The low hanging fruit. *UCLA Law Review*, 55, 1701–1758. <https://scholarship.law.vanderbilt.edu/faculty-publications/1031>
- World Energy Council. (2008). *Energy efficiency policies around the world: Review and evaluation, executive summary*. https://www.worldenergy.org/assets/downloads/PUB_Energy_Efficiency_Policies_Around_the_World_Review_and_Evaluation_Exec_Summary_2008_WEC.pdf
- Yanarella, E. J. (2008). Research and solutions: Don't pick the low-hanging fruit! Counterintuitive policy advice for achieving sustainability. *Sustainability: The Journal of Record*, 1(1), 27–32. https://www.academia.edu/90323761/Research_and_Solutions_Dont_Pick_the_Low_Hanging_Fruit_Counterintuitive_Policy_Advice_for_Achieving_Sustainability

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LARGE-SCALE ENERGY STORAGE SOLUTIONS: A COMPREHENSIVE REVIEW OF CURRENT TECHNOLOGIES

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Abstract: This paper provides a comprehensive review of current technologies in the area of energy preservation and storage, for subsequent electrical conversion. It analyzed all relevant and available means of storage, that are already being applied in practice or which usage was already tested, and their large-scale implementation is planned in foreseeable future. We discuss the presence of different types of energies that are being converted during the generation of electrical energy intended for storage. In the end, we found that several currently known technologies provide for viable and already rentable solutions of energy storage on different levels, which will need to be implemented in larger scale should we move towards more sustainable future.

Keywords: energy storage, renewable energy, environmental policy, sustainability, technology

JEL: Q40, Q51, Q55

Introduction

Energy exists in many forms - fundamentally, it is a quantitative property that governs the behavior of physical systems in the universe. However, ever since Faraday came up with electromagnetic induction which was a little later used to effectively transform mechanical energy into electrical energy, suddenly, there was a way to create a very usable state of energy for various purposes. Naturally, humanity, which is striving to make living as simple as possible by minimizing *human* energy expenditure, started using it in a very effective way. Energy we are speaking of is none other than electricity.

It seems rather paradoxical that the device, capable of storing the continuous electrical energy, came before the invention of electromagnetic induction and generator of electricity itself. However, Volta, who made such discovery of three-layered *apparatus* (voltaic pile) which we now refer to as battery, was able to demonstrate only single-use solution, which was energetically charged chemically, and after discharge, it loses its electrical potential. After the invention of electrical generator, it came soon, that we realized that it might be beneficial to be able to cyclically store the produced electrical energy for future use but also, so that all the work done to create it, does not go to waste when there is no immediate consumption. That is, where the first commercially viable rechargeable solution was proposed in form of Lead-Acid battery which is widely used to this day in a form not fundamentally so different from Planté's original design.

While most current papers on energy storage analysis and historical overviews only refer to energy storage in sense of electrical energy storage, the whole concept should be instead expanded to the full extent. The idea of energy storage and conversion to more effective form was brought forward much sooner since there are, naturally, other types of energy other than electrical energy that can be stored and provide useful work for humans in future. If we stretch this a little, we can trace this idea back to ancient civilizations which were able to figure out that potential energy can be stored for future use in various ways. Hence, devices such as crossbow was effectively storage of elastic potential energy, which after release turns into kinetic energy and creates useful work that is transferred to the arrow, which flies with high

speed desired for its purpose. Another example could be a medieval trebuchet which also stored gravitational potential energy in counterweights.

Coming back to present, clarification of what we define as electrical energy production needs to be given. To be precise, and not to contradict with laws of physics, energy itself cannot be produced, it can only be transferred/changed to usable (or less usable - entropy) state, where it can provide some type of work for our usage by which it makes our lives effectively better and easier. So even within the *generation* of electrical energy, the energy is only converted from wind, photons, water, burning coal, splitting uranium and other sources into electrical energy.

So then, after implementing law of conservation of energy and understanding the potential of other types of energy, the means of electrical energy storage are diverse. Following chapter defines the types of energy to answer the question of how they can be of use in storage of electrical energy.

1 Types of Energy

Universe provides for various types of energy that can be used for simplifying the life of human beings. To better define the energy, mainly from statistical reasons, nowadays the terms of Primary and Secondary energy can be used. This, however, is mostly just definition and in reality, does not mean, as already declared, that the secondary energy was created from primary energy. Instead, it was transformed into a more usable form. This division is also necessary to be able to measure losses in conversion, system efficiency, energy return on investment, or CO₂ emissions per kWh. Although division to Primary and Secondary is not as important for what the purpose of this paper is, it helps to better understand the importance of energy states for storage of electrical energy, hence we provide a brief description.

Primary energy, as defined by UN “*should be used to designate those sources that only involve extraction or capture, with or without separation from contiguous material, cleaning or grading, before the energy embodied in that source can be converted into heat or mechanical work*” (Øvergaard, 2008). This means that it is captured directly from the environment.

Secondary energy “*should be used to designate all sources of energy that results from transformation of primary sources*” (Øvergaard, 2008). It is converted from primary energy in the form of electricity or fuel. The UN definition also defined primary energy to be capture directly from natural resources such as crude oil, coal, natural gas or produced from primary commodities although this was in 1982. Today the list could be expanded with solar, wind, hydropower, geothermal, ocean, biomass or nuclear potential. (Demirel, 2012)

So, in reality, Primary and Secondary energy are both types of energy in certain state that is derived from its previous occurrence. The difference is only that the secondary energy was intentionally and purposefully transformed to its form from some other source, which is considered primary. A simple example of this would be wind energy transformation to electrical energy. Wind energy is available due to natural geological events on earth (primary energy). Technological advance allowed us to capture this energy with wind turbines that have generators installed in them and therefore could transform this wind energy (which is kinetic mechanical energy of moving air molecules) by rotating the rotor (magnet) around copper coil, by which the mechanical energy is transformed into electrical energy.

As a matter of fact, the secondary energy that we produce is being transformed back into certain state that could be defined almost as primary energy again, however usually in events, when it's extremely hard to capture and make it usable again. Therefore, by definition and from statistical point of view, it's not transformed into primary energy since it's been derived from the usage of secondary and became dispersed. Most commonly, especially with the usage of electrical energy, it is transformed back to thermal energy either during the conduction (electrons flow) itself, or via specifically using it to create heat or light, such as during heating the air during the winter or using light to provide visibility in space. This reverse transformation

represents entropy, where the usable energy turns into mostly unusable state and is gradually radiated into outer space.

Following, we define the most relevant energy types for this analysis, that can be converted from one to another under different circumstances. It is crucial to understand how these forms of energy can be transformed and stored to advance in the development of efficient energy-storage technologies for expected future energy demand increase.

Table 1: Fundamental Energy (Sub)Types

Energy (sub)types			
Mechanical (<i>kinetic/ potential</i>)	Gravitational	Chemical (<i>bonds of molecules</i>)	Electrical (<i>electrons</i>)
Magnetic (<i>fields</i>)	Electromagnetic (<i>waves [photons]</i>)	Thermal (<i>excited state of atoms</i>)	Nuclear (<i>atomic nuclei</i>)

Note: Own adaptation. Additional highly specialized forms of energy exist in theoretical physics, which are now not too relevant with current technologies for practical use. Therefore, the types listed above represent the most relevant and transformable forms of energy from an engineering and applied-physics perspective.

It could be argued that truly fundamental types of energy are only kinetic and potential (and field energy (Polonyi, 2009; Brandenburg & Protiti, 2023), as all the defined above are some forms of those (US Energy Information Administration, 2024). However, for the purpose of this analysis, we need to look specifically into these sub-categories that are better expressed. We now briefly analyse each sub-category to be able to better imagine the following energy conversions within the energy storage process.

Mechanical energy of an object can be the result of its motion (kinetic energy) and the result of its stored energy of position (potential energy).

Kinetic energy is the energy of motion. An object that has motion has kinetic energy. The amount of kinetic energy that an object has depends upon two variables: the mass (m) of the object and the velocity (v) of the object.

Potential energy is energy that could be used to do work. An object can store energy as the result of its position. This stored energy of position is referred to as potential energy (Wilson, 2020).

Gravitational (potential) energy is the energy stored in an object as the result of its position in gravitational field. An object's gravitational potential energy is the result of the gravitational attraction to other mass (for our purposes we can replace "mass" with "Earth"). It is dependent on the mass of the object and the height to which it is raised from reference point. The greater the mass of an object, and the greater the height it is raised against gravity, the greater its gravitational potential energy (Wilson, 2020).

Gravitational energy *storage* is based on changing the potential energy of the storage material. During charging, the storage material is raised against the gravitational force (upwards, from Earth's core), and during discharging, the potential gravitational energy is released (downwards, towards the Earth's core) by lowering the stored material to the initial level from which it was previously raised (Steinmann, 2022).

Chemical energy is readily available and can be stored or released from all chemical reactions (Zeadally et al., 2020). Chemical reactions in this sense simply represent the rearrangement of molecular structure of a substance to form a new chemical structure. The most common form of chemical energy is in the form of bonds between the atoms that make up a molecule (Dincer et al., 2018).

On practical level, and to name few examples, usable chemical energy is stored in various sources such as coal, natural gas, oil, biomass (Belyakov, 2019) which we use for conversion of energy. Additionally, it is also stored in batteries or food.

Electrical energy is the energy carried or stored by electric charges – movement of electrons. It is one of the most useful forms of energy as it can be easily transported over long distances through conductive materials like copper or aluminium (Letcher & Williamson, 2004), with relatively low losses. Technological advances allowed it to be used as a substitute for fuel, which it replaces in many industrial applications already. There is no doubt that its share will increase in the future as the non-renewable sources are limited while electrical energy generation is practically unlimited in habitable Earth. Currently, electrical energy is converted (*obtained*) from mechanical (kinetic) energy, chemical energy (Gilchrist, 1977) or electromagnetic energy.

Magnetic energy is the energy stored in a magnetic field. Unlike mechanical or chemical energy, it is not associated with matter, which makes it slightly less intuitive. It is similar to gravitational energy, since both exist in a field. It can be converted to electrical energy using a technique called inductive charging (Owojaiye & Sun, 2013).

Electromagnetic (radiation) energy is transmitted at the speed of light through oscillating electric and magnetic fields (Mirhadi, 2010). It contains neither mass nor charge but travels in packets of radiant energy called photons, or quanta (Percuoco, 2014). The largest natural source of electromagnetic energy reaching Earth is the Sun, while the amount of energy received in one hour by the Earth from the Sun is equivalent to world energy consumption in one year (Zahedi, 2011).

Thermal energy is the internal energy from the motion of atoms or molecules. In every mass in the universe, there is a continual random movement of the particles they consist of. This movement we define as thermal motion, and it is directly responsible for the sentiment of feeling heat or cold (Landau et al., 1967). Thermal energy is considered as one of the most ubiquitous forms of mentioned energies. Most of the thermal energy is discarded as waste heat that has no easy use or does not provide effective work for us. This is also true within the generation of electricity or burning fossil fuels. Significant part of the energy we produce within this area is waste heat radiated into outer space, again due to entropy. *“According to an estimate by the US Department of Energy (DOE), almost 50% of thermal energy generated from all fuels burned remains unused and is released into the atmosphere”* (Kishore & Priya, 2018).

Nuclear energy is produced in two main ways - fission and fusion. In both cases, energy comes from a change in the nucleus. During fission, a nucleus (core) splits into smaller nuclei (several parts). During fusion, nuclei merge to form a heavier nucleus, releasing energy because the resulting nucleus is more tightly bound (IAEA, 2025). Based on Einstein's equation ($E=mc^2$), it is now known that during both processes a huge amount of energy is released. Currently, we can capture large amounts of energy during splitting (fission) of the Uranium isotopes which is done in Nuclear powerplants and generate electrical energy. Fusion energy is mostly theoretical or experimental for power generation at this stage of development; however, advance is expected within following years (World Nuclear News, 2025). So far, the largest amount of energy released by Fusion that reaches Earth is delivered from Sun.

2 Means of Energy Storage

When storage of energy is mentioned, the usual assumption and imagination might come to the batteries. To be fair, it is in fact that the device strongly reminiscent to current batteries, was invented before the discovery of electromagnetic induction itself, which gave us the ability to convert mechanical energy into electrical energy. Alexander Volta came up with solution for chemical electrical energy storage. Even back then, he referred to such device as *battery*, likely due to previously used term mainly by Benjamin Franklin reflecting on Leyden jar

(Franklin, 1751). However, as already mentioned, this device could deliver electrical energy only once, although continuously, due to its properties, before the electrolyte needed to be replaced.

These days, special composition of anode, cathode and electrolyte allows us to use the batteries cyclically, meaning they can be not only discharged but recharged with electric potential again up until certain point of chemical degradation. Reflecting on table 1. distribution, this *battery type of storage* would belong into (electro)chemical energy storage (Lefebvre & Tezel, 2017). It is indeed quite unique, since when the energy is first converted and transferred to battery, electrons within the device take such state, that after providing them with an option to get back to their *normal state*, they very willingly do so, and while doing so, they create desired electrical energy. This means that no additional input is required in order to deliver current immediately after connection, contrary to some other energy storages which we will analyse.

However, although arguably the chemical storage of electrical energy is among the most discussed subject within energy storage (and rightly so), their practicality, scalability and effectiveness are still below the level need. The level needed would present effective planetary energy storage that can be implemented on a very large scale. For this, rentability is crucial as well as lifespan.

Luckily, there are other means that prove potential and could provide (possibly) better solutions should we look for much larger scale of storing energy. Below we define the most common or proposed solutions for energy storages, while providing a brief description of their properties, advantages, limitations and probability of having a significant role in the future. While Elaflly (Elaflly et al., 2024) categorized energy storage in certain way, we redesign the categorization based on our previous energy definitions, so that each storage is attributable to specific energy type and includes some additional options.

Table 2: Viable Energy Storage System Types

Types of Energy Storage Systems		
Electrochemical and Battery Energy Storage (ECS or CS)	Chemical (and Hydrogen) Energy Storage (CES)	Thermochemical Energy Storage (TCES)
Flywheel Energy Storage (FESS)	Compressed Air Energy Storage (CAESS)	Pumped Hydro Energy Storage (PHES / PHS)
Magnetic Energy Storage (SMES)	Thermal Energy Storage (TESS)	*Underground Gravity Energy Storage (UGES)

Note: Own adaptation.

The system of Electrochemical and Battery Energy Storage (ECS or CS)¹ is well documented and known, while large resources are going into its development and research boost. Currently, the most used chemical type of battery storage is Li-ion, which accounts for 78% of BESS in operation (Choi et al., 2021); specifically, Lithium Iron Phosphate (LiFePO₄) for large scale grid storage (XIHO, 2025). The efficiency of this type of Storage is at a quite high level, up to 80%. Technology reaching higher efficiency (70-80%) – deep cycle batteries – is used specifically for large storage systems where it is expected that the

¹ Electrochemical storage is on the principle of chemical storage, however new term is being used more frequently to specifically describe that the energy is stored in batteries or similar device and not within the molecules, since chemical energy is also contained in food etc.

energy might be stored for prolonged time (Amir, 2023). The main reason for lowered efficiency is degradation and self-discharge of the accumulated energy. However, compared to other energy storages, ECS is among the best for very long-term energy storage, since the energy could be held for several days or even months without very significant loss.

Emerging type of energy storage is also Thermal Energy Storage (TES). Currently the technology of molten sand is being implemented and tested on a larger scale, however the efficiency of thermal energy storage is quite limited due to high losses. Efficiency is around 30-50% and the potential for long term energy storage is very limited. However, this system could be effective for fast cycles, where energy is provided and material is heated, and taken within several hours, before it has time to dissipate into the surrounding area and lose its potential.

Similarly, Flywheel Energy Storage (FES) stores energy in kinetic energy in form of rotating wheel. This wheel is given energy and put into rotation during a power surplus in grid, while this motion energy can be later used and converted back to electricity when demand increases, and renewable energy sources (or other) cannot deliver enough. The round-trip efficiency of flywheel can reach up to 85% (Chauhan & Saini, 2014) however once again, the energy potential can be stored only up to few hours meaning that this system is specifically designed for very fast cycles and “charge/discharge” sequences.

Finally, the most implemented system, that is however not as promoted and marketized due to its initial cost and unavailability for individuals, Pumped Hydro Energy Storage (PHES / PHS), which proved much potential within several markets (Steinmann, 2022). This type of storage is very closely related to gravitational energy and could only work thanks to it. During the process, gravitational energy is transformed into mechanical energy in form of rotating turbine (generator) which converts mechanical energy into electrical energy (Murray, 1993).

Two reservoirs at different elevations are required. Pumped hydroelectric energy storage (PHES) uses water as the storage medium, which is moved back and forth between them (Steinmann, 2022). When this “battery” or Hydro Energy Storage is charged, the water is pumped against gravity to the reservoir that is at the higher elevation and when the energy is demanded, water is dropped down against gravity to spin the generator and provide the energy back.

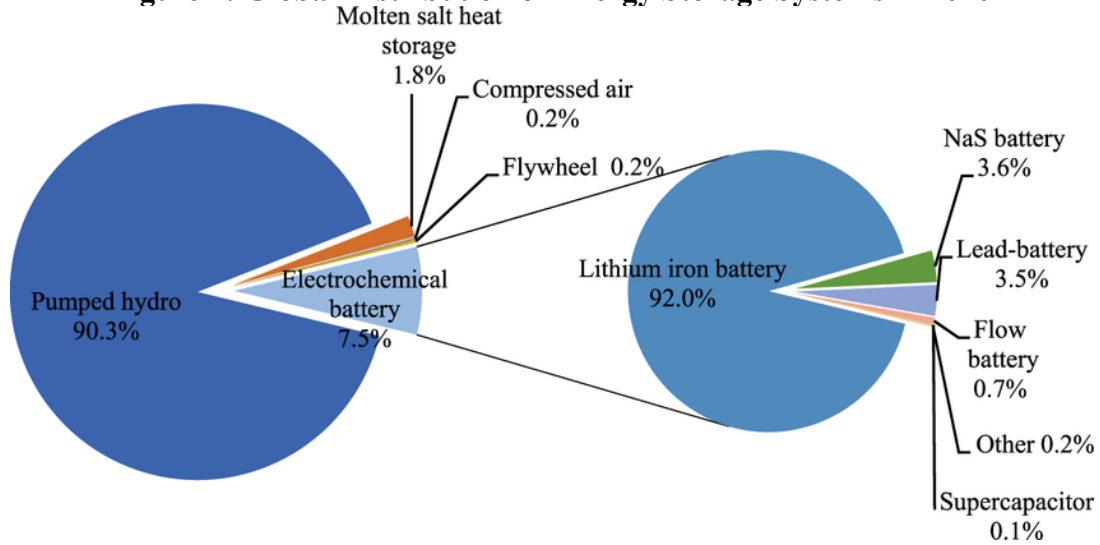
The overall round-trip efficiency of this system is around 80% while during pumping and storage approximately 10% of the energy is lost and later another 10% during the release and electrical energy generation. About 20% of the electricity is lost in a complete cycle (Blakers et al., 2021), which makes this system still highly efficient even for long-term storage.

Even though within this system the losses are relatively minimal, the evaporation of water in open system can present quite significant challenge. This can be especially significant for large reservoirs in hot climates.

On following Figure (1.), we observe the real global distribution within defined storages in 2020. While the overall share of Pumped Hydro Energy Storage is further supported by the data from International Hydropower Association (IHA) which in 2025 estimated the share to be even higher, at the level of 94%² globally. This would represent the total capacity of almost 200 GW (IHA, 2025)

² Accounts for 94% of the world’s long duration energy storage capacity, which is well ahead of lithium-ion and other battery types share.

Figure 1: Global Distribution of Energy Storage Systems in 2020



Source: Xu, Y., Pei, J., Cui, L. Liu, P. (2022). The Levelized Cost of Storage of Electrochemical Energy Storage Technologies in China

This figure from statistical database of China Energy Storage Alliance (CNESA) from 2020 quite strongly demonstrated that the assumption of dominance of Battery Energy Storage is, or was, not correct. The situation in 2025 is in fact different, however, the Global share of Pumped Hydro is still likely dominant although strong data to prove this assumption is limited. It is however unlikely that the share could drop by 40% within 5 years provided that, of course, CNESA data from 2020 was correct. Updated data, available for China for September 2024 showed, that the share of Pumped Hydro Energy Storage in China for the first time dropped below 50%. This could suggest that the global trend is indeed tilting towards more Battery Energy Storage (which is rapidly becoming cheaper and available), since it took the other half of almost 50% (specifically Li-ion battery technology) (CNESA, 2024).

This means, that with currently most widespread technology for storage of electrical energy, the electrical energy is not directly (chemically) stored. Instead, we store the potential of gravitational energy which we can turn into kinetic mechanical energy by releasing the water against gravity, gaining momentum, spinning the generator and as a result transforming the gravitational and mechanical energy into very usable electrical energy.

Conclusion

Our paper analyzed currently implemented technologies within energy storage. Clearly, the highest share of such systems is taken by Pumped Hydro Energy Storage which dominates overall capacity but does not have a strong position on market due to its high costs and unavailability do individuals. For those, battery energy storage (chemical) is viable option, that can be implemented in small scale for small energy storages for which it is very effective. Due to rapid decrease in overall costs, it is likely that share of battery energy storage will continue to increase although its costs and efficiency is not yet superior to the PHES, but its practicality is. New technologies are emerging that have yet to prove their large-scale potential, while still having significant limitations especially with relation to their effectiveness and long-term storage capabilities.

From energy point of view, this concludes that with currently most widespread technology for storage of electrical energy, the electrical energy is not directly (electro-chemically) stored. Instead, we store the potential of gravitational energy which we can turn into kinetic mechanical energy by releasing the water against gravity, gaining momentum,

spinning the generator and as a result transforming the gravitational and mechanical energy into very usable electrical energy.

Clearly, much larger initiative is needed not only within scientific area, but also political in order to increase the overall energy storage capabilities and capacity globally for humanity to be able to safely stabilize the energy gride in future, where demand is expected to increase significantly. Likely, more Hydro Storages will contribute to this stabilization, but in the meantime, increase in investments into research and development of new technologies focused on this problematic would be in place.

References:

- Amir, M., Deshmukh, R. G., Khalid, H. M., Said, Z., Raza, A., Muyeen, S. M., Nizami, A.-S., Elavarasan, R. M., Saidur, R., & Sopian, K. (2023). Energy storage technologies: An integrated survey of developments, global economical/environmental effects, optimal scheduling model, and sustainable adaption policies. *Journal of Energy Storage*, 72, 108694. <https://doi.org/10.1016/j.est.2023.108694>
- Belyakov, N. (2019). Concept of energy. In: *Sustainable Power Generation*. <https://doi.org/10.1016/B978-0-12-817012-0.00010-4>
- Blakers et al. (2021). A review of pumped hydro energy storage. <https://doi.org/10.1088/2516-1083/abeb5b>
- Brandenburg, A., & Protiti, N. N. (2023). Electromagnetic Conversion into Kinetic and Thermal Energies. *Entropy*, 25(9), 1270. <https://doi.org/10.3390/e25091270>
- Chauhan, A., & Saini, R. P. (2014). A review on Integrated Renewable Energy System based power generation for stand-alone applications: Configurations, storage options, sizing methodologies and control. *Renewable and Sustainable Energy Reviews*, 38, 99–120. <https://doi.org/10.1016/j.rser.2014.05.079>
- China Energy Storage Alliance (CNESA), (2024). Summary of Global Energy Storage Market Tracking (Q3 2024). Retrieved November 2025, from <https://en.cnesa.org/latest-news/2024/11/15/cnesa-officially-released-2024-q3-energy-storage-market-data>
- Choi, D., Shamim, N., Crawford, A., Huang, Q., Vartanian, C. K., Viswanathan, V. V., Paiss, M. D., Alam, M. J. E., Reed, D. M., & Sprenkle, V. L. (2021). Li-ion battery technology for grid application. In *Journal of Power Sources*, 511, 230419. <https://doi.org/10.1016/j.jpowsour.2021.230419>
- Demirel, Y. (2012). Energy and Energy Types. https://doi.org/10.1007/978-1-4471-2372-9_2
- Dincer, I., Rosen, M. A., Al-Zareer, M. (2018). Chemical Energy Production. In *Comprehensive Energy Systems*. 470–520. <https://doi.org/10.1016/B978-0-12-809597-3.00326-6>
- Elalfy, D. A., Gouda, E., Kotb, M. F., Bureš, V., & Sedhom, B. E. (2024). Comprehensive review of energy storage systems technologies, objectives, challenges, and future trends. *Energy Strategy Reviews*, 54, 101482. <https://doi.org/10.1016/j.esr.2024.101482>
- Franklin, B. (1751). Experiments and Observations on Electricity. Communicated in several Letters.
- Gilchrist, J. D. (1977). *Electrical Energy*. In: *Fuels, Furnaces and Refractories. International Series on Materials Science and Technology*. <https://doi.org/10.1016/B978-0-08-020430-7.50013-X>. <https://ia801905.us.archive.org/20/items/experimentsobser00fran/experimentsobser00fran.pdf>
- International Hydropower Association (IHA) Pumped storage hydropower: Water batteries for solar and wind power. Retrieved November, 2025, from <https://www.hydropower.org/factsheets/pumped-storage>

- Kishore, R. A., & Priya, S. (2018). A review on design and performance of thermomagnetic devices. *Renewable and Sustainable Energy Reviews*, 81, 33–44. <https://doi.org/10.1016/j.rser.2017.07.035>
- Landau, L.D., Akhiezer, A. I., Lifshitz, E. M., (1967). Heat. Chapter VII, In *General Physics; Mechanics and Molecular Physics*. <https://doi.org/10.1016/B978-0-08-009106-8.50010-8>
- Lefebvre, D., & Tezel, F. H. (2017). A review of energy storage technologies with a focus on adsorption thermal energy storage processes for heating applications. *Renewable and Sustainable Energy Reviews*, 67, 116–125. <https://doi.org/10.1016/j.rser.2016.08.019>
- Letcher, T. M., Williamson, A. (2004). Forms and Measurement of Energy. In *Encyclopedia of Energy*. 739–748. <https://doi.org/10.1016/B0-12-176480-X/00076-0>
- Mirhadi, A. J., (2010). Overview of Radiation Therapy Terms and Procedures in the Management of Thoracic Malignancies. In *Medical Management of the Thoracic Surgery Patient*. <https://doi.org/10.1016/B978-1-4160-3993-8.00025-8>
- Murray, R. L. (1993). Energy. In *Nuclear Energy (Fourth Edition); An Introduction to the Concepts, Systems, and Applications of Nuclear Processes; Pergamon Unified Engineering Series*. 3-11. <https://doi.org/10.1016/B978-0-08-042125-4.50011-X>
- Øvergaard, S. (2008). Definition of primary and secondary energy. In Chapter 3: Standard International Energy Classification (SIEC), *International Recommendation on Energy Statistics (IRES)*. <https://unstats.un.org/oslogroup/meetings/og-04/docs/oslo-group-meeting-04--paper-definition-of-primary-and-secondary-energy.doc>
- Owojaiye, G., & Sun, Y. (2013). Focal design issues affecting the deployment of wireless sensor networks for pipeline monitoring. *Ad Hoc Networks*, 11(3), 1237–1253. <https://doi.org/10.1016/j.adhoc.2012.09.006>
- Percuoco, R., (2014). Plain Radiographic Imaging. In *Clinical Imaging* (pp. 1–43). Mosby. <https://doi.org/10.1016/B978-0-323-08495-6.00001-4>
- Polonyi, J. (2009). Lecture Notes on Classical Field Theory. <https://wigner.hu/~polonyi.janos/cft.pdf>
- Steinmann, W. D. (2022). Overview of the Section on Mechanical Energy Storage. In *Encyclopedia of Energy Storage*. <https://doi.org/10.1016/B978-0-12-819723-3.00152-9>
- U.S. Energy Information Administration (2024, December). What is energy? Forms of energy. Wendelstein 7-X sets new fusion performance records. (2025, June 4). World Nuclear News. <https://world-nuclear-news.org/articles/wendelstein-7-x-sets-new-fusion-performance-records>
- What is Nuclear Energy? The Science of Nuclear Power. (2025, November 11). IAEA. <http://www.iaea.org/newscenter/news/what-is-nuclear-energy-the-science-of-nuclear-power>
- Why Are Lithium Iron Phosphate (LiFePO₄) Batteries the Mainstream Choice for Energy Storage (2025, August). In XIHO Energy. <https://www.xihopower.com/why-are-lithium-iron-phosphate-%28lifepo4%29-batteries-the-mainstream-choice-for-energy-storage.html>
- Wilson, M. (2020). Mechanics: Force, mass, acceleration energy, work, power. *Anaesthesia & Intensive Care Medicine*, 21(5), 256–260. <https://doi.org/10.1016/j.mpaic.2020.02.007>
- Zahedi, A. (2011). Maximizing solar PV energy penetration using energy storage technology. *Renewable and Sustainable Energy Reviews*, 15(1), 866–870. <https://doi.org/10.1016/j.rser.2010.09.011>
- Zeadally, S., Shaikh, F. K., Talpur, A., & Sheng, Q. Z. (2020). Design architectures for energy harvesting in the Internet of Things. *Renewable and Sustainable Energy Reviews*, 128, 109901. <https://doi.org/10.1016/j.rser.2020.109901>

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FROM FOSSIL FUELS TO HYDROGEN: AUSTRALIA'S JOURNEY TO CLEAN ENERGY¹

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Abstract: Australia is among the countries with the highest energy consumption per capita and is also one of the largest producers of greenhouse gases per capita. Although the share of renewable energy sources in the national energy mix is gradually increasing, fossil fuels remain the dominant source of primary energy. In electricity generation, the share of renewable sources is approximately 35%. Within the context of the Australian government's current strategies to diversify and decarbonise energy sources, hydrogen emerges as an important element with transformative potential. This paper analyses the role of hydrogen in the Australian economy, considering the key challenges and promising opportunities for its development.

Keywords: hydrogen, green economy, Australia

JEL: O31, Q42

Introduction

In 2015, at the UN Climate Change Conference (COP21) in Paris, the parties adopted a legally binding international climate agreement – the Paris Agreement – with the aim of limiting global warming and mitigating its negative consequences. The commitments were endorsed by 195 parties, including the European Union and its Member States, the United States of America, Australia, China, India, the Russian Federation, and other countries, thereby declaring their political will to contribute collectively to solving the climate crisis. In line with the goal of keeping the average global temperature rise to 1.5 °C above pre-industrial levels, greenhouse gas emissions must peak by 2025 at the latest and then be reduced by approximately 43% by 2030 (United Nations, 2025).

The commitments arising from the Paris Agreement, together with efforts to strengthen energy security and reduce dependence on fossil fuels, have stimulated intensive research into alternative energy sources. In current discussions, hydrogen is increasingly seen as a promising candidate in the transformation of the energy sector, regarded as a potential foundation for a new energy industry. Significant investment in research and technological development in hydrogen technologies reflects expectations that hydrogen could serve as a low-carbon fuel, contributing to the mitigation of the anthropogenic greenhouse effect (McLellan et al., 2005). According to experts, pressure to reduce greenhouse gas emissions, combined with the ongoing trend of falling costs, will be a significant stimulus for investment in large-scale electricity generation from renewable sources. This sector is expected to continue growing at a faster rate than other energy production technologies, strengthening its strategic role in the transformation of energy systems and the transition to a low-carbon economy (Arraño-Vargas et al., 2022).

According to forecasts by the International Energy Agency (IEA), the share of fossil fuels in global energy consumption is expected to decline significantly for the first time by 2030, after several decades of continuous growth. Based on current commitments by individual countries, demand for coal is expected to fall by 74%, oil by 43%, and natural gas by 42%

¹ Project: ESG 21 *Current relevance and prospects for the development of green cooperation between Australia and the European Union in the field of sustainable energy.*

by 2050. Given the gradual escalation of political and technological measures aimed at achieving carbon neutrality, these declines are likely to be even more pronounced (IEA, 2024).

The global hydrogen economy is on the verge of significant expansion, with major economies such as Japan, South Korea, China, the United States, Germany, and Australia actively promoting the integration of hydrogen into their energy systems.

In this scientific article, we focus on Australia, which is intensively developing hydrogen production using clean technologies through systematic and strategically focused policies, thereby seeking to strengthen its position in the international hydrogen market and support the low-carbon transition of the energy sector.

1 Literature Review and Research Methods

A review of the professional literature indicates broad consensus among authors that Australia has significant potential for developing green hydrogen production and subsequent export. Hughes (2025) notes that Australia has historically been a reliable partner in foreign trade within the Asia-Pacific region, particularly in exporting traditional energy sources such as coal and natural gas. However, the country also has abundant renewable energy resources, which are a key prerequisite not only for decarbonising the domestic economy but also for supporting greenhouse gas emission reductions in a broader regional context.

Experts from the Rajiv Gandhi Institute of Petroleum Technology note that Australia has significant potential for cost-effective production and export of green hydrogen. Combined with modern supply chain infrastructure, this gives Australia notable competitive advantages over other exporters. However, Kar et al. (2022) highlight that Australia faces several structural challenges, including insufficient investment, low public awareness, and limited domestic infrastructure to support hydrogen use. Effective use of existing comparative advantages is essential for strengthening Australia's position in the emerging hydrogen markets of Japan, China, and South Korea, its key export destinations.

In his publication *The Clean Hydrogen Economy and Saudi Arabia*, Kolodziejczyk (2024) identifies Australia's comparative advantages in green hydrogen production and emphasises the crucial role of supportive industrial, technical, commercial, and entrepreneurial ecosystems. These factors significantly strengthen Australia's competitive position and make it one of Saudi Arabia's main rivals in shaping the global hydrogen export strategy.

Zahraee and Shiwakoti (2025), in their study highlighting the fundamental interconnection between technological innovation, strategic government initiatives, and market demand as key determinants of widespread hydrogen implementation, state that although strategic plans exist in the field of hydrogen, regulatory frameworks in Australia require further improvement. Optimising these frameworks is essential to support the dynamic development of the sector and to align with international standards. The authors also emphasise that government support should be directed towards pilot projects, public awareness campaigns, and the introduction of financial incentives to help reduce private sector investment risks and strengthen innovation processes across economic sectors.

The methodological framework of this study combines several research methods, enabling a comprehensive understanding of the issue under investigation. In the first phase, analysis and comparison were used to track the historical development of selected indicators and their interrelationships. Using a deductive approach, we began at a general level, defining the characteristics of hydrogen, its consumption, and production capacities globally, before focusing on the specific conditions and development dynamics in Australia. The descriptive method was applied for the systematic and transparent processing of the data obtained, while synthesis integrated knowledge from various sources into a comprehensive interpretative

framework. This methodological approach provided the basis for assessing the issue in both global and local contexts.

2 Hydrogen in the Global Economy

Hydrogen (H), a potential competitor to fossil fuels, is the most abundant chemical element in the universe, but is practically non-existent in its free form on Earth. Hydrogen is a colourless, odourless, and tasteless gas with high flammability (Commonwealth of Australia, 2024), and its industrial production from natural sources – water, biomass, coal, and natural gas – requires a significant amount of input energy in the form of heat or electricity (Dawood, Anda, Shafiullah, 2020).

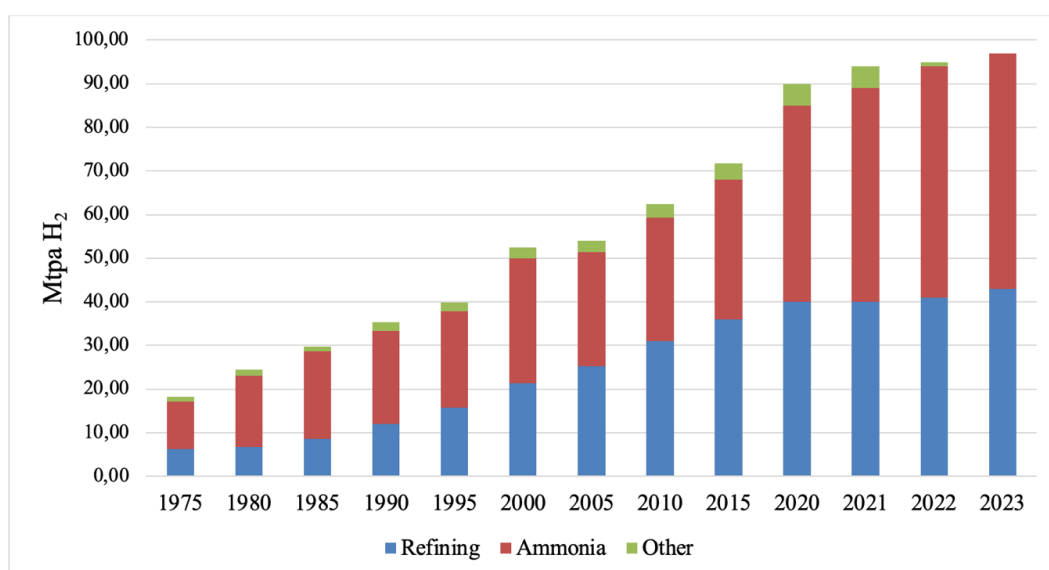
The hydrogen produced can be efficiently stored and distributed in various forms – as a gas, liquid, or bound to other chemical compounds. In its gaseous state, it can be transported via the existing gas pipeline network, while in the form of ammonia or methanol, its storage and long-distance transport flexibility increases, mainly via sea routes. Alternatively, hydrogen is distributed as compressed gas via pipeline networks or road transport to specialised storage facilities. These logistical options create the conditions for hydrogen to establish itself not only as a strategic energy carrier but also as a globally tradable commodity (Australian Government, 2025).

Hydrogen has a wide range of applications across various sectors of the economy. It is used as a fuel for maritime, air, and land transport, contributing to the decarbonisation of the transport sector. In industry, hydrogen is used in the production and processing of fertilisers (ammonia synthesis), petrochemical refining, metallurgical processes, the food industry, cooling turbogenerators in power plants, and the production of semiconductors. Owing to its ability to function as an energy carrier with zero direct CO₂ emissions, hydrogen is also considered a key element in the transition to a low-carbon economy. The authors predict that increased demand from the industrial sector is more likely to occur after the wider implementation of hydrogen in the energy sector (Dawood, Anda, Shafiullah, 2020).

The growing interest in developing a global hydrogen economy is evident in the significant increase in approved investment projects. In 2020, 102 projects with a total investment value of approximately USD 10 billion were registered, while by 2024 this number had risen to 434 projects with an estimated financial volume of approximately USD 75 billion (Hydrogen Council & McKinsey & Company, 2024).

However, experts note that several projects are experiencing delays or have been cancelled, posing a risk to a significant portion of initiatives currently in the preparation phase. Key factors limiting their implementation include unclear signals about future demand, limited availability of financial resources, delays in the provision of government incentives, regulatory uncertainties, administrative barriers to licensing and permitting, and operational and technological challenges (IEA, 2024).

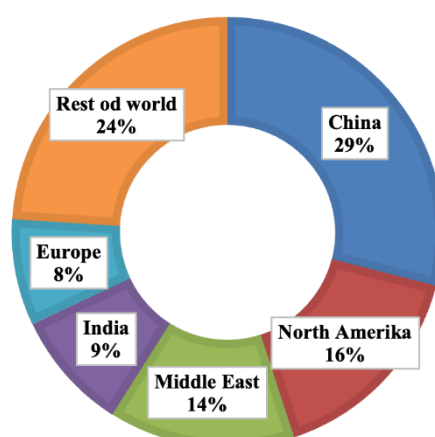
Figure 1: Global hydrogen demand trend, 1975-2023, in millions of tons (Mt)



Source: Retrieved from „Global Hydrogen Review“, by International Energy Agency, 2021.

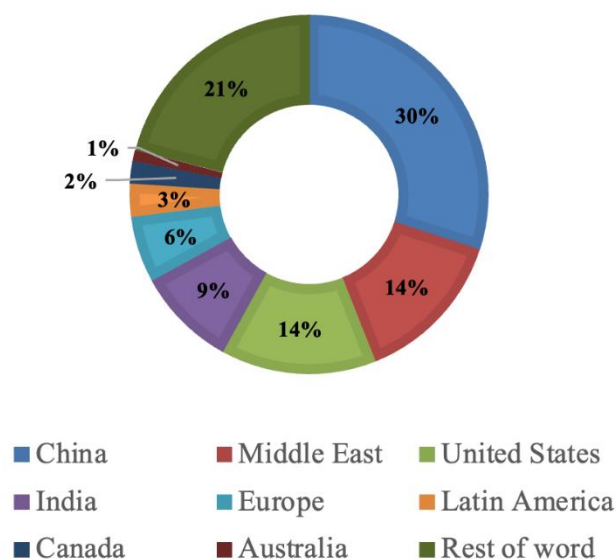
Despite ongoing concerns about future demand trends, global hydrogen consumption has been rising steadily since 1975, as shown in Figure 1. In 2020, global demand reached approximately 90 Mt, a 50% increase compared to the start of the 21st century. Refining processes and the chemical industry remain the main sources of consumption. However, the Covid-19 pandemic negatively affected the refining sector, resulting in a slowdown in demand growth. In 2021, global hydrogen demand increased by 5% to 94 Mt, reflecting the gradual recovery of economic activity following the easing of pandemic restrictions. Growth continued in 2023, when global demand exceeded 97 Mt, a year-on-year increase of 2.5% compared to 2022. Consumption remains concentrated mainly in the refining and chemical industries. Although official data for 2024 have not yet been published, expert forecasts suggest the growth trend will continue, with a possible level of approximately 100 Mt (IEA, 2024).

Figure 2: Regional demand for hydrogen in 2023, in %



Source: Retrieved from „Global Hydrogen Review“, by International Energy Agency, 2023.

Figure 3: Regional hydrogen supply in 2023, in %



Source: Retrieved from „Global Hydrogen Review“, by International Energy Agency, 2023.

From 2019 to the present, the regional structure of hydrogen demand has remained relatively stable. The People's Republic of China has consistently been the largest consumer, with annual demand of around 28 million tonnes, accounting for nearly one-third of global hydrogen consumption. Consumption in China is more than double that of the United States, which ranks second with approximately 13 million tonnes (about 16% of global demand). Middle Eastern countries account for approximately 14% of global demand, with consumption growing at a significant rate (over 6% year-on-year), primarily driven by increasing needs in the refining sector and methanol production. India has experienced dynamic consumption growth in recent years, recording more than 5% year-on-year growth in 2023 compared to 2022. This trend is mainly driven by rising demand in the refining industry and steel production. Globally, the European Union ranks fifth, with estimated consumption of approximately 8 million tonnes per year, representing about 8% of global hydrogen consumption (IEA, 2022, 2023, 2024).

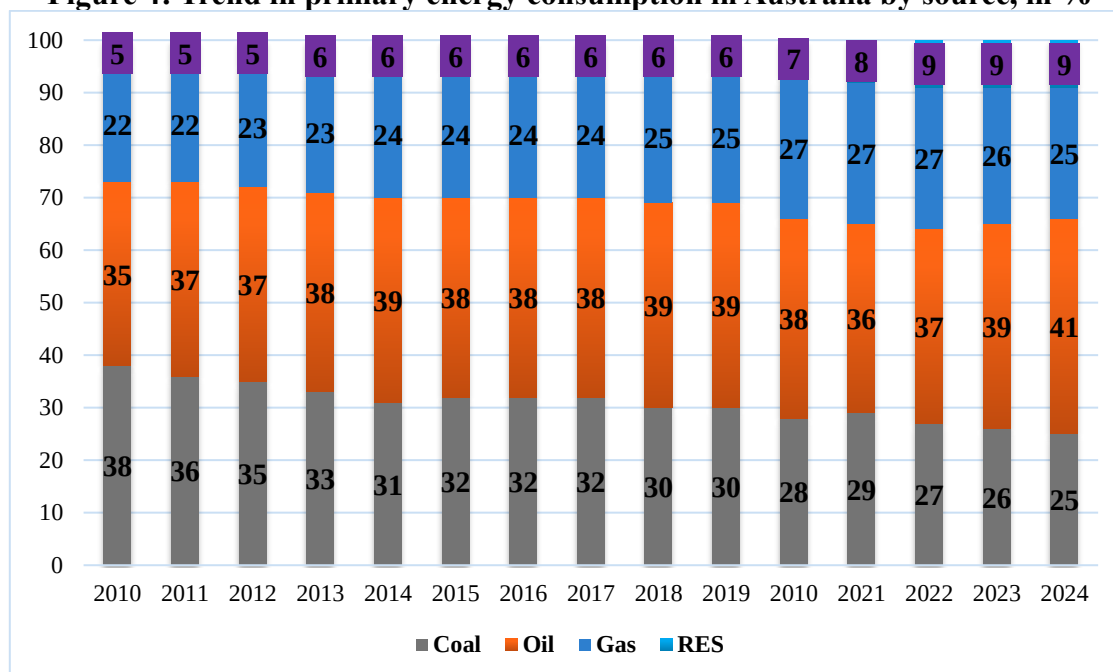
Global demand for hydrogen during the period under review is mainly met by domestic production in major industrial centres, with international trade playing a negligible role. The People's Republic of China accounts for approximately 30% of global production, placing it in the leading position. The United States and the Middle East each account for approximately 14% of production, while India accounts for 9%. Estimates suggest that total global production will continue to grow to meet global consumption of this commodity (IEA, 2022, 2023, 2024).

3 Characteristics of Australia's Hydrogen Economy

Australia is among the countries with the highest energy consumption per capita, currently at 228 GJ per person, placing it 13th in the global ranking (World Population Review, 2025). Australia's energy mix is predominantly based on fossil fuels, resulting in high emissions intensity per capita and ranking the country among the largest producers of greenhouse gases per capita.²

² In 2022, carbon dioxide emissions in Australia reached 15.01 t CO₂ per capita, placing the country 12th in the global ranking.

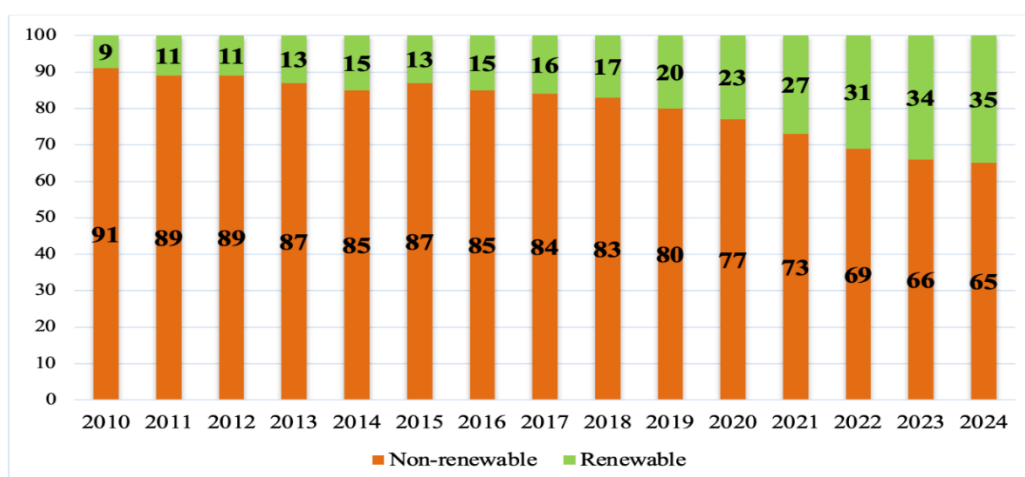
Figure 4: Trend in primary energy consumption in Australia by source, in %



Source: Retrieved from „Australian Energy Statistics“, by Australian Government, Department of Climate Change, Energy, the Environment and Water, 2024.

The long-term development of primary energy consumption in Australia indicates the dominant position of oil, whose share has increased continuously since the beginning of the period under review, reaching approximately 41% in 2024. Coal consumption, by contrast, is showing a downward trend and currently accounts for the same share as natural gas, approximately 25%. Although renewable energy sources are showing a slight upward trend, their share in the overall energy mix remains below 10%.

Figure 5: Share of renewable and non-renewable sources in electricity generation in Australia, 2010-2024, in percent

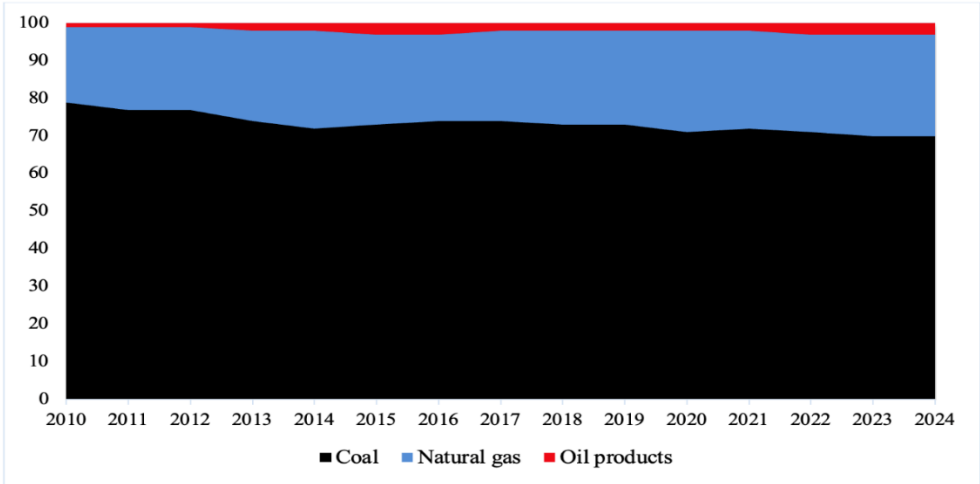


Source: Retrieved from „Renewables“, by Australian Government, Department of Climate Change, Energy, the Environment and Water, 2024.

During the period under review, there has been a significant and continuous increase in the share of renewable energy sources in Australia's total electricity generation. While their share was approximately 9% in 2010, it rose to 35% by 2024. At the same time, the Australian

government has set an ambitious target of achieving a 75% share of electricity production from renewable sources by 2025. This goal is supported by the implementation of technological innovations, particularly battery storage and synchronous condensers, which play a key role in increasing the stability and reliability of the electricity system (Arraño-Vargas et al., 2022).

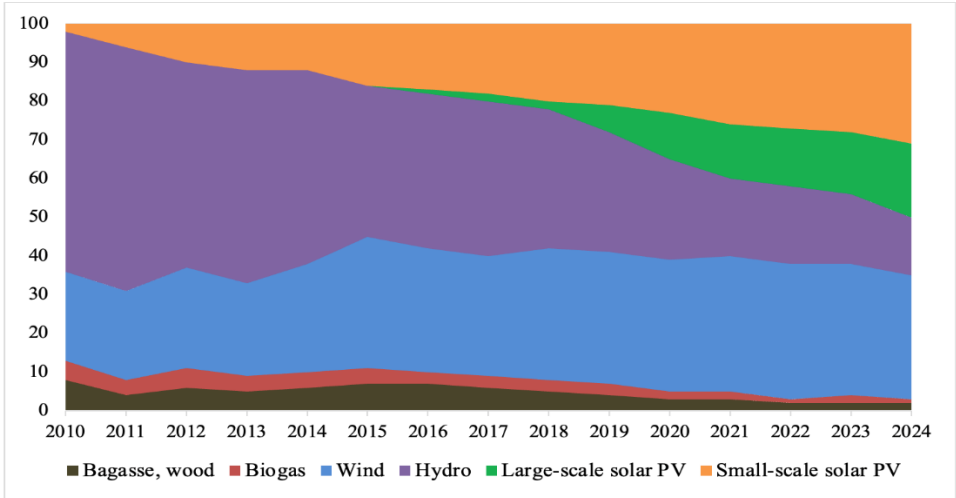
Figure 6: Share of non-renewable energy sources in electricity generation in Australia, 2010-2024, in percent



Source: Retrieved from „Australian Energy Statistics“, by Australian Government, Department of Climate Change, Energy, the Environment and Water, 2024.

During the period under review, black and brown coal were the dominant sources of electricity in Australia, accounting for approximately 80% of total production at the beginning of the period and 70% in 2024. This trend indicates a gradual but still slow decline in dependence on coal as the primary and most environmentally damaging energy source. Natural gas experienced a slight increase in its share, rising from around 20% in 2010 to 27% in 2024. This development reflects its growing role as a flexible and less emission-intensive source in the country's energy mix. The share of petroleum products in electricity generation remained marginal throughout the period, ranging from 1% to 3%.

Figure 7: Share of renewable energy sources in electricity generation in Australia, 2010-2024, in percent



Source: Retrieved from „Australian Energy Statistics“, by Australian Government, Department of Climate Change, Energy, the Environment and Water, 2024.

Solar and wind energy have been key drivers of the dynamic growth in renewable electricity generation in Australia over the past decade. The share of solar energy, primarily from small photovoltaic devices, increased from approximately 2% in 2010 to 31% in 2024, matching the share of wind energy over the same period. Since 2016, there has also been significant expansion of large-capacity photovoltaic systems, which accounted for 19% of total renewable energy production in 2024. As a result of these trends, solar energy accounts for approximately half of the country's renewable energy mix. In contrast, the share of hydropower declined significantly during the period under review: while it accounted for 62% of total renewable energy production in 2010, its share stabilised at around 15% in 2024. This development indicates a gradual loss of the dominant position of hydropower due to the growing diversification of renewable energy sources.

In the context of the Australian government's current efforts to diversify and decarbonise energy sources, hydrogen offers significant transformative potential. This clean, safe, and technologically advanced energy carrier can make a major contribution to the country's transition to a low-carbon economy while strengthening its position as a global leader in renewable energy. As part of the national energy mix, hydrogen can not only respond flexibly to growing electricity demand but also ensure efficient storage, similar to solar battery systems. The development of the domestic hydrogen industry enables the Australian government to meet its ambitious target of achieving 82% of electricity production from renewable sources, while also providing an effective tool for mitigating the risks arising from natural gas price volatility and dependence on imports of liquid fossil fuels (Australian Government, 2024).

In addition to its use in electricity generation and the transport sector, hydrogen has significant potential as a raw material in industrial processes. The use of renewable (so-called green) hydrogen in Australia can be a key tool for reducing greenhouse gas emissions in energy-intensive industries with high temperature requirements. Promising applications include the processing of minerals, the production of green iron and aluminium oxide—the basic raw material for aluminium production—as well as the production of chemicals, industrial fertilisers, and other segments of the mining industry (Australian Government, 2025). Australian mining companies operating in the iron ore sector are also intensively exploring the integration of green hydrogen into metallurgical processes. Attention is being paid to its use in the production of sponge iron or pig iron, where hydrogen could replace natural gas in direct iron reduction technologies or coke in blast furnaces (Kolodziejczyk, 2024).

Current annual hydrogen production in Australia is estimated at approximately 650 ktpa, with almost all this volume produced through steam reforming of methane from natural gas (NG SMR). Within the economy, demand for hydrogen is concentrated primarily in two segments: approximately 65% is used as a key raw material in ammonia synthesis, and approximately 35% is used for oil refining (Advisian, 2021).

The Australian government's strategy for decarbonising the national economy is reflected in the dynamic growth in the number of large-scale projects focused on hydrogen production and use. While 48 projects were registered in 2022, this number rose to 76 in 2023 and reached 80 in 2024 (Australian Government, 2024). Of these, 18 projects were in operation, 12 were under construction, and 50 were in the development phase (HyResource, 2025). The spatial distribution of projects indicates a significant concentration in Western Australia, Queensland, and Victoria, reflecting both favourable natural and geographical conditions and regional economic priorities in the field of energy transformation.

In its National Hydrogen Strategy 2024, the Australian government has set strategic goals for domestic hydrogen production, defined by five-year milestones. By 2030, production is expected to reach between 0.5 and 1.5 million tonnes per year; by 2035, between 3 and 5 million tonnes; by 2040, between 5 and 12 million tonnes; and by 2045, between 9 and 20 million tonnes. Achieving these targets will depend on a combination of domestic factors,

such as the extent and nature of government support, and international determinants, including the development of supply chains, the creation of global markets, and growing demand for hydrogen and its derivatives (Australian Government, 2024).

Experts predict that Australia's transition to a hydrogen-based circular economy will face several structural and technological challenges:

- The cost of producing renewable hydrogen through electrolysis is currently around AUD 5–10/kg, significantly higher than fossil fuel alternatives; however, the strategic goal is to reduce the price to below USD 2/kg by 2050.
- The sector's development will require careful planning, coordination, and substantial capital investment in building reliable distribution and storage infrastructure.
- The limited capacity of Australian ports is another constraint on the sector's export orientation.
- The country's vast geographical expanse creates significant logistical barriers to transporting hydrogen from production centres to consumers, especially in remote regions.
- The development of efficient hydrogen production, storage, and use depends on systematically strengthening the country's technological capabilities and innovation potential.
- High labour costs and a shortage of skilled workers also remain significant challenges; this necessitates systematic education and retraining programmes, especially in areas affected by the decline of traditional industries.
- Hydrogen production through electrolysis is highly water-intensive, posing additional constraints in arid regions of Australia. The sustainability of this process therefore requires investment in seawater desalination, recycling, and efficient water resource management technologies.
- Australia also faces significant global competition in hydrogen technologies, particularly from countries with comparable renewable energy potential.
- The absence of a clearly defined regulatory and safety framework is a potential barrier to development, particularly in the transport sector (Zahraee & Shiwakoti, 2025; Government of South Australia, 2017).

Alongside the identified challenges, Australia also has a wide range of opportunities in the green hydrogen sector:

- diversification and acceleration of long-term economic growth;
- decarbonisation of key industrial and transport sectors, including iron, steel, ammonia, the chemical industry, road freight transport, aviation, and maritime transport;
- promotion of domestic hydrogen production, reduction of dependence on fossil fuels, and strengthening of energy security;
- creation of new jobs in emerging industries, particularly in regions affected by the decline of traditional industries;
- support for innovation and technological progress in renewable energy sources and hydrogen technologies;
- strengthening of cooperation between the public and private sectors to streamline investment and research and development activities;
- attraction of foreign capital and enhancement of the country's investment appeal;
- development of the export potential of renewable hydrogen and its derivatives (e.g. green ammonia, low-carbon metals);
- intensification of international cooperation with key partners such as the US, Japan, Singapore, South Korea, India, Germany, the UK, the Netherlands, and Denmark (Zahraee & Shiwakoti, 2025).

Conclusion

Currently, energy production is experiencing a gradual decline in fossil fuels, particularly coal and natural gas, alongside the dynamic development of renewable sources. In the context of the Australian electricity industry, wind and solar energy play a particularly dominant role. Hydrogen holds significant promise, with the potential to contribute substantially to the diversification and decarbonisation of the energy mix, as well as to strengthening energy security and reducing the country's dependence on price volatility and fossil fuel imports.

As part of its National Hydrogen Strategy, the Australian government has set strategic goals for each five-year period, targeting annual hydrogen production of between 0.5 and 1.5 million tonnes by 2030. The country has already achieved this target, demonstrating effective use of its comparative advantages, which include abundant renewable energy resources, a highly skilled workforce, good governance, a strong institutional framework, an open economy, and developed financial markets.

Despite ongoing challenges such as high initial infrastructure costs, technological development, and human capital development, Australia has all the prerequisites to establish itself as a global leader in green hydrogen production and export in the coming decades.

References:

- Allen, A. (2018). *Opportunities for Australia from Hydrogen Exports* Acil Allen Consulting for Arena. <https://arena.gov.au/assets/2018/08/opportunities-for-australia-from-hydrogen-exports.pdf>
- Arraño-Vargas, F., Shen, Z., Jiang, S., Fletcher, J., & Konstantinou, G. (2022). Challenges and Mitigation Measures in Power Systems with High Share of Renewables—The Australian Experience. *Energies*, 15(2), 429. <https://doi.org/10.3390/en15020429>
- Australian Renewable Energy Agency. (2018). *Hydrogen energy*. Australian Renewable Energy Agency. <https://arena.gov.au/renewable-energy/hydrogen/>
- Clean Energy Finance Corporation. (n.d.). *Australian hydrogen market study*. <https://www.cefc.com.au/document?file=/media/nkmljvkc/australian-hydrogen-market-study.pdf>
- CSIRO. (n.d.). *Industry – Active (HyResource — CSIRO)*. <https://research.csiro.au/hyresource/projects/facilities/>
- Dawood, F., Anda, M., & Shafiullah, G. M. (2020). Hydrogen production for energy: An overview. *International Journal of Hydrogen Energy*, 45(7), 3847–3869. <https://doi.org/10.1016/j.ijhydene.2019.12.059>
- DCCEEW. (2024). *National Hydrogen Strategy 2024*. Department of Climate Change, Energy, the Environment and Water. <https://www.dccceew.gov.au/sites/default/files/documents/national-hydrogen-strategy-2024.pdf>
- Department of Climate Change, Energy, the Environment and Water. (n.d.). *Renewables*. Energy.gov.au. <https://www.energy.gov.au/energy-data/australian-energy>
- Geoscience Australia. (2024, July 15). *Hydrogen*. Geoscience Australia. <https://www.ga.gov.au/aecr2024/hydrogen>
- Government of South Australia, Department for Energy and Mining. (2017, September 8). *Green H₂ study report*. <https://www.energymining.sa.gov.au/industry/hydrogen-and-renewable-energy/hydrogen-in-south-australia/hydrogen-files/green-h2-study-report-8-sept-2017.pdf>
- Hughes, L. (2025). Australia's Emerging Hydrogen Economy: In Search of Export Opportunities. *Studies in Energy, Resource and Environmental Economics*, 155–175. https://doi.org/10.1007/978-3-031-84022-7_7
- Hydrogen Council, & McKinsey & Company. (2024). *Hydrogen insights 2024*. Hydrogen

- Council. <https://hydrogencouncil.com/wp-content/uploads/2024/09/Hydrogen-Insights-2024.pdf>
- IEA. (2021). *Global Hydrogen Review 2021*. <https://iea.blob.core.windows.net/assets/5bd46d7b-906a-4429-abda-e9c507a62341/GlobalHydrogenReview2021.pdf>
- IEA. (2024a). *Executive summary – Global Hydrogen Review 2024 – Analysis - IEA*. IEA. <https://www.iea.org/reports/global-hydrogen-review-2024/executive-summary>
- IEA. (2024b, October 2). *Global Hydrogen Review 2024*. IEA. <https://www.iea.org/reports/global-hydrogen-review-2024>
- Kar, S. K., Sinha, A. S. K., Bansal, R., Shabani, B., & Harichandan, S. (2022). Overview of Hydrogen Economy in Australia. *WIREs Energy and Environment*, 12(1). <https://doi.org/10.1002/wene.457>
- Kolodziejczyk, B. (2024). The role of hydrogen in Australia's decarbonization and export strategy. *Routledge EBooks*, 308–328. <https://doi.org/10.4324/9781003294290-13>
- MCLELLAN, B., SHOKO, E., DICKS, A., & DINIZDACOSTA, J. (2005). Hydrogen production and utilisation opportunities for Australia. *International Journal of Hydrogen Energy*, 30(6), 669–679. <https://doi.org/10.1016/j.ijhydene.2004.06.008>
- Seyed Mojib Zahraee, & Nirajan Shiwakoti. (2025). A review of sustainable hydrogen energy by 2050: Supply chain, export markets, circular economy, social dimensions, and future prospects: Australia vs. worldwide. *Sustainable Futures*, 10, 101070–101070. <https://doi.org/10.1016/j.sftr.2025.101070>
- UNFCCC. (2025). *The Paris agreement*. United Nations Climate Change. <https://unfccc.int/process-and-meetings/the-paris-agreement>

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CORPORATE SOCIAL RESPONSIBILITY AND TAX BEHAVIOR: A SYSTEMATIC REVIEW OF THE CSR–TAX AVOIDANCE NEXUS

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Abstract: The relationship between Corporate Social Responsibility (CSR) and corporate tax behavior has become a central topic in global economic governance. While CSR frameworks emphasize ethical conduct, transparency, and contributions to societal welfare, multinational corporations often employ sophisticated tax strategies that significantly reduce their effective tax burdens. This paper presents an extended systematic review of the academic literature on the CSR–tax avoidance nexus and integrates perspectives from international political economy, business ethics, and institutional theory. The findings reveal substantial inconsistencies across empirical studies, driven by methodological heterogeneity, divergent CSR and tax avoidance metrics, and cross-country institutional variation. The analysis also demonstrates that global tax competition, fragmented regulatory environments, and asymmetric power relations among states shape the structural conditions under which firms make tax decisions. Building on these insights, the paper argues that tax responsibility should be formally recognized as a core dimension of CSR. Strengthening the alignment between sustainability commitments and responsible tax conduct is essential for corporate legitimacy, public trust, and sustainable global development.

Keywords: Corporate Social Responsibility, Tax Avoidance, Tax Havens, Global Governance, International Political Economy, Sustainability Reporting

JEL: M14, H26, H32, F23

Introduction

Corporate Social Responsibility (CSR) has evolved into a fundamental component of contemporary corporate governance. Firms are increasingly expected to address not only their environmental and social impacts but also their broader contributions to public welfare. Tax behavior represents one of the most direct and measurable ways in which corporations contribute to society. Nonetheless, multinational enterprises routinely employ tax planning structures that minimize their tax liabilities, often through aggressive but legal mechanisms such as profit shifting and the exploitation of gaps in international tax regimes.

Public scrutiny of corporate tax practices has intensified following major leaks—including the *Panama Papers*, *Paradise Papers*, and *LuxLeaks*—which revealed the scale of offshore structures used by global corporations. These revelations prompted stronger regulatory and political responses, including the OECD/G20 Base Erosion and Profit Shifting (BEPS) initiative, the global minimum tax agreement, and the European Union’s Corporate Sustainability Reporting Directive (CSRD). These reforms reflect growing recognition that tax avoidance undermines social equity, fiscal stability, and public trust in both business and government institutions.

Given its importance for funding public goods, taxation is inherently linked to the ethical commitments embedded in CSR. Yet research on the CSR–tax avoidance nexus produces mixed and often contradictory results. This paper synthesizes existing literature, deepens the theoretical framework, integrates international governance perspectives, and highlights key areas for future research.

1 Theoretical Background

CSR scholarship has traditionally been grounded in Freeman's (1984) stakeholder theory, which asserts that corporations must address the needs and expectations of a broad set of stakeholders, including governments and society. From this perspective, paying taxes can be viewed as a fundamental contribution to social welfare. Aggressive tax avoidance—although sometimes legal—may therefore contradict a firm's ethical responsibilities.

Carroll's (1991) CSR pyramid conceptualizes CSR along hierarchical layers: economic, legal, ethical, and philanthropic responsibilities. Taxation intersects with both the legal and ethical layers. While fulfilling legal tax obligations ensures compliance, responsible tax behavior extends beyond compliance to considerations of fairness, societal contribution, and long-term legitimacy.

Legitimacy theory provides further explanatory power. According to Suchman (1995), organizations seek pragmatic, moral, and cognitive legitimacy. CSR activities may serve as "legitimacy insurance," enabling firms to mitigate reputational risks arising from contentious tax practices (Col & Patel, 2016; Davis et al., 2016). This can create a paradox in which firms with strong CSR communication simultaneously engage in aggressive tax avoidance.

Institutional theory, particularly the work of DiMaggio and Powell (1983), highlights how coercive, normative, and mimetic pressures shape corporate behavior across countries. Differences in regulatory regimes, tax enforcement capacity, and social norms help explain cross-country variation in the CSR–tax relationship. Firms embedded in strong institutional environments face greater constraints on aggressive tax practices, whereas those in weaker contexts may rely more heavily on CSR narratives to maintain legitimacy.

2 Methodology

This study employs a systematic review of peer-reviewed research in accounting, business ethics, corporate governance, sustainability, and international business. The review includes conceptual analyses, empirical econometric studies, systematic literature reviews, and the first meta-analysis examining the CSR–tax avoidance relationship. Particular attention is paid to measurement challenges. CSR is commonly operationalized using ESG ratings derived from databases such as MSCI, Sustainalytics, Thomson Reuters, or the KLD dataset. However, ESG ratings often diverge substantially due to methodological differences, producing inconsistent assessments of sustainability performance (Berg et al., 2022). Tax avoidance is measured using various proxies—including GAAP Effective Tax Rates (ETR), cash ETR, long-run ETR, permanent differences, and tax shelter indicators (Hanlon & Heitzman, 2010). These methodological divergences complicate cross-study comparisons and contribute to inconsistent results.

3 Review of the Literature

Qualitative studies consistently argue that CSR and aggressive tax planning are ethically incompatible. Fisher (2014) contends that tax havens undermine firms' contributions to public welfare, while Sikka (2010) frames CSR as a "smokescreen" for unethical financial practices. Scarpa and Signori (2023) call for the explicit integration of tax responsibility into CSR frameworks. Empirical research provides mixed evidence. Several studies find that CSR reduces tax avoidance: CSR-oriented firms exhibit lower tax aggressiveness (Lanis & Richardson, 2012), and irresponsible CSR practices correlate with increased tax sheltering (Hoi et al., 2013). These findings support the reputation-risk hypothesis.

Other studies show the opposite: CSR and tax payments may operate as substitutes for building legitimacy (Davis et al., 2016). Zeng (2018; 2019) finds that high CSR scores can coexist with aggressive tax avoidance, suggesting CSR may be used strategically to offset reputational threats. Mao (2019) similarly finds a positive association between CSR

and aggressive tax planning. Meta-analytic evidence demonstrates that the overall relationship remains weak and highly dependent on methodological choices (Marques et al., 2024). Literature reviews (Velte & Kovermann, 2020; Whait et al., 2018) highlight fragmentation and call for more standardized research designs. Corporate governance moderates tax behavior: institutional ownership reduces aggressive tax planning, while managerial ownership may heighten it (Sarhan, 2023). Board oversight also shapes tax decisions (Whait et al., 2018). Significant divergence in ESG methodology further contributes to conflicting findings. Different rating agencies use distinct weighting systems, data sources, and assumptions (Berg et al., 2022). Similarly, tax avoidance metrics capture different dimensions of tax behavior. These challenges underscore the need for more consistent measurement frameworks. Growing interest in tax transparency reporting—including the Global Reporting Initiative’s GRI 207 standard—offers a promising avenue for future research. Preliminary evidence suggests alignment between transparency initiatives and responsible tax practices, though causal pathways remain unclear.

4 International Dimensions of CSR and Corporate Tax Behavior

Corporate tax behavior is fundamentally shaped by global economic structures and political incentives. Taxation takes place in a fragmented international environment in which states compete for mobile capital by offering favorable tax regimes. This global tax competition creates structural incentives for profit shifting and aggressive tax planning, regardless of firms’ CSR commitments (Guex, 2022). Small, highly globalized financial centers—such as Luxembourg, Ireland, Singapore, and various offshore jurisdictions—play pivotal roles in facilitating these practices.

International efforts to address these challenges include the OECD/G20 BEPS initiative and the 2021 agreement on a 15% global minimum corporate tax. These reforms aim to reduce tax base erosion and profit shifting and represent the most ambitious attempt to coordinate international tax governance in decades. Although CSR frameworks rarely address global taxation explicitly, such initiatives contribute to greater alignment between ethical corporate conduct and responsible tax behavior.

The European Union functions as a normative power in shaping global sustainability and transparency standards. Through CSRD, ATAD, and public CbCR requirements, the EU disseminates norms that extend beyond its borders and influence multinational firms regardless of origin (European Parliament, 2022). These developments effectively integrate tax transparency into the broader ESG agenda. Tax havens remain central to global financial flows and occupy a unique geopolitical position. Their persistence is partly due to political and economic ties with major powers (Reusser & Pluss, 2023). This complicates the evaluation of tax behavior within CSR frameworks.

Tax responsibility also connects to global development agendas. The UN Sustainable Development Goals (SDGs)—particularly Goals 16 and 17—emphasize accountable institutions and sustainable financing. Profit shifting disproportionately affects developing countries, undermining public finances and widening global inequalities (Cobham & Janský, 2018). Thus, tax avoidance directly contradicts sustainability narratives. International organizations, NGOs, investigative journalists, and activist investors further shape expectations for corporate tax behavior. As a result, tax behavior is no longer merely a financial decision but a matter of global governance and corporate diplomacy.

5 CSR, Taxation and Business Ethics

CSR and taxation intersect directly in the domain of business ethics. Beyond compliance, tax behavior communicates a firm’s moral stance toward society. Ethical frameworks help illustrate this complexity. A deontological approach considers aggressive

tax avoidance unethical because it violates societal expectations of fairness, regardless of outcomes. A utilitarian perspective focuses on broader consequences: if tax avoidance undermines public goods, social welfare decreases. Rawlsian justice emphasizes fairness and equitable burden sharing—stipulating that corporations benefiting from public infrastructure have a moral obligation to support it.

Tax morale further illustrates the socio-psychological dimension of taxation. Trust in institutions and perceptions of fairness enhance tax morale. When multinational enterprises engage in aggressive tax planning, public trust diminishes, harming long-term governance and weakening the social fabric that sustains tax compliance.

Prominent corporate cases illustrate the tensions between CSR narratives and tax practices. The Apple–Ireland case exemplified how intellectual property structures enabled extremely low effective tax rates, raising concerns about competition and state aid. Starbucks faced public backlash in the UK after paying minimal taxes despite substantial revenues, ultimately making voluntary tax payments in response to reputational pressure. Google’s “Double Irish, Dutch Sandwich” structure enabled the routing of intellectual property income through low-tax jurisdictions. IKEA has been scrutinized for intra-group licensing arrangements. These examples illustrate how firms with strong public CSR communication may still rely on aggressive international tax planning structures, underscoring the persistent gap between stated CSR commitments and actual financial behaviour.

6 Methodological Challenges and Future Research Directions

Methodologically, research on CSR and tax avoidance faces challenges related to endogeneity and causality. CSR performance may influence tax behaviour, but tax strategy may also influence CSR investments, creating potential reverse causality. Many studies rely on observational data, making causal inference difficult. Future research could benefit from quasi-experimental approaches, natural experiments, and longitudinal datasets.

Another area requiring development is the integration of tax transparency indicators—such as voluntary tax reports or adherence to GRI 207—into CSR measurement frameworks. As firms increasingly publish tax-related disclosures, researchers can better examine how transparency affects tax planning and stakeholder perceptions. Cross-country comparative studies and analyses of regulatory changes (such as mandatory Country-by-Country Reporting) offer promising avenues for advancing the field.

Beyond these challenges, future research should more systematically incorporate contextual variables that shape the CSR–tax avoidance relationship. Cross-country differences in tax enforcement, legal frameworks, and societal norms can significantly influence corporate incentives (DiMaggio & Powell, 1983). Multi-level empirical designs would therefore allow scholars to disentangle the effects of firm-level characteristics from institutional environments, helping to clarify why studies reach divergent conclusions (Velte & Kovermann, 2020; Marques et al., 2024).

Qualitative approaches remain underused in this domain. While most studies rely on large-sample econometric analyses, interviews, case studies, and internal governance documents can reveal mechanisms that quantitative data alone cannot capture—such as the internal tensions between sustainability and finance departments, the influence of tax advisors, or managerial ethical considerations (Sikka, 2010; Fisher, 2014). Such depth-oriented methods can complement existing evidence and illuminate how tax strategies are formed within organizations.

Future research should also exploit new data sources. Machine-readable sustainability reports, voluntary tax transparency disclosures such as GRI 207, and public procurement or regulatory datasets offer novel opportunities for constructing more reliable indicators (Global Reporting Initiative, 2020). Advances in natural language processing and artificial intelligence

make it possible to automatically analyze these large volumes of text, potentially improving the measurement of both CSR and tax avoidance (Berg et al., 2022). Integrating such approaches with traditional econometric models may substantially enrich the empirical toolkit of the field.

Finally, global tax reforms—including the OECD/G20 two-pillar solution and the implementation of the global minimum tax—provide a natural setting for quasi-experimental research (OECD, 2021). Comparing corporate behavior before and after these reforms could clarify their impact on tax planning. Another crucial direction involves assessing whether increased transparency affects investor perceptions or merely produces symbolic compliance without altering actual tax practices (Davis et al., 2016; Zeng, 2018).

Conclusion

The relationship between CSR and tax avoidance is complex and contested. Empirical research offers inconsistent findings, ranging from negative to positive associations, while qualitative studies highlight deep ethical tensions. These inconsistencies reflect not only methodological differences but also broader structural forces of global tax competition and geopolitical fragmentation.

The international dimension is crucial: corporate tax behaviour cannot be understood without considering the incentives and constraints created by global economic governance. As the EU, OECD, and G20 strengthen transparency and cooperation through initiatives such as CSRD, ATAD, CbCR, and the global minimum tax, there is growing momentum to integrate tax ethics into CSR frameworks.

The paper concludes that tax responsibility should be recognized as an essential element of CSR. Without this integration, CSR frameworks risk remaining incomplete, and the paradox between public commitments and private tax behaviour will persist. Strengthening the alignment between CSR and responsible tax practices is therefore vital for corporate legitimacy, public trust, and the long-term sustainability of global economic systems.

The evidence reviewed in this paper demonstrates that the future of corporate sustainability cannot be meaningfully addressed without integrating tax responsibility as a core component of CSR. Firms increasingly face expectations from investors, regulators, and civil society to align their environmental and social commitments with transparent and responsible tax conduct (Carroll, 1991; Freeman, 1984). This alignment is becoming central to corporate legitimacy, as aggressive tax strategies undermine public trust and contradict the ethical aspirations of CSR frameworks (Suchman, 1995; Sikka, 2010).

Yet voluntary efforts alone are insufficient. As long as global tax competition and offshore financial structures remain embedded in the international economic system, corporations will continue to face conflicting incentives (Guex, 2022; Reusser & Pluss, 2023). International coordination—strengthened through instruments such as CSRD, ATAD, public CbCR, and the global minimum tax—represents a critical step toward reducing opportunities for profit shifting and ensuring that firms' sustainability narratives reflect actual financial behavior (European Parliament, 2022; OECD, 2021).

Recognizing tax responsibility as an integral pillar of CSR would help bridge the gap between public commitments and private practices. Such integration is essential not only for corporate accountability but also for the fiscal capacity of states, the credibility of global governance, and progress toward the Sustainable Development Goals, which highlight the importance of fair taxation and effective institutions (Cobham & Janský, 2018). Incorporating tax ethics more explicitly into CSR frameworks will therefore be vital for achieving more equitable, transparent, and sustainable global economic systems.

References:

- Acquier, A., Gond, J.-P., & Pasquero, J. (2011). Rediscovering Howard R. Bowen's legacy: The unachieved agenda and continuing relevance of *Social Responsibilities of the Businessman*. *Business & Society*, 50(4), 607–646.
- Berg, F., Kölbel, J. F., & Rigobon, R. (2022). Aggregate confusion: The divergence of ESG ratings. *Review of Finance*, 26(6), 1315–1344. <https://doi.org/10.1093/rof/rfac031>
- Carroll, A. B. (1991). The pyramid of corporate social responsibility: Toward the moral management of organizational stakeholders. *Business Horizons*, 34(4), 39–48.
- Cobham, A., & Janský, P. (2018). Global distribution of revenue loss from tax avoidance: Re-estimation and country results. *Journal of International Development*, 30(2), 206–232. <https://doi.org/10.1002/jid.3369>
- Col, B., & Patel, S. (2016). Going to haven? Corporate social responsibility and tax avoidance. *Journal of Business Ethics*, 154(4), 1033–1050. <https://doi.org/10.1007/s10551-016-3323-5>
- Davis, A. K., Guenther, D. A., Krull, L. K., & Williams, B. M. (2016). Do socially responsible firms pay more taxes? *The Accounting Review*, 91(1), 47–68. <https://doi.org/10.2308/accr-51324>
- DiMaggio, P. J., & Powell, W. W. (1983). The iron cage revisited: Institutional isomorphism and collective rationality in organizational fields. *American Sociological Review*, 48(2), 147–160. <https://doi.org/10.2307/2095101>
- European Parliament. (2022). *Directive (EU) 2022/2464 on corporate sustainability reporting (CSRD)*. Official Journal of the European Union.
- Fisher, P. S. (2014). Fairer shores: Tax havens, tax avoidance, and corporate social responsibility. *Boston University Law Review*, 94(3), 1041–1082.
- Freeman, R. E. (1984). *Strategic management: A stakeholder approach*. Pitman.
- Global Reporting Initiative. (2020). *GRI 207: Tax 2019*. Amsterdam, The Netherlands: GRI.
- Guex, S. (2022). The emergence of the Swiss tax haven, 1816–1914. *Business History Review*, 96(2), 353–372. <https://doi.org/10.1017/S0007680522000199>
- Hanlon, M., & Heitzman, S. (2010). A review of tax research. *Journal of Accounting and Economics*, 50(2–3), 127–178. <https://doi.org/10.1016/j.jacceco.2010.09.002>
- Hoi, C. K., Wu, Q., & Zhang, H. (2013). Is corporate social responsibility (CSR) associated with tax avoidance? Evidence from irresponsible CSR activities. *The Accounting Review*, 88(6), 2025–2059. <https://doi.org/10.2308/accr-50544>
- Lanis, R., & Richardson, G. (2012). Corporate social responsibility and tax aggressiveness: An empirical analysis. *Journal of Accounting and Public Policy*, 31(1), 86–108. <https://doi.org/10.1016/j.jaccpubpol.2011.10.011>
- Lanis, R., & Richardson, G. (2015). Is corporate social responsibility performance associated with tax avoidance? *Journal of Business Ethics*, 127(2), 439–457. <https://doi.org/10.1007/s10551-014-2052-8>
- Leu, S. (2021). *Corporate social responsibility in der Schweiz*. Stämpfli Verlag.
- Mao, C. W. (2019). Effect of CSR on corporate tax avoidance: Evidence from a matching approach. *Accounting & Finance*, 59(4), 3271–3296. <https://doi.org/10.1111/acfi.12495>
- Marques, M., Montenegro, T. M., & Brás, F. A. (2024). Tax avoidance and corporate social responsibility: A meta-analysis. *Journal of the American Taxation Association*, 46(1), 137–156. <https://doi.org/10.2308/jata-2024-6003>
- OECD. (2021). *Statement on a two-pillar solution to address the tax challenges arising from the digitalisation of the economy*. Paris: OECD Publishing.
- Reusser, K., & Pluss, J. (2023, February 9). Trotz Reformen: Der Ruf der Schweiz als Steueroase hält sich hartnäckig. *SwissInfo*. <https://www.swissinfo.ch/>

- Sarhan, A. A. (2023). Corporate social responsibility and tax avoidance: The role of shareholding structure. *International Journal of Disclosure and Governance*. <https://doi.org/10.1057/s41310-023-00195-5>
- Scarpa, F., & Signori, S. (2023). Understanding corporate tax responsibility: A systematic literature review. *Sustainability Accounting, Management and Policy Journal*, 14(7), 179–201. <https://doi.org/10.1108/SAMPJ-10-2022-0298>
- Sikka, P. (2010). Smoke and mirrors: Corporate social responsibility and tax avoidance. *Accounting Forum*, 34(3–4), 153–168. <https://doi.org/10.1016/j.accfor.2010.02.003>
- Stephenson, D., & Vracheva, V. (2015). Corporate social responsibility and tax avoidance: A literature review and directions for future research. *Journal of Business Ethics*, 127(4), 759–772. <https://doi.org/10.1007/s10551-014-2056-4>
- Suchman, M. C. (1995). Managing legitimacy: Strategic and institutional approaches. *Academy of Management Review*, 20(3), 571–610. <https://doi.org/10.5465/amr.1995.9508080331>
- Velte, P., & Kovermann, J. (2020). CSR and tax avoidance: A review of empirical research. *Corporate Governance: The International Journal of Business in Society*, 20(2), 263–289. <https://doi.org/10.1108/CG-04-2019-0135>
- Whait, R. B., Christ, K. L., Ortas, E., & Burritt, R. L. (2018). What do we know about tax aggressiveness and corporate social responsibility? An integrative review. *Journal of Cleaner Production*, 204, 542–552. <https://doi.org/10.1016/j.jclepro.2018.09.121>
- Zeng, T. (2018). Relationship between corporate social responsibility and tax avoidance: International evidence. *Social Responsibility Journal*, 15(1), 87–103. <https://doi.org/10.1108/SRJ-03-2018-0055>
- Zeng, T. (2019). Relationship between corporate social responsibility and tax avoidance: International evidence. *Social Responsibility Journal*, 15(2), 244–257. <https://doi.org/10.1108/SRJ-03-2018-0056>

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SUSTAINABLE WATER RESOURCE MANAGEMENT IN A CHANGING WORLD: ECONOMIC, ENVIRONMENTAL, AND POLICY DIMENSIONS

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Abstract: The objective of this paper is to examine the economic, environmental, and policy dimensions of sustainable water resource management in the context of accelerating climate change. Using a qualitative research approach and analysis of international frameworks such as the UN 2030 Agenda, Paris Agreement, and OECD principles, the study identifies the key challenges affecting water security and governance worldwide. Results show that water scarcity, pollution, and transboundary management issues are closely connected to socio-economic inequalities and insufficient institutional capacity. The paper concludes that effective implementation of Integrated Water Resources Management (IWRM), stronger international cooperation, and inclusive policy frameworks are crucial to ensuring global water sustainability.

Keywords: water resource, sustainable development, water governance, climate change, IWRM, international cooperation

JEL: Q53, Q58

Introduction

Water and water resources represent one of the most critical foundations of life on Earth, playing an irreplaceable role in achieving long-term sustainable development. As an important and unique component of the natural environment, water supports not only human survival and economic activity but also the health of ecosystems and biodiversity that sustain planetary stability. Across the world, every country carries the responsibility of managing the quality, availability, and accessibility of water for its population through effective water governance and resource management.

In recent decades, global climate change has intensified challenges related to water security. Rising temperatures, prolonged droughts, extreme flooding, melting glaciers, and unpredictable heavy rainfall have placed extreme pressure on natural and human systems alike. These studies have highlighted the urgent need for comprehensive and adaptive management strategies that ensure water availability, protect aquatic ecosystems, and support social and economic resilience.

Effective water management has therefore become an essential element of modern environmental policy, legislation, and international cooperation. The task is not just technical but deeply interconnected with the issue of equity, governance, and sustainable development. The ultimate goal for all nations should be to achieve a balance between efficient water use, the protection of biodiversity and ecosystems, and economic accessibility of this vital resource for all people. Only through an integrated and globally coordinated approach can we ensure that the world's water systems remain viable and resilient for future generations.

1 Water resources and water governance

Water resources, in their various forms ranging from oceans, rivers, and lakes to underground water resources, glaciers, and permanent snowfields, constitute a fundamental

assumption for human existence and sustainable development. Throughout history, societies have expanded, and their reliance on these resources, particularly on freshwater with a constantly growing population, agricultural intensification, industrial production, and urban expansion, has continuously widened the demand (Li & Wu, 2023).

In many regions, the capacity of surface-water systems has already reached sustainable limits, for example, dry regions of the southwestern United States, where water scarcity is a persistent problem (Fuller & Harhay, 2010).

The water crisis has many terms, not only physical availability. The quality of water resources has been progressively weakened by human activity, often because of overuse. In agriculture, fertilizers and pesticides started to contaminate surface and subsurface reserves and destabilize aquatic ecosystems (Syafrudin et al., 2021).

At the same time, rivers and lakes have suffered from untreated municipal wastewater. The combination of various influences – quantitative scarcity and qualitative decline – highlights the complexity of current water management and demonstrates the urgency of integrated and innovative approaches capable of managing environmental sustainability with social and economic dimensions of the 21st century (Preisner, 2020).

Water governance refers as the way society organizes the distribution, regulation, and supervision of resources and responsibilities in a legitimate and socially acceptable way (Roger & Hall, 2003).

Water governance it's not only a technical process but also a political one because decisions about access to resources, enforcement of rules, and setting policy priorities are closely linked to questions of power and social values. Governance operates through a combination of values, norms, laws, and regulations, which influence the collective behaviour of society. It involves not only legislation, institutions, and regulatory systems, but also government actions, public policies, and wider networks of influence that include international markets, private companies, and civil organizations. These mechanisms are strongly influenced by the political systems in which they are based, as well as by national government, cultural values, and ideological orientations. These factors can significantly restrict or facilitate reforms, particularly in sensitive areas such as land ownership, water rights, and corruption (Muller & Woodhouse, 2017).

The governance of water resources is not exclusively a national or local problem. It is progressively framed with international agreements, institutions, and cooperative mechanisms. This global dimension reflects the cross-border character of many water systems and the acknowledgement that sustainable water management is critical to human well-being, economic development, and ecological stability. One of the most prominent frameworks is the United Nations 2030 Agenda for Sustainable Development, particularly Sustainable Development Goal 6 – Clean Water and Sanitation (United Nations, Goal 6).

Security of clean water and sanitation is one of the global goals of the United Nations. The organization determined eight partial goals to be achieved by 2030 to ensure clean water and sanitation worldwide in the SDG 6 Global Acceleration Framework. The Framework is focusing on increasing the availability of water, improving water management, and unifying legislation by the UN organization. From a health perspective, insufficient access to clean water and sanitation could lead to infections, diseases, and death. Conflict zones and zones of geopolitical tensions also undermine these goals. From an economic perspective, the United Nations is trying to improve accessibility of safe and affordable drinking water, increase water-use efficiency, ensure freshwater supplies, and address freshwater to reduce water scarcity worldwide. From an environmental perspective, the organization is focused on improving water quality, wastewater treatment, safe reuse of water, and protecting and restoring water-related ecosystems. The main problem with the water goal is support and help to improve the situation in developing countries (UN-Water, 2020).

In addition, the Paris Agreement from 2015 on Climate Change highlights the water-climate interconnection. Rising temperatures, changing precipitation patterns, and extreme weather events intensify water scarcity and flood risks, making adaptive water governance a central component of climate resilience strategies. The separate topic of water is not included in the Paris Agreement. Further complex explanation of climate problems puts emphasis on effective and inclusive water management, which can help with climate change and reducing greenhouse gas emissions, which are the key to this Agreement (Dombrowsky et al., 2016).

The Helsinki Convention from 1992, formally known as the Convention on the Protection and Use of Transboundary Watercourses and International Lakes, is another key framework for the discussed topic. The framework is focused on cooperation between states sharing rivers, lakes, and water resources with the aim of ensuring fair and sustainable management. Its importance grew when more non-European countries joined the agreement, giving it much-needed global reach. The Convention improves conflict prevention and promotion of peace and regional integration (UNECE, 1992).

At the institutional level, UN-Water serves as a coordinating mechanism across UN agencies, promoting coherence in water-related policies and actions worldwide. The main goal of UN-Water is effectively managing agencies focused on water and sanitation and support countries in achieving goals from international agreements (UN-Water). The OECD has developed various principles on water governance that emphasize responsibility, inclusiveness, efficiency, and transparency in the management of water systems (OECD, 2015). The World Bank, in cooperation with the Swedish International Development Agency (SIDA) and the United Nations Development Program (UNDP), established the Global Water Partnership (GWP) in 1996. The GWP was created in response to the degradation of freshwater resources and to assist in the sustainable management of their water resources. In this document were grounded the principles of Integrated Water Resources Management (IWRM) focusing on capacity building and actions across local and global levels. The initiative serves as a model for how multi-stakeholder networks can advance water governance worldwide (IEG, 2010).

2 Current Global State of the Issue

2.1 Economic Challenges

Water has long been considered essential for human survival, health, and dignity. Over time, this understanding has developed into formal recognition as a fundamental human right. The 1977 Mar del Plata Action Plan marked the first international recognition of the importance of universal access to water, followed by General Comment No. 15 of the UN Committee on Economic, Social and Cultural Rights in 2002. The document defined access to enough safe and affordable water as essential for the realization of other human rights. This process reached a milestone in 2010 when the United Nations General Assembly passed Resolution A/64/292, recognizing safe and clean drinking water and sanitation as essential for life and human well-being. By doing so, water was no longer seen only as a natural resource or an economic asset, but as a universal right that governments are responsible for guaranteeing and ensuring for people (Ibrahim, 2021).

An official publication by UNICEF, *Progress in household drinking water, sanitation, and hygiene 2000 – 2024: Special focus on Inequalities*, highlights that in 2024, more than 2 billion people – over one quarter of the global population – continue to lack access to safely managed drinking water services. The report also reveals that more than 3 billion individuals remain without basic sanitation facilities. Among the countries reviewed, Somalia and Afghanistan demonstrated the most significant progress during this period, achieving the largest improvements in expanding coverage of at least basic drinking water services (WHO/UNICEF, 2025).

One of the most important initiatives on the discussed topic is the Roundtable on Financing Water held by OECD, the World Water Council, the Netherlands, and the World Bank. This project brings a combination of political leadership, technical expertise, and ideas to increase investments in water security and sanitation worldwide. The Roundtable on Financing Water connects the financial and water sector for know-how exchange on emerging trends, explores innovative solutions, and strengthens cooperation. Its main target is to elevate the issue of water financing on the international political agenda with the investment community. They are also addressing barriers to investment in water security and sustainable growth. The Roundtable brings more impactful and inclusive ways to mobilize resources for water-related projects, including governments, institutional investors, commercial banks, asset managers, impact investors, development finance institutions, international organizations, academia, and civil society. Their work has included assessments of financing needs and capacities across different regions, such as Europe and Asia, with the documents for meeting providing valuable input for international discussions led by OECD and other organizations (OECD-WWC-Netherlands, 2017).

2.2 Environmental Challenges

Climate change significantly impacts water availability around the world. Higher temperatures produce evaporation, and global warming causes unexpected extreme precipitation and floods. All these changes and more are currently affecting our water resources and increasing pressure on water management and efficient governance. By the end of this century, our planet will face up to a lot of environmental challenges – for example, one third of the world's major river basins that depend on melting glaciers for their water supply are expected to experience a decline in annual flow of more than 10%. The biggest decreases are likely to happen in Central Asia and the Andes. This decline could affect more than 1,5 billion people who depend on water from mountain glaciers for drinking, agriculture, and daily life by the middle of the 21st century (Caretta, Mukherji, 2022).

Water pollution represents one of the most pressing global environmental challenges of the 21st century, resulting from a complex interaction between natural processes and human activities. According to the review by Malik and Chaudhry, the quality of water resources is influenced by climatic and geological conditions, but primarily by human activity. Industrial facilities and urban centres that discharge untreated wastewater directly into rivers and lakes create one of the biggest threats to water quality. In addition, pesticides, fertilizers, and other chemicals contribute significantly to the contamination of surface and groundwater, often leading degradation of ecosystems. Subsurface pollution as chemicals and nitrates, can leak into groundwater are threaten drinking water supplies. Atmospheric pollutants such as sulphur and nitrogen oxides are present through rainfall into aquatic systems. The review concludes that it is necessary to monitor systems, strict regulatory frameworks, and coordinated policies across agricultural, industrial, and urban sectors to protect water quality and ensure the long-term sustainability of freshwater ecosystems (Chaudhry, Malik, 2017).

2.3 Legislative and Governance Challenges

Achieving effective and sustainable water management, or just the right to clean water and sanitation, has a lot of problems, among them also belong legislative and governance challenges. One of the most dangerous and present legislative problem in the discussed topic are transboundary lakes and rivers. These water resources are shared between countries or nations without high-quality and well-established legislation. These situations can escalate into various conflicts or even wars, and the main problem is insufficient legislation or a complex Framework to resolve them or help through the process. In this inadequate situation is almost

half of the world's population lives with more than 300 transboundary rivers and lakes (Sarfaraz et al., 2022).

The river Nile, with its length of 6,650 km long runs through eleven countries, including Egypt, Ethiopia, Uganda, and Sudan. To improve cooperation and benefits from the river, they created the Nile Basin Initiative (NBI). These days, around 400 million people live in the basin of the Nile, and more than half depend on the river daily, which creates strong pressure. The population is expected to double by the year 2050, which will increase this pressure. Today, about 10% of people already face water shortages; this number could increase to 35% by the year 2040 due to population growth and climate-related impacts such as extreme weather (OWP – The Organization for World Peace, 2025).

According to the UN-Water report *Progress in Transboundary Water Cooperation-2024 Update*, countries worldwide have on average, only 59% of their transboundary river and lake basin areas covered by operational cooperation arrangements. This number, calculated for 117 countries, has shown little progress since 2017, highlighting limited progress in advancing transboundary water governance. As a result, a considerable share of transboundary waters is still not managed under formal cooperative frameworks, leaving many regions vulnerable to governance challenges and potential disputes (United Nations – UN Water, 2024).

3 Interconnected Challenges

Solving global water access issues requires a combination of technological innovation, stronger institutional frameworks with better reach, and local and regional participatory initiatives. Public authorities should prioritize investments in infrastructure such as rainwater harvesting systems and wastewater recycling facilities, which will help reduce dependence on limited freshwater supplies and ensure more reliable supplies in drought-affected areas. Expanding the use of desalination technologies that convert seawater into drinking water offers an innovative solution for coastal regions. Water reuse programs, such as the reuse of treated wastewater for irrigation or industrial processes, help relieve pressure on natural resources. At the same time, it is essential to strengthen regulatory frameworks, including the introduction of fair and inclusive pricing policies that maintain affordability for vulnerable groups. Local communities also play a key role, and empowering them through education, raising awareness, and active participation ensures more sustainable results. Other actions include introducing decentralized water treatment systems based on renewable energy sources that can operate independently of central networks, as well as corporate responsibility through water management initiatives, where industries commit to returning treated clean water to the same watersheds from which they draw their resources (IDRA, 2025).

Integrated Water Resource Management (IWRM) is fundamentally linked to the sustainable use of available water resources, supporting progressive development without depreciation of biodiversity and ecosystems to ensure their preservation for future generations (Shimon, 2010).

Table 1: The Four Dublin Principles (1992)

Principle No. 1	Fresh water is a finite and vulnerable resource, essential to sustain life, development, and the environment
Principle No. 2	Water development and management should be based on a participatory approach, involving users, planners, and policymakers at all levels
Principle No. 3	Women play a central part in the provision, management, and safeguarding of water
Principle No. 4	Water has an economic value in all its competing uses and should be recognized as an economic good

Source: https://www.cawater-info.net/bk/water_law/pdf/dublin_statement.pdf

The Mekong River is the world's most biodiverse transboundary resource, with a length of almost 5,000 km, which runs through 6 countries, such as China and Vietnam. The basin is an important source of food, water, energy, and habitat for thousands of species with profound economic, social, and political implications. Its waters sustain agriculture, hydropower, fisheries, and ecosystems with increasing pressure from dam construction. Rapid developments, including large projects, have underscored the need for cooperation to prevent disputes and ensure equal sharing of benefits. Recognizing these risks, the Mekong River Commission (MRC) has incorporated Integrated Water Resources Management (IWRM) principles under the Mekong Agreement since 1995. The framework is balancing economic development with environmental protection by promoting cross-border dialogue, sustainable hydropower, resilient agriculture, and improving disaster management. The Mekong illustrates both the challenges and opportunities of governing large transboundary rivers with economic, environmental, and legislative dimensions (MRC, 2024).

Conclusion

Ensuring sustainable and efficient water management requires a comprehensive and coordinated approach that gives equal weight to environmental, social, and economic considerations. A key element of this effort is the introduction of Integrated Water Resources Management (IWRM), which supports complex planning with an emphasis on the connection between surface and groundwater systems, ecological needs, agricultural requirements, and urban water consumption. By adopting IWRM principles, policymakers can better anticipate and manage conflicts over water use, optimize water allocation, and increase resilience to increasingly frequent and severe climate events such as droughts and floods.

It is important to strengthen global cooperation and the role of multilateral and international institutions that serve as platforms for know-how exchange, technology transfer, and coordinated financial support. This cooperation are particularly important in regions and areas where water scarcity transcends national borders or where infrastructure and management capacities are limited. Investments in modern and sustainable infrastructure – from efficient irrigation systems and rainwater management to modern wastewater treatment facilities – are essential to protect the human population, ecosystems, and biodiversity while reducing the impacts of pollution and climate change.

At the policy level, inclusive pricing and regulatory frameworks need to be promoted to make water accessible and affordable for all segments of society, especially vulnerable communities, and groups. Such policies promote responsible water use while maintaining equity and social equality. In addition to economic and technical measures, access to safe and sufficient water should be recognized as a fundamental human right. Adherence to this principle strengthens social cohesion, increases accountability in water management, and ensures that long-term sustainability is not sacrificed for short-term gains. Ultimately, an integrated, cooperative, and rights-based approach is essential to protect water resources for current and future generations, while preserving the vital ecosystem services on which human well-being depends.

The current challenges across several key areas indicate that effective water resource management requires correct compliance with legal regulations and directives, the modernization of existing infrastructure, the development of new technical infrastructure, effective supervision of strategic planning, and, finally, strong and consistent cooperation at the international level between countries, but also at the national level among institutes and citizens.

References:

- Caretta, M.A., A. Mukherji. (2022). Water. In: *Climate Change 2022: Impacts, Adaptation and Vulnerability*. Contribution of Working Group II to the Sixth Assessment Report of the Intergovernmental Panel on Climate Change.
- Chaudhry F. N., Malik M. F. (2017). Factors Affecting Water Pollution: A Review. *Journal of Ecosystem & Ecography*. https://facultystaff.richmond.edu/~sabrash/110/Chem%20110%20Spring%202022%20Homework%20Articles/King_factors-affecting-water-pollution-a-review-2157-7625-1000225.pdf
- Dombrowsky, I., Bauer, S., Scheumann, W. (2016). The Current Column: *What does the Paris climate agreement mean for water policy?* German Institute of Development and Sustainability. <https://www.idos-research.de/en/the-current-column/article/what-does-the-paris-climate-agreement-mean-for-water-policy/#:~:text=At%20first%20glance%2C%20water%20plays,to%20reduce%20greenhouse%20gas%20emissions>.
- Fuller, A. C. & Harhay, M. O. (2010). Population Growth, Climate Change and Water Scarcity in the Southwestern United States. *American Journal of Environmental Sciences*, 6(3), 249-252. <https://doi.org/10.3844/ajessp.2010.249.252>
- Ibrahim, Imad Antione. (2021, July). *Water as a human right, water as a commodity: can SDG6 be a compromise?* The International Journal of Human Rights. <https://doi.org/10.1080/13642987.2021.1945582>
- IDRA. (2025, February). *Global Water Inequality: The Crisis of Access, Impact, and Urgency!* <https://idrawater.org/news/global-water-inequality-the-crisis-of-access-impact-and-urgency/>
- Independent Evaluation Group (IEG). (2010). *The Global Water Partnership (GWP)*. Global Program Review. <https://documents1.worldbank.org/curated/en/776821468331144910/pdf/576460NWP0Box31am0review0v40issue03.pdf>
- Li, P., Wu, J., (2023). Water Resources and Sustainable Development. *Water*. ISBN-978-3-0365-9973-1
- Mekong River Commission For Sustainable Development (MRC). (2024). *Mekong Integrated Water Resources Management Project*. Mekong IWRM Initiatives. <https://www.mrcmekong.org/mekong-integrated-water-resources-management-project>
- Muller, M., Woodhouse, P. (2017, April). World Development: *Water Governance – An Historical Perspective on Current Debates*. <https://www.sciencedirect.com/science/article/abs/pii/S0305750X16305460>
- OECD, *Better Policies For Better Lives*. (2015, June). *OECD Principles on Water Governance*. <https://www.oecd.org/content/dam/oecd/en/topics/policy-sub-issues/water-governance/oecd-principles-on-water-governance-en.pdf>
- OECD-WWC-Netherlands. (2017, April). *Roundtable on Financing Water*. <https://www.worldwatercouncil.org/sites/default/files/2017-10/Roundtable-on-Financing-Water-Prospectus.pdf>
- OWP – The Organization for World Peace. (2025). *Nile River Conflicts*. https://theowp.org/crisis_index/nile-river-conflicts/
- Preisner, M. Surface Water Pollution by Untreated Municipal Wastewater Discharge Due to a Sewer Failure. *Environ. Process*. 7, 767–780 (2020). <https://doi.org/10.1007/s40710-020-00452-5>
- Rogers, P., & Hall, A. (2003). *Effective Water Governance*. Sweden: Elanders Novum. ISBN: 91-974012-9-3
- Sarfaraz, M.U., Hall, D. M., Rotman, R. M. (2022, September). *Data Sharing in transboundary water management*. *Frontiers in Water*.
- Shimon, C. Anisfeld. (2010). *Water Resources*. Washington: Island Press. ISBN-10: 1-59726-495-4

- Syafrudin, M., Kristanti, R. A., Yuniarto, A., Hadibarata, T., Rhee, J., Al-onazi, W. A., Algarni, T. S., Almarri, A. H., & Al-Mohaimed, A. M. (2021). Pesticides in Drinking Water—A Review. *International Journal of Environmental Research and Public Health*, 18(2), 468. <https://doi.org/10.3390/ijerph18020468>
- UN Water. *Our Work*. <https://www.unwater.org/our-work>.
- UNECE. (1992). *The 1992 UNECE Convention on the Protection and Use of Transboundary Watercourses and International Lakes*. https://unece.org/fileadmin/DAM/env/water/documents/brochure_water_convention.pdf
- United Nations, UN Water. (2024, October). *Progress on Transboundary Water Cooperation – 2024 Update*. United Nations and UNESCO. https://www.unwater.org/sites/default/files/2025-02/sdg6_indicator_report_652_progress-on-transboundary-water-cooperation_2024_en.pdf
- United Nations. Transforming our World: *The 2030 Agenda for Sustainable Development*. Goal 6: Ensure availability and sustainable management of water and sanitation for all. <https://sustainabledevelopment.un.org/content/documents/21252030%20Agenda%20for%20Sustainable%20Development%20web.pdf>
- UN-Water. (2020). *The Sustainable Development Goal 6: Global Acceleration Framework*. <https://www.unwater.org/sites/default/files/app/uploads/2020/07/Global-Acceleration-Framework.pdf>
- WHO/UNICEF. (2025). *Progress on household drinking water, sanitation, and hygiene 2000 – 2024: special focus on inequalities*. WHO/UNICEF Joint Monitoring Programme for Water Supply, Sanitation and Hygiene.

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THE CONCEPT OF WATER SECURITY REVISITED

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Abstract: This paper offers a positive outlook of the concept of *Water Security*, which is often considered vague, broad or rather academic. By means of comprehensive analysis, the paper investigates the origins of the concept and its evolution, to explain how, in time, the concept has grown in its relevance. Compared with the clear-cut definition of Sustainable Development Goals, or with the abundant body of human rights law and water-related rights, the paper argues that water security concept can be perceived as a by-product of diverse global, regional and national water-related debates. Its broad and dynamic nature is often subject to critique, still, once articulated as a vision and a framework, water security happens to be in vogue – as it has gradually mainstreamed into all relevant global water policy levels and talks. The paper shows there is a growing understanding that water security balances economic, environmental and social criteria and has become a relevant tool in the sustainability toolkit.

Keywords: Water security, human right to water, sustainable development goals, access to water, water scarcity, securitisation

JEL: F63, K38, Q25

Introduction

Despite a continued increase in access of population to safe drinking water, as reported by international organisations (e.g. World Bank Group, 2024; WHO/UNICEF, 2025), and diplomatic efforts to slow down effects of the climate change, the same international institutions report about world-wide water insecurity affecting agricultural and energy production, or health and labour productivity.¹ Over the past decades, debates on water-related solutions have been on the rise and a number of theoretical concepts emerged. In the words of the Mar de la Plata Action Plan of 1977, there has been a “need for a concerted action to find solutions and apply them at the national, regional and international levels” (United Nations, 1977).

Before 1990s, the UN, World Bank, FAO and other international development organisations addressed water-related issues in the framework of access to safe water or water resources protection and environmental sustainability, i.e. with the focus on quantity and quality of water supply (UNESCO and UNESCO i-WSSM, 2019). Later, in 1990s the notion of human security started to be occasionally employed in policy circles as well as academia, though, without any formalized definition (Gerlak et al., 2018). Some argue for earlier origins, namely that already by 1990s, water security was used in connection with “human security issues like economic security, environmental security, food security or military security” (Gerlak & Mukhtarov, 2015, p. 260).

There is a major consensus that it was only after 2000 that the concept of water security gained a prominent position in the academic discourse and water-expert development talks (Lautze & Manthritlake, 2012, p. 76). A number of factors of empowering the concept could be found, next to the objective need for formalizing of the notion, as “uncertainties about

¹ Water use has increased sixfold over the past century and is rising by about 1% a year. UNESCO. UN-Water. (2020).

the definition of water security restrict the use of the term in the context of international, regional, and national processes and the UN's development work“ (Institute for Water, Environment and Health, 2013, p. 2.). In parallel, several other developments occurred, particularly regarding the sustainable development goals, which challenged the international community. Similarly, the concept of human right to water was recognized at international level, highlighting the negative effects of promoting market-based approaches to water.

The paper examines the concept of water security, the human right to water, and the Sustainable Development Goals, with the aim of clarifying their interactions and interconnections. Through a comprehensive analysis of the origins, content, and nature of water security, the paper demonstrates the value of this concept. Owing to its fluidity and breadth, water security can encompass the full spectrum of water-related issues. One could contend that concepts supported by more precise definitions and measurable indicators would prove more effective. Over the time, however, owing to the limits of Millenium Development goals (MDGs) and the implementation constraints of the human right to water, it is the concept of water security that appears best suited to help the international community articulate water needs and often-conflicting interests of diverse actors. Mostly as a byproduct of expert discussions, often without explicit mentioning, water security has gradually evolved into an overarching framework – a vision to work with.

1 How to Define Water Security

In 2000 Ministerial Conference on Water Security in the 21st Century was held in the Hague, where Ministerial Declaration on Water Security in the 21st Century broadly defined water security as a multi-dimensional concept with five basic strands: “Ensuring that freshwater, coastal and related ecosystems are protected and improved; that sustainable development and political stability are promoted, that every person has access to enough safe water at an affordable cost to lead a healthy and productive life and that the vulnerable are protected from the risks of water-related hazards.

Academia often links this definition to the work of the Global Water Partnership, and acknowledges four key elements of water security (Cook & Bakker, 2012; Lautze & Manthritilake, 2012):

- i.) access to potable water for basic human needs or domestic use (water availability);
- ii.) provision of water for productive activities such as agriculture, food and industrial goods (human needs with emphasis on food security);
- iii.) focus on environmental conservation or protection (sustainability);
- iv.) prevention of water-related disasters (human vulnerability to hazards).

Relatively little emphasis was put on military security related to water wars (Cook & Bakker, 2012, p. 97). Only later academia introduces the final fifth element (v.) of risk management and independence (Grey & Sadoff, 2007), even though „sustainable development and political stability“ had already been a part of the aforementioned Ministerial Declaration of 2000. The reason for little emphasis paid to this dimension from the beginning can be explained by the fact, that the concepts of military security (water wars) or the concept of environmental security (‘green wars’) “emerged only in the 1990s to refer to the links between violent conflict and environmental degradation” (Cook & Bakker, 2012, p. 97).

At this point, a growing number of actors started to use the term and international organisations started to use the water security concept to frame water-related issues. Diverse approaches related to water security have been taken towards discipline-based definitions, as well as complex interdisciplinary approaches (Cook & Bakker, 2012, p. 97)

and multiple interpretations.² Among these, there are geopolitical discourses, theories linked with water availability and risks, utilitarian approaches prioritizing water access and environmental and economic services, or, among most recent, water security capabilities approach, which dwells on the lived experience (Jepson et al., 2019, p. 85).

2 Can Water Security be Measured?

A broader definition that integrates water quality and quantity – as offered by the original concept of water security – was welcomed, and criticised at the same time, for being “destructively elastic and indeterminate” (Cook & Bakker, 2012, p. 100). The debates entered a new phase focused on how to measure and evaluate water security, how to reform water governance for the sake of efficiency of water use etc. To this end diverse indexes for evaluating water security were developed. For example, by studying the intersection of two or more water-related security areas, which has specifically given way to studies of water-energy-food security ‘nexus’ (Zeitoun, 2011, p. 288) Others debated the relationship between the integrated water resources management, as a then popular process of coordinating water, land, and related resources across sectors (e.g. Cook & Bakker, 2012). Yet others studied water security as a new water sector target (Fischhendler, 2015).

A common denominator that both constrained and stimulated research was the question of how to quantify water security. At early 2000s, the general question of measuring security in health, livelihoods or industry, i.e. tracking the social context behind securitization was considered unsolved (Lautze & Manthritlake, 2012). Further limits to quantifiability and predictability of trends are given by the innovative focus of water security on vulnerability to threats, which are on the rise. For illustration, water scarcity affects almost half of the global population and the demand for water services is projected to rise (Vörösmarty et al., 2018).

No perfect formula was found. Instead, academic debates helped proliferate the notion of water security³ and shape the ongoing discussions in global fora on sustainability. There, it was finally recognized that „the centrality of water to achieving the MDGs has been largely overlooked and water security must therefore figure prominently in the post-2015 development framework“ (Institute for Water, Environment and Health, 2013, p. 13). It should be noted that *the centrality of water* was acknowledged as a core principle, and *water security* was set as a goal, later to be specified.

Building on all elements of the 2000 water security framework, and further standardizing and refining them, a UN working definition of water security⁴ was formulated to underpin the UN Sustainable Development Goals (SDGs), adopted in 2015.⁵ Although SDGs do not explicitly mention water security, they clearly respect the principle of centrality of water, with the understanding that “integrity of the environment underpins a reliable water resource base” (Vörösmarty et al., 2018, p. 318). SDGs set out measurable targets (and a global monitoring mechanism) linked to the elements of water security, in particular SDG6 on Clean Water and Sanitation, which deals with water access (SDG 6.1.), sanitation (SDG 6.2.), water quality (SDG 6.3.), efficiency (6.4.), governance (6.5.) and ecosystems (6.6). The dynamic and broad water security concept directly or indirectly penetrates most, if not all, SDGs,

² Such as the *web of water security*, which positions six interrelated “security areas”: human security, climate security, food security, energy security, national security, and water resources security (Zeitoun, 2011).

³ Over 400 peer-reviewed publications on water security have appeared between 1990s-2012 (Bakker, 2012).

⁴ „Capacity of a population to safeguard sustainable access to adequate quantities of acceptable quality water for sustaining livelihoods, human well-being, and socio-economic development, for ensuring protection against water-borne pollution and water-related disasters, and for preserving ecosystems in a climate of peace and political stability“ (Institute for Water, Environment and Health, 2013, p. 1).

⁵ In addition, the United Nations Security Council held an Arria formula meeting on water, peace and security on Earth Day in 2016. Then, it was the first time Council members discussed water as a separate security issue (Magsig, 2020, p. 45).

be it SDGs on poverty, health, hunger or economic growth, climate or energy – and preserves its relevance as a framework or a vision. And, in addition, due to its explicit emphasis on the cross-sectoral links between, for example, water, human health, climate, and food security, water security can act as a leverage point for achieving the Agenda 2030.⁶

3 Human Right to Water and Water Security

Parallely, the body of international human rights law has evolved as regards water. Although it was already in 1950s and 1970s that the existence of human right to water was implicitly recognized, neither the Universal Declaration of Human Rights nor the International Covenant on Economic, Social and Cultural Rights, nor the International Covenant on Civil and Political rights mentioned water (Ibrahim, 2021). A major milestone was the Mar de la Plata Action Plan of 1977, which is often cited as one of the foundations of the right to access to drinking water.

In 2002 General Comment 15 No., as a soft-law tool of non-binding nature, recognized that the Covenant on Economic, Social and Cultural Rights include human right to water⁷ – water was considered essential for guaranteeing an adequate standard of living and the right to health (Ibrahim, 2021). According to the Committee, the right to water entitles everyone to sufficient, safe, acceptable, physically accessible and affordable water for personal and domestic uses (United Nations, 2002) This normative claim further invokes the principles of non-discrimination, links the right to water with sanitation, emphasises sustainability and participatory governance and claims water access to be a global responsibility.

It set a decent basis for the later adoption of UN resolution 64/292 on the human right to water and sanitation (United Nations General Assembly, 2010) – without any explicit reference to water security. Human right to water comprises a major shift in understanding of water: It is not just an economic good subject to market pricing, it's a social, cultural, and human need, which should be guaranteed equitably.

Inasmuch the UN resolution was considered a victory for water justice advocates, a lot of critique was voiced as regards its individualist and state-centered nature, a problematic emphasis on drinking water, little attention paid to human dignity or overlooking water insecurities in the developed world, etc. (Jepson et al., 2019). Some argued that human right to water is “a limited strategy to meet progressive goals“, which cannot resist ongoing water privatisation (Miroso, 2012, p. 934). Yet importantly, the critique does not negate human right to water as a policy frame – scholars call for reformulation of the human right to water, or its “holistic conceptualization” (Jepson et al., 2019, p. 85) which brings us back to the concept of water security, or alike.

Pure recognition of water-right by states, however, does not immediately satisfy the needs of the population, as there is a lack of proper definition of the right or determination of the responsible authority to oversee implementation, or insufficient allocation of resources (Ibrahim, 2021). Reasons can be found in the dual dimension of all water-related issues. First, in-built dilemmas, water can be seen as a potential source of a (political) conflict and, at the same time, also a strategic asset. Political water wars are to the social detriment of the losing party and bring insecurity to the bilateral or broader relations. After all, “water security can only be what states make of it, a factor which becomes even more obvious in cases where a hydro-hegemon is involved” (Magsig, 2020, p. 48). Secondly, the access to resource water is linked to “the opportunities and challenges, for instance through the concepts of virtual water and benefit sharing” (Magsig, 2020, p. 47). The productive dimension of water goes hand

⁶ „Positive linkages of water security were observed across all SDGs, with almost all linkages (91%) being positive“ (Taka et al., 2021, p. 260).

⁷ It must be noted, however, that the Committee previously recognized in the General Comment No. 6 (1995) that water is a human right contained in article 11 of ICESCR – but it went largely unnoticed.

in hand with its destructive capacities in the form of natural disasters – not only “the *absence* of water but also its *presence* that can be a threat” (Grey & Sadoff, 2007, p. 546).

Bearing this complex picture in mind, it becomes clear that the goal of protecting human rights to water is relevant yet insufficient. It must be accompanied by a body of national legislation, as well as national, regional and international judicial and institutional mechanism to ensure its implementation.

Still, the concept cannot guarantee a balance of environmental, human, or even economic concerns – there are diverse ideas about the use of water, often competing with the concept of human right to water. This takes place for a number of reasons, most importantly because water (shortage) remains a significant obstacle to growth in both developed and developing countries in the context of climate change (Distefano & Kelly, 2017, p. 140).

The ultimate goal of the international community must be to identify the actions required to achieve water-related objectives, including by limiting the threats posed by ill-advised human choices concerning water use. In this regard, the notion of water security is useful once again, owing to its conceptual fluidity. Although it may be presented as politically viable (e.g., as a justification for security-driven arguments such as ‘water wars’) and economically quantifiable (through governance benchmarks and the SDGs), it can also remain intentionally broad when needed. When the focus shifts to the national or even local level, however, the vagueness of the water security concept can yield positive outcomes. Some argue that by “encompassing undetermined parameters such as a *sufficient quantity* and *quality of freshwater* and an *acceptable level of water-related risk and repercussions*, the definition offers communities considerable flexibility in how they implement the concept” (Magsig, 2020, p. 47).

Conclusion

The concept of water security was studied with a focus on the trends of its evolution in real time and its interactions with two other key water-related concepts. While scholars and water practitioners have developed a number of different theoretical frameworks, this paper focused on water security as the predominant concept in contemporary water discourse. The analysis demonstrated that, thanks to the fluidity of the concept, as well as dichotomous nature of water-related issues, its relevance is likely to continue increasing. Although the notion of water security is not explicitly mentioned in the UN resolution on the human right to water, or within SDGs, it is implicitly embedded in all related discussions. As a by-product, its scope continues to expand, incorporating new insights and perspectives.

Admittedly, for the sake of a deeper insight, water security could be further examined from a semantic perspective, and from the political, economic or environmental point of view. The paper chose a general approach to water, without specifying different types of water, and water resources, or economic classification of water as a public or economic good.

References:

- Bakker, K. (2012). Water Security: Research challenges and opportunities. *Science*, 337, 914-915. <https://doi.org/10.1126/SCIENCE.1226337>
- Cook, C., & Bakker, K. (2012). Water security: Debating an emerging paradigm. *Global Environmental Change*, 22(1), 94–102. <https://doi.org/10.1016/j.gloenvcha.2011.10.011>
- Distefano, T., & Kelly, S. (2017). Are we in deep water? Water scarcity and its limits to economic growth. *Ecological Economics*, 142, 130–147. <https://doi.org/10.1016/j.ecolecon.2017.06.019>
- Fischhendler, I. (2015). The securitization of water discourse: Theoretical foundations, research gaps and objectives of the special issue. *International Environmental Agreements*:

- Politics, Law and Economics*, 15(3), 245–255. <https://doi.org/10.1007/s10784-015-9277-6>
- Gerlak, A. K., House-Peters, L., Varady, R. G., Albrecht, T., Zúñiga-Terán, A., De Grenade, R. R., Cook, C., & Scott, C. A. (2018). Water security: A review of place-based research. *Environmental Science & Policy*, 82, 79–89. <https://doi.org/10.1016/j.envsci.2018.01.009>
- Gerlak, A. K., & Mukhtarov, F. (2015). ‘Ways of knowing’ water: Integrated water resources management and water security as complementary discourses. *International Environmental Agreements: Politics, Law and Economics*, 15(3), 257–272. <https://doi.org/10.1007/s10784-015-9278-5>
- Grey, D., & Sadoff, C. W. (2007). Sink or Swim? Water security for growth and development. *Water Policy*, 9(6), 545–571. <https://doi.org/10.2166/wp.2007.021>
- Ibrahim, I. (2021). Water as a human right, water as a commodity: can SDG6 be a compromise? *The International Journal of Human Rights*. 10.1080/13642987.2021.1945582.
- Institute for Water, Environment and Health (Ed.). (2013). *Water security and the global water agenda: A UN water analytical brief*. UNU INWEH.
- Jepson, W., Wutich, A., & Harris, L. (2019). Water-security capabilities and the human right to water. In F. Sultana & A. Loftus (Eds.), *Water Politics: Governance, Justice and the Right to Water* (pp. 84–98), Routledge. <https://doi.org/10.4324/9780429453571-7>
- Lautze, J., & Manthritilake, H. (2012). Water security: Old concepts, new package, what value? *Natural Resources Forum*, 36(2), 76–87. <https://doi.org/10.1111/j.1477-8947.2012.01448.x>
- Magsig, B. (2020). Water security: A litmus test for international law. *Review of European, Comparative & International Environmental Law*, 29(1), 44–55. <https://doi.org/10.1111/reel.12328>
- Ministerial Declaration of The Hague on Water Security in the 21st Century. (2000). Retrieved 5 October 2025, from <https://www.ielrc.org/content/e0012.pdf>
- Mirosa, O., & Harris, L. M. (2012). Human Right to Water Contemporary Challenges and Contours of a Global Debate. *Antipode*, Vol. 44, Issue 3, 932–949. <https://doi.org/10.1111/j.1467-8330.2011.00929.x>
- Roth, D., & Warner, J. (2008). Virtual water: Virtuous impact? The unsteady state of virtual water. *Agriculture and Human Values*, 25(2), 257–270. <https://doi.org/10.1007/s10460-007-9096-7>
- Taka, M., Ahopelto, L., Fallon, A., Heino, M., Kallio, M., Kinnunen, P., Niva, V., & Varis, O. (2021). The potential of water security in leveraging Agenda 2030. *One Earth*, 4(2), 258–268. <https://doi.org/10.1016/j.oneear.2021.01.007>
- UNESCO and UNESCO i-WSSM. (2019). *Water Security and the Sustainable Development Goals (Series I)*. Global Water Security Issues (GWSI) Series, UNESCO Publishing, Paris.
- UNESCO. UN-Water. (2020). *United Nations World Water Development Report 2020: Water and Climate Change*. Paris. Retrieved 15 October 2025, from <https://unesdoc.unesco.org/ark:/48223/pf0000372985/PDF/372985eng.pdf.multi>
- United Nations (1977). *Report of the United Nations Water Conference*, Mar de la Plata. E/CONF.70/29. Retrieved 5 October 2025 from <https://digitallibrary.un.org/record/724642?v=pdf>
- United Nations Committee on Economic, Social and Cultural Rights (2002). *General comment no. 15, The right to water (arts. 11 and 12 of the International Covenant on Economic, Social and Cultural Rights)*. 29th sess. Geneva. Retrieved 30 October 2025 from https://digitallibrary.un.org/record/486454/files/E_C-12_2002_11-EN.pdf?ln=en

- United Nations General Assembly (2010). Resolution adopted by the General Assembly on 28 July 2010. The human right to water and sanitation. A/RES/64/292 Retrieved 30 October 2025 from <https://digitallibrary.un.org/record/687002?v=pdf>
- Vörösmarty, C. J., Rodríguez Osuna, V., Cak, A. D., Bhaduri, A., Bunn, S. E., Corsi, F., Gastelumendi, J., Green, P., Harrison, I., Lawford, R., Marcotullio, P. J., McClain, M., McDonald, R., McIntyre, P., Palmer, M., Robarts, R. D., Szöllösi-Nagy, A., Tessler, Z., & Uhlenbrook, S. (2018). Ecosystem-based water security and the Sustainable Development Goals (SDGs). *Ecohydrology & Hydrobiology*, 18(4), 317–333. <https://doi.org/10.1016/j.ecohyd.2018.07.004>
- World Bank Group. (2024). *Water Security and Climate Change. Insights from Country Climate and Development Reports*. Retrieved 4 October 2025, from <https://documents1.worldbank.org/curated/en/099124511122431814/pdf/IDU-fa8a4c3a-fd8c-4810-9485-fb785b73d02d.pdf>
- World Health Organization (WHO) and the United Nations Children’s Fund (UNICEF). (2025). *Progress on household drinking water, sanitation and hygiene 2000–2024: special focus on inequalities*. Licence: CC BY-NC-SA 3.0 IGO. Retrieved 15 October 2025, from <https://washdata.org/reports/jmp-2025-wash-households>
- Zeitoun, M. (2011). The Global Web of National Water Security: The Global Web of National Water Security. *Global Policy*, 2(3), 286–296. <https://doi.org/10.1111/j.1758-5899.2011.00097.x>

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Section 2

CURRENT ISSUES OF DEVELOPMENT COOPERATION

HEALTH SECTOR AMID DECLINING FOREIGN AID: THE CASE OF BOTSWANA

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Abstract: This paper examines the challenges facing Botswana's health sector amid declining foreign aid. Although Botswana is often praised for its economic stability and progress in HIV/AIDS response, its health system remains reliant on external donors. The aim is to identify key challenges and evaluate the current state of the sector under reduced donor assistance. Using a case study approach supported by data analysis and literature review, the study highlights critical issues such as overdependence on diamond revenues, inefficiencies in the medical supply chain, and limited domestic capacity. A successful transition from aid dependence requires strategic planning, diversified funding sources, and strong institutions. Botswana, though relatively aid-independent, still faces major sector vulnerabilities, making it a key case for studying the shift from donor reliance to sustainable self-financing.

Keywords: Botswana, foreign aid, health sector, development assistance, PEPFAR, sustainability

JEL: I15, F35, O55

Introduction

Development assistance is currently undergoing a period of significant transformation, shaped by shifting geopolitical dynamics and global crises such as the COVID-19 pandemic and Russia's invasion of Ukraine. Key donors, including the United States, the United Kingdom, and EU member states, are gradually reassessing their foreign policy priorities and reducing their commitments to official development assistance (ODA). The rapid rise of security threats and growing international tensions are prompting a reallocation of funds towards defence budgets, placing increased pressure on the efficiency, transparency, and strategic focus of development cooperation (Institute for Economics and Peace, 2025).

Africa is an important example because its history, from the colonial period to independence, left many countries in a vulnerable position. After getting independence in the 1960s, many African countries relied on foreign aid to support development, stability, and democracy (Fentahun, 2023). However, the current state of public health in Africa is alarming. The continent faces serious challenges, including declining aid, high public debt, limited domestic funding, and frequent epidemics such as Mpox, Ebola, cholera, measles, and Marburg, which strain already fragile systems. The number of public health emergencies has increased in recent years. Over 90% of vaccines, medicines, and diagnostic tools are imported, leaving countries vulnerable to global supply chain shocks. Climate change and humanitarian crises add further pressure, while health systems struggle with underfunding, staff shortages, and weak infrastructure (Africa CDC, 2025). Cuts in USAID funding had an immediate impact on health sector in Africa. Many skilled health workers lost their jobs, and numerous clinics had to close. Essential services, such as HIV testing, treatment,

and prevention, were greatly reduced. Funding shortfalls also affected research: many HIV and tuberculosis clinical studies were put at risk, and universities struggled to employ staff and maintain ongoing projects (Murray & Venter, 2025). Despite the 2001 Abuja Declaration by the African Union, which recommended that countries allocate at least 15% of their budgets to health sector (African Union, 2001), most states still fail to reach even half of this target, leaving their health systems vulnerable and dependent on donors.

Botswana was selected for this case study because it stands out as one of the few upper-middle-income countries in Sub-Saharan Africa with an ODA to GNI ratio below 1%, reflecting relative financial independence from foreign aid. Unlike highly aid-dependent countries such as the Central African Republic, Malawi, Mozambique, and the Democratic Republic of Congo, Botswana has made significant progress in reducing external assistance. Having recently “graduated” to upper-middle-income status, Botswana represents an important example of a country transitioning away from traditional aid dependence. This transition is especially relevant as many other countries in the region aim to follow a similar path. Still, Botswana faces serious challenges such as medicine shortages and funding gaps, showing that even more economically stable countries struggle with sustainable health sector financing. Despite its economic achievements and progress in HIV/AIDS control, Botswana’s health sector remains reliant on external support, highlighting ongoing vulnerabilities. This makes Botswana an important case to study the challenges of transitioning away from aid and ensuring health system resilience in a context of changing financial dynamics.

1 Literature Review

Many economists have studied the issue of development dependence, with a particular focus on Sub-Saharan Africa. Among experts, Botswana is often highlighted as a leading example within the region, thanks to its decline in HIV prevalence and improvements in several economic indicators. However, as we will see later, even in Botswana there are significant limitations and challenges that affect the country’s development and health sector.

An insightful study by Kwete et al. (2021) helps us to understand how health priorities are decided when countries depend on foreign aid. The authors created a framework used primary data from Ethiopia, Nigeria, and Tanzania. These three countries were chosen from a group of seven African countries in the China–Harvard–Africa Network, which also included Botswana. The framework looks at four areas: Principles, Players, Processes, and Products. The study found that in countries more dependent on foreign aid, like Ethiopia (22%) and Tanzania (32%), donors had a stronger influence on health priorities. In Nigeria, where external funding was under 10% of total health spending, local leaders, especially top government officials, had more control. Common practices included collaborative planning and political discussions, and national health strategies were often used.

Even though African countries are making progress in development and living standards, their health systems still rely heavily on foreign aid. MacPherson et al. (2025) show that if funding for programs like PEPFAR⁸ is suddenly cut, it could immediately harm efforts to fight infectious diseases and disrupt diagnosis, treatment, and monitoring. These cuts not only create short-term health risks but can also slow down long-term progress, showing that relying on external funding remains a major challenge for African countries. For many years, African countries have depended on foreign aid to support their health sector budgets, with Sub-Saharan Africa receiving more than a third of U.S. foreign assistance. When the U.S. abruptly suspended this aid in January 2025, it created chaos and uncertainty. The speed and scale

⁸ The U.S. President’s Emergency Plan for AIDS Relief (PEPFAR) is a multi-billion-dollar program to combat HIV/AIDS, launched by the U.S. government in 2003.

of the cuts put basic health services at risk, disrupted HIV, tuberculosis, and malaria programs, and caused shortages of staff, medicines, and technical support.

Mutapi (2025) highlights that Africa's heavy reliance on foreign aid in health sector limits countries' ability to set their own priorities. Donor-driven programs often focus on individual diseases rather than strengthening the overall health system, making it harder to respond to diverse health challenges. She suggests that countries could reduce this dependence by improving domestic funding through health taxes, government investment, private partnerships, and local medicine production. Addressing these issues is crucial for building stronger, more self-reliant health sector in Africa.

Thokwane et al. (2022) analyze Botswana's reliance on external support in the health sector, highlighting key systemic challenges. Although Botswana meets the Abuja Declaration's health budget target, the system remains under strain due to limited specialist care, heavy reliance on expensive private and foreign services, and a reactive, treatment-focused approach. The country has frequently relied on partners such as Cuba, China, Egypt, and faith-based NGOs for specialist services, but these partnerships have had limited lasting impact. The authors argue that future efforts should adopt Global Health Diplomacy principles, promoting strategic, sustainable partnerships that integrate training, capacity development, and long-term planning, rather than short-term aid.

2 The Case of Botswana

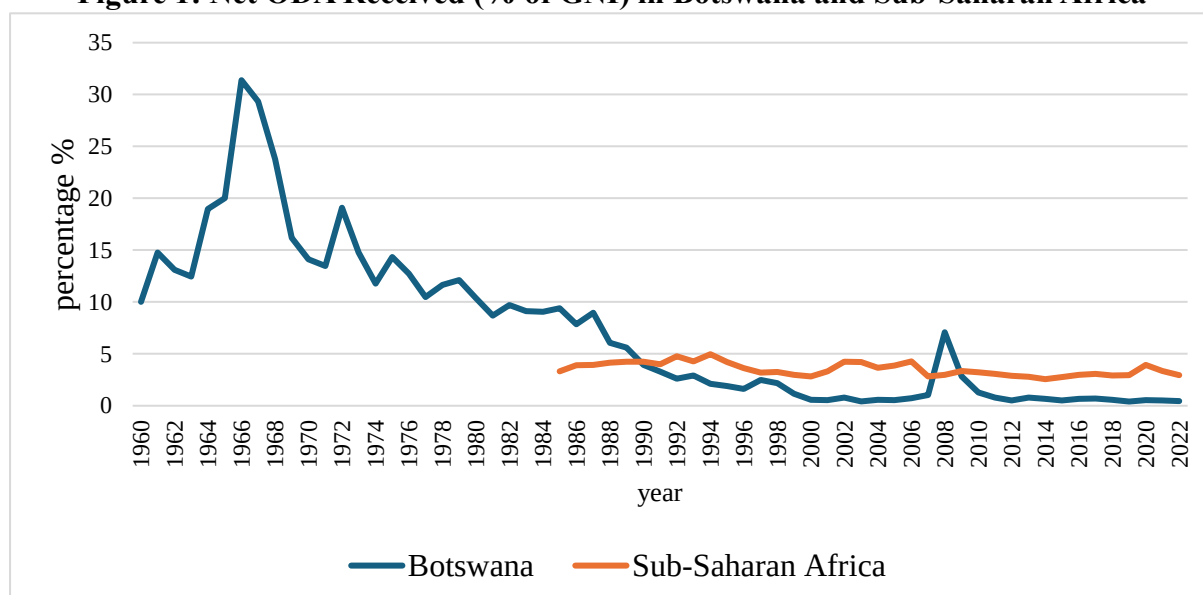
When Botswana gained independence in 1966, it was among the poorest African countries, with weak infrastructure, limited agriculture, and a largely uneducated population. Despite these challenges, Botswana achieved an impressive average annual per capita income growth of 7.7% between 1965 and 1998 (Talesco, 2015). Botswana's past economic success was driven by its commitment to political and economic openness, which helped the country move from poverty to stability and offers valuable lessons for other Sub-Saharan African countries (Hope, 1998). Its significant growth was mainly driven by its diamond industry, developed in partnership with South African mining firms. Foreign aid, especially programs like PEPFAR, played a crucial role in addressing health challenges like HIV/AIDS by funding prevention, care, and antiretroviral treatment, greatly improving health outcomes. Moreover, Botswana's response to HIV/AIDS turned the disease into a major national and politically charged issue. Through public-private partnerships and international aid, health became a political commodity. Astrid Bochow even directly labels health as a commodity in Botswana. During the HIV/AIDS pandemic, the government focused on the economic importance of health. Projects like Bokamoso hospital tried to make healthcare more like a business, changing the idea of health from a basic right to something with financial value. The opening of Bokamoso hospital showed a step toward being more independent, relying less on foreign aid and building a health sector that can support itself (Bochow, 2015).

To fully understand Botswana's gradual move away from foreign aid dependency, it is essential to examine the key strategies that enabled this transition. Botswana reduced its reliance on foreign aid by focusing on strategic development planning, managing diamond revenues wisely, and forming key partnerships. Through focused efforts and long-term vision, the country gradually strengthened its economic resilience. Important parts of this process were the National Development Plans (NDPs), which coordinated development activities even before independence. The first transitional plan (1966–1968) established the basis for directing government spending and donor support, setting priorities and involving private sector actors, NGOs, and civil society (World Bank, 2004). The Ministry of Finance and Development Planning also played a crucial role in coordinating donors, reducing inefficiencies, and aligning aid with national priorities (Kerapeletswe et al., 2008). Botswana's careful management of its natural wealth was also essential, along with its budgeting and reinvestment of diamond

revenues into infrastructure, social services, and reserves. The Sovereign Wealth Fund, created in the 1990s and made up of the Pula Fund and the Government Investment Account, helped the country manage surpluses systematically (Jefferis, 2024). Equally important was Botswana's partnership with the South African company De Beers through the joint venture Debswana, which remains the main source of mining revenue. The government receives most profits from dividends, royalties, and taxes (Finančné noviny, 2023).

Figure 1 shows Botswana's ODA as a share of Gross National Income (GNI), a common measure of aid dependency used by the United Nations Development Programme (UNDP, 2011). After gaining independence in 1966, Botswana's ODA to GNI ratio was very high. By 1990, benefiting from its neutral position during the Cold War, the country had one of the highest ODA per capita rates. A sharp rise occurred in 2008 due to increased U.S. HIV/AIDS funding and substantial debt relief from OECD countries. Since 2011, the ratio has stayed below 1%, reflecting Botswana's economic growth and reduced reliance on foreign aid (Reynolds & Anderson, 2017).

Figure 1: Net ODA Received (% of GNI) in Botswana and Sub-Saharan Africa



Source: OECD. (n.d.). Net ODA received (% of GNI) – Botswana. *World Bank Data*. Retrieved [2024-09-23], from <https://data.worldbank.org/indicator/DT.ODA.ODAT.GN.ZS?contextual=default&end=2022&locations=BW&start=1960&view=chart&year=2022>

However, the health sector risks funding gaps, medicine shortages and weaker services during this shift. The workforce is vulnerable because donor-built capacity is rarely sustained by local budgets, causing staff shortages and lower care quality. Monitoring the health sector is vital to assess capacity and risks when moving away from aid (Huffstetler et al., 2022).

Although Botswana's health sector is less dependent on development aid than before, it still relies on external support. To understand the current situation, we can observe recent trends. Due to declining support from even external donors, Botswana carried out a comprehensive health financing study from June to August 2025. The study clarified funding and spending for healthcare and HIV/AIDS programs, aiming to improve resource allocation and policy planning (Panwar, 2025). Another sign of challenges in Botswana's health sector is the president's declaration of a public health emergency on August 26, 2025. This followed chronic shortages of medicines and supplies caused by falling diamond revenues and reduced foreign aid, particularly from the US. The declaration underscores the risks of dependence

on a single natural resource and external funding, resulting in strained health infrastructure, growing debt, and limited treatment access (Mitchell, 2025).

3 Botswana's Internal and External Health Financing Challenges

Botswana is shifting from heavy foreign aid dependence toward greater self-reliance, but challenges persist. Despite progress in HIV/AIDS control and reduced aid reliance, health sector remains vulnerable. The recent public health emergency highlights ongoing dependence on external funding and the difficulties even stable economies face in fully financing essential services. Botswana continues to struggle with complex internal and external factors limiting full financial independence in health sector. The key issues are outlined as follows:

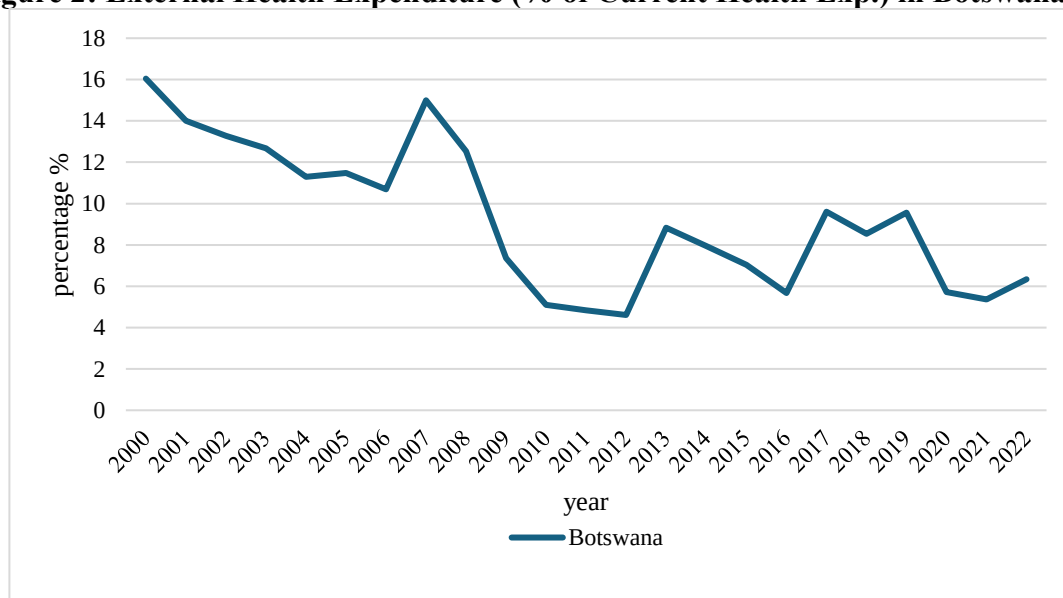
1. *Dependence on the diamond sector.* Botswana's economy still relies heavily on diamonds, which make up about 80% of its foreign earnings. Despite careful management and partnerships, recent drops in diamond sales have reduced government revenue, forcing spending cuts such as the recent suspension of government purchase. This dependence threatens financial stability and limits funding for key sectors such as the health sector. UNICEF warns of a worsening health crisis, with one in five children near the Namibian border suffering from undernutrition (Al Jazeera, 2025). Botswana's economy remains insufficiently diversified, which continues to limit long-term and sustainable growth. Slow progress in developing a competitive, export-oriented private sector is due to weak reforms, limited foreign investment, fragmented policies, poor infrastructure (e.g., air transport, digital connectivity), complex regulations, weak government capacity, and many state-owned enterprises. These challenges result in low productivity, weak job creation, and slow wage growth (Diaz-Bonilla et al., 2023).

2. *Challenges in Botswana's Medical Supply Chain.* The Central Medical Stores (CMS), responsible for purchasing and delivering medicines, has faced inefficiency and overpricing, sometimes up to ten times market rates. President Duma Boko cited these issues as factors in the health crisis, while CMS blamed middlemen for rising costs. In August 2025, the Ministry of Health revealed debts of about 74 million USD to private clinics and suppliers, leading to postponed non-urgent surgeries. To improve distribution, the army was allocated 18.7 million USD to manage medicine delivery. Experts from the University of Botswana suggest lasting improvement requires making CMS an independent, professionally managed institution (Southern African Times, 2025). These supply chain challenges directly impact public health facilities in Botswana, including Princess Marina Hospital (PMH) in Gaborone, the country's largest hospital. PMH faces low local manufacturing, raw material shortages, a small pharmaceutical market, inefficient logistics, and poor CMS coordination. Regulatory barriers like limited registered medicines, slow approvals, understaffing, and weak management worsen shortages and reduce care quality (Modutlwa et al., 2023). Recently, Botswana received over 36 tonnes of emergency medicines from the IDA Foundation (Logistics Update Africa, 2025) and nearly two tonnes of essential cancer medication for children from Cyprus under the Cyprus International Action Plan (OncoDaily, 2025). While these shipments provide critical short-term relief, systemic supply chain reforms are essential for sustainable healthcare access.

3. *Dependence on PEPFAR and the challenges of transitioning from donor support.* Even before the planned funding cuts, Botswana, as an upper-middle-income country, was already expected to reduce its dependence on donor aid, including a phased reduction of PEPFAR funding. With support from both PEPFAR and the Global Fund, the country initiated the development of a sustainability plan to manage this transition. However, in 2024, Cindy Kelemi, executive director of BONELA, a local civil society group focused on human rights and HIV advocacy, warned that ongoing funding gaps threaten hard-won progress. Her statement highlights that Botswana's financial and systemic challenges predate the most recent donor reductions, further complicating its path toward full self-sufficiency (Ravelo, 2024). Despite limited data for the last two to three years (2022-2025), *Figure 2* suggests

a gradual decline in external health financing in Botswana, though with greater fluctuations compared to the steadier decrease in total ODA/GNI shown in *Figure 1*. *Table 1* indicates that major donors remain active in the health sector, but reduced support from key donors may raise the importance of smaller or emerging contributors, including non-DAC donors.

Figure 2: External Health Expenditure (% of Current Health Exp.) in Botswana



Source: World Bank. (2025). External health expenditure (% of current health expenditure) – Botswana.

World Bank Data. Retrieved [2025-09-23], from

<https://data.worldbank.org/indicator/SH.XPD.EHEX.CH.ZS?locations=BW>

Table 1: Main health development partners in Botswana

<i>Development partners in Botswana</i>	<i>Health</i>	<i>Development partners in Botswana</i>	<i>Health</i>
African Development Bank	x	Japan	
African Union	x	PEPFAR	x
Centers for Disease Control and Prevention	x	Norway	x
China		Roll Back Malaria	x
Cuba	x	Rotary International	x
European Union		Russian Federation	
France		Sweden	x
GAVI	x	Southern African Development Community (SADC)	x
Germany	x	United Kingdom	x
Global Fund	x	UN agencies	x
Global Polio Eradication Initiative	x	United States Agency for International Development (USAID)	x
India		World Bank	x

Source: World Health Organization. (2024). *Country cooperation strategy 2024–2027: Botswana* (pp. 14–15). WHO African Region. Retrieved [2025-09-13], from <https://www.who.int/publications/i/item/9789290313991>

4. *Internal barriers in the health sector in responding to external shocks*. According to WHO, key internal challenges limiting Botswana’s ability to respond to external shocks

include a shortage of qualified community health workers and weak local structures like Village Development Committees (VDCs). Most health initiatives remain focused at the national level, limiting regional and local engagement. Other issues include undertrained emergency staff, low retention rates, and poor integration of COVID-19 lessons into planning. Delays in formalizing critical structures like the Public Health Emergency Operation Centre and the National Action Plan for Public Health Surveillance further weaken crisis response. These internal barriers hinder Botswana's ability to manage reduced aid and external health threats (World Health Organization, 2024).

5. Limited Domestic Capacities. Despite progress in public health, Botswana lacks the capacity to fully take over donor-funded health programs. In 2023–2024, the National AIDS & Health Promotion Agency cut funding to civil society organizations by about 30%. According to BONELA, this reflects limited financial and institutional resources to sustain key community-based services. The reduction underscores that Botswana is not yet fully self-reliant in managing essential health programs, especially for vulnerable groups (Ravelo, 2024).

6. HIV/AIDS in Botswana: Remarkable Progress Amid Persistent Risks. One of the main reasons Botswana is internationally praised is its exceptional success in fighting this epidemic. It became the third country in the world to meet and surpass the UNAIDS 95–95–95 targets, with 95% of people living with HIV aware of their status, 98% of those on treatment, and 98% achieving viral suppression. This achievement is the result of long-term political commitment, strong domestic funding (covering around 60% of total HIV spending), partnerships with the private sector and international organizations (such as the Gates Foundation, Merck, PEPFAR, and the Global Fund), and progressive public health strategies. Key milestones include being the first African country to offer free antiretroviral therapy (ART), launching routine HIV testing in 2004, adopting the Treat All policy in 2016, and introducing lifelong treatment for HIV-positive pregnant women. Between 2002 and 2020, AIDS-related deaths fell by 72%, new infections by 61%, and mother-to-child transmission to just 2.2%, earning WHO silver-tier certification. While these results show that Botswana is firmly on track to end AIDS as a public health threat by 2030, the persistently high HIV prevalence (20.8%) and emerging global challenges now put this progress at risk (Thornton, 2022).

While Botswana has emerged as a global leader in HIV/AIDS control, its approach is not yet fully sustainable. As Uwishema et al. (2025) observe, the country remains positioned between a donor-dependent system and a fully self-sustaining HIV financing model. It has made considerable progress, including the integration of the SDGs into its Vision 2036 strategy, the adoption of the Integrated National Financing Framework, and the alignment of HIV care with national health planning and fiscal decentralization, all of which reflect strong political will. Nonetheless, several key gaps persist. Botswana still lacks a fully self-financed HIV budget, diversified domestic revenue sources such as social health insurance, and innovative, context-specific financing mechanisms like sustainable taxation. In addition, although HIV services are increasingly linked to the broader national system, full integration within a Universal Health Coverage framework has yet to be achieved.

Conclusion

Botswana is preparing to launch its Twelfth National Development Plan (2025–2030), presenting a crucial opportunity to tackle ongoing challenges in health financing and advance the broader objectives of Vision 2036 and the National Transformation Strategy. Despite significant progress in reducing foreign aid dependence, the country remains vulnerable. Recent public health emergencies have underscored the continued reliance on external assistance, particularly amid declining diamond revenues and reduced donor support. Key challenges include limited economic diversification, inefficiencies in the medical supply chain, and gaps in the transition from donor-funded programs such as PEPFAR. Internal systemic weaknesses,

including limited local healthcare capacity and delays in emergency preparedness planning, further limit Botswana's ability to respond effectively to health crises.

Thokwane et al. (2022) highlighted the critical role of strategic and sustainable partnerships through Global Health Diplomacy, a concept clearly reflected in Botswana's experience. The recent emergency aid shipments from Cyprus and the IDA Foundation, as referenced in this study, demonstrate how such partnerships are essential for securing vital health supplies during crises. This example reinforces the ongoing dependence of even relatively stable countries on foreign aid, echoing findings by MacPherson et al. regarding the risks posed by sudden funding cuts to major programs like PEPFAR. The abrupt suspension of USAID in January 2025 caused significant disruption to regional health services, illustrating that long-term sustainability of health systems in Africa continues to rely heavily on external assistance.

While Botswana is internationally recognized for its remarkable achievements in HIV/AIDS control, its health financing model is not yet fully sustainable. The country lacks a sufficiently diversified domestic revenue base and has yet to fully integrate HIV services into a comprehensive universal health coverage framework. As traditional health funding declines, smaller and emerging donors may play an increasingly important role. Addressing these challenges will require strong political leadership, ongoing reforms, and innovative health financing approaches to ensure Botswana's progress toward self-reliance and sustainable health outcomes.

References:

- Africa CDC. (2025). Africa's health financing in a new era. *Africa Centres for Disease Control and Prevention*. Retrieved [2025-09-13], from <https://africacdc.org/download/africas-health-financing-in-a-new-era-april-2025/>
- African Union. (2001). *Abuja declaration on HIV/AIDS, tuberculosis and other infectious diseases*. Retrieved [2025-09-13], from <https://au.int/sites/default/files/pages/32894-file-2001-abuja-declaration.pdf>
- Al Jazeera. (2025). Botswana declares public health emergency over medicine shortage. *Al Jazeera*. Retrieved [2025-09-23], from <https://www.aljazeera.com/news/2025/8/26/botswana-declares-public-health-emergency-over-medicine-shortage>
- Bochow, A. (2015). A future beyond HIV/AIDS? Health as a political commodity in Botswana. *Africa Spectrum*, 50(1), 30–37. Retrieved [2025-09-18], from <https://www.jstor.org/stable/24589178>
- Diaz-Bonilla, C., et al. (2023). *Botswana - Systematic country diagnostic update: At a crossroads - Reigniting efficient and inclusive growth* (pp. 28–30). World Bank Group. Retrieved [2025-09-23], from <http://documents.worldbank.org/curated/en/099112023112034378>
- Fentahun, G. (2023). Foreign aid in the post-colonial Africa: Means for building democracy or ensuring Western domination? *Cogent Social Sciences*, 9(1), 1–2. <https://doi.org/10.1080/23311886.2023.2241257>
- Finančné noviny. (2023). Botswana a De Beers podpísali novú zmluvu. Retrieved [2025-01-25], from <https://financnenoviny.com/botswana-a-de-beers-podpisali-novu-zmluvu/>
- Hope, K. R. (1998). Development policy and economic performance in Botswana: Lessons for the transition economies in Sub-Saharan Africa. *Journal of International Development*, 10(5), 539–554. [https://doi.org/10.1002/\(SICI\)1099-1328\(199806\)10:4<539::AID-JID544>3.0.CO;2-I](https://doi.org/10.1002/(SICI)1099-1328(199806)10:4<539::AID-JID544>3.0.CO;2-I)
- Huffstetler, H. E., et al. (2022). The impacts of donor transitions on health systems in middle-income countries: A scoping review. *Health Policy and Planning*, 37(9), 1188–1202. <https://academic.oup.com/heapol/article/37/9/1188/6651686>

- Institute for Economics & Peace. (2025). *Official development assistance: Geopolitical tensions, economic constraints & shifting priorities* (pp. 1–11). Retrieved [2025-05-01], from <http://visionofhumanity.org/resources>
- Jefferis, K. (2024). Management of Botswana's diamond revenues. *IMF PFM Blog*. Retrieved [2025-01-24], from <https://blog-pfm.imf.org/en/pfmblog/2024/07/management-of-botswana-diamond-revenues>
- Kerapeletswe, C., et al. (2008). *Managing aid exit and transformation: Botswana country* (p. 18). Swedish International Development Cooperation Agency.
- Kwete, X. J., et al. (2021). Health priority-setting for official development assistance in low-income and middle-income countries: A best fit framework synthesis study with primary data from Ethiopia, Nigeria and Tanzania. *BMC Public Health*, 21(2138), 1–13. <https://doi.org/10.1186/s12889-021-12205-6>
- Logistics Update Africa. (2025). Logistics providers join hands to deliver IDA Foundation aid to Botswana. *Logistics Update Africa*. Retrieved [2025-09-22], from <https://www.logupdateafrica.com/air-cargo/logistics-providers-join-hands-to-deliver-ida-foundation-aid-to-botswana-1356494>
- MacPherson, P., et al. (2025). Reductions in development assistance for health funding threaten decades of progress in Africa. *PLOS Medicine*. Retrieved [2025-09-12], from <https://journals.plos.org/plosmedicine/article?id=10.1371/journal.pmed.1004695>
- Magoola, J., et al. (2025). United States foreign aid freezes: A wake-up call for African countries to increase health financing. *Journal of Interventional Epidemiology and Public Health*, 8(2). <https://doi.org/10.37432/jieph-d-25-00055>
- Mitchell, O. (2025). Diamond-rich Botswana declares national public health emergency. *BBC News*. Retrieved [2025-09-13], from <https://www.bbc.com/news/articles/c78zg67x38zo>
- Modutlwa, N., et al. (2023). The supply and demand challenges of medicines at Princess Marina Hospital, Gaborone, Botswana. *International Journal of Innovation in Management Economics and Social Sciences*, 3(3), 1–9. <https://doi.org/10.59615/ijimes.3.3.1>
- Murray, W. L., & Venter, F. (2025). The impact of United States Government cuts to funding on South African healthcare and research. *Wits Journal of Clinical Medicine*, 7(2), 87–90. Retrieved [2025-09-13], from <http://dx.doi.org/10.18772/26180197.2025.v7n2a8>
- Mutapi, F. (2025). Africa relies too heavily on foreign aid for health – 4 ways to fix this. *The Conversation*. Retrieved [2025-09-16], from <https://doi.org/10.64628/AAJ.ggjammqek>
- OECD. (n.d.). Net ODA received (% of GNI) – Botswana. *World Bank Data*. Retrieved [2024-09-23], from <https://data.worldbank.org/indicator/DT.ODA.ODAT.GN.ZS?contextual=default&en=2022&locations=BW&start=1960&view=chart&year=2022>
- OncoDaily. (2025). Emergency aid delivered: Two tons of medicines for children with cancer in Botswana. *OncoDaily*. Retrieved [2025-09-22], from <https://oncodaily.com/positive/botswana-325958>
- Panwar, V. (2025). Botswana commissions health financing study amid aid cuts. *P4H*. Retrieved [2025-09-13], from <https://p4h.world/en/news/botswana-commissions-health-financing-study-amid-aid-cuts/>
- Ravelo, J. L. (2024). What a PEPFAR funding cut could mean for the HIV response in Botswana. *Devex*. Retrieved [2025-09-19], from <https://www.devex.com/news/what-a-pepfar-funding-cut-could-mean-for-the-hiv-response-in-botswana-107906>
- Reynolds, T., & Anderson, L. (2017). Aid and self-sufficiency: Case study - Botswana. *University of Washington*. Retrieved [2024-01-18], from <https://epar.evans.uw.edu/aid-and-economic-self-sufficiency/>
- Southern African Times. (2025). How economic strain and aid cuts drove Botswana to declare a public health emergency. *Southern African Times*. Retrieved [2025-09-19], from

- <https://southernafricantimes.com/how-economic-strain-and-aid-cuts-drovebotswana-to-declare-a-public-health-emergency/>
- Talesco, C. (2015). Aid effectiveness and development policies in Botswana: A successful story. *Millennium Development Goals (MDGs) in Retrospect*. (pp. 247–266). Springer. https://doi.org/10.1007/978-3-319-16166-2_16
- Thokwane, K., et al. (2022). Global health diplomacy: Provision of specialist medical services in the Republic of Botswana. *The Surgeon*, 20(4), 258–261. <https://doi.org/10.1016/j.surge.2021.04.011>
- Thornton, J. (2022). *Botswana's HIV/AIDS success*. *The Lancet*. Retrieved [2025-09-13], from <https://www.proquest.com/scholarly-journals/botswanas-hiv-aidssuccess/docview/2701012798/se-2>
- UNDP. (2011). *Towards human resilience: Sustaining MDG progress in an age of economic uncertainty* (pp. 152–153). United Nations Development Programme.
- Uwishema, O., et al. (2025). A wake-up call: Can Africa sustain HIV/AIDS programs without foreign aid? *Health Science Reports*, 8(9), 3. <https://doi.org/10.1002/hsr2.71248>
- World Bank. (2004). *Botswana - Towards prosperity for all: A comprehensive development framework profile* (pp. 4–5). World Bank Group. Retrieved [2025-01-19], from <http://documents.worldbank.org/curated/en/244321468005714046/Botswana-T>
- World Bank. (2025). External health expenditure (% of current health expenditure) – Botswana. *World Bank Data*. Retrieved [2025-09-23], from <https://data.worldbank.org/indicator/SH.XPD.EHEX.CH.ZS?locations=BW>
- World Health Organization. (2024). *Country cooperation strategy 2024–2027: Botswana* (p. 11-15). WHO African Region. <https://www.who.int/publications/i/item/9789290313991>

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THE BALKAN GATEWAY: CHINA'S EXPANDING ROLE IN SERBIA'S ECONOMY AND GOVERNANCE

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Abstract: This paper examines China's deepening involvement in Serbia's economy and governance within the framework of the Belt and Road Initiative. Using a qualitative analysis of political and economic cooperation, the study highlights the dual role of Chinese engagement as both a driver of modernization and a source of governance and transparency challenges. Findings reveal that while Chinese investments have contributed to Serbia's infrastructure and growth, they also raise concerns over dependency, political alignment and institutional integrity of Serbia. The paper contributes to the debate on China's strategic influence in the Western Balkans and its implications for European integration.

Keywords: China, Serbia, Belt and Road Initiative, foreign investment, governance, Balkans

JEL: F21, F35, O19, P33

Introduction

In the last two decades, China has emerged as a formidable global actor whose influence extends far beyond its immediate neighbourhood. As part of its Belt and Road Initiative (BRI), launched in 2013, Beijing has sought to expand its presence across Eurasia, Africa, and Latin America through a combination of infrastructure development, trade agreements, loans, and strategic investments. While much attention has been paid to China's engagement with major economies in Western Europe and Asia, the Balkans - and Serbia in particular - have quietly become a focal point of Beijing's ambitions. For China, Serbia is more than just a small Southeast European state; it represents a symbolic and strategic gateway to the Balkans (Benedetto, 2024).

Dramatic shifts in the political situation in the country, such as the dissolution of the state union Serbia and Montenegro (2006) and the declaration of independence of Kosovo (2008), caused political instability and inhibited the economic potential of the country. The political and economic evolution of Serbia has been marked by instability and institutional challenges. As Benedetto (2024) notes, that as a "latecomer in economic and political transition, Serbia has experienced a turbulent period over the last two decades characterized by political instability, institutional failure, and modest economic performance. Initially, it followed the same path as other transition countries: liberalisation, deregulation, macroeconomic stabilisation, and privatisation of state-owned enterprises (p. 66)." According to Ivanović and Zakić (2023), Serbia's unique geopolitical position has made it a promising partner for Beijing. Ruled by an illiberal government and situated at the crossroads between the East and the West, outside the European Union but with aspirations for accession, Serbia offers China a relatively open political and economic environment in which to expand. Geographically speaking, this "narrow, landlocked region has limited political and economic potential" (Dimitrijević & Jokanović, 2016, p. 327). According to Stanojević (2025), it is also important to note that Serbia, which maintains a stance of formal military neutrality, is surrounded by NATO member states, except for Bosnia and Herzegovina. Consequently, Serbia's foreign policy strategy is dependent on effective collaboration with countries that exert significant

political and economic influence on the global arena, such as Russia and China (Imsirovic et al., 2024).

The bilateral relationship between Serbia and the People's Republic of China has flourished, especially since the early 2010s, and it was marked by important agreements in energy, transport, manufacturing, and technology (Lazaj et al., 2024). Chinese companies have made substantial investments across a wide range of sectors in Serbia. Their involvement spans from the comprehensive modernization of key railway lines, such as those linking Belgrade with Budapest, to strategic acquisitions in critical industries like steel production and mining. In addition, Chinese firms have undertaken numerous large-scale construction projects, further cementing their role in shaping Serbia's infrastructure and industrial landscape. Acquisitions in the steel and mining industries and large-scale construction projects funded by Chinese loans have fostered a perception of China as a reliable partner, filling gaps left by Western investors and institutions (Ivanović and Zakić, 2023; Benedetto, 2024; Zubaľová, 2023). This paper explores the dual dimensions of China's involvement in Serbia: its economic role as a leading investor and its political influence as a partner shaping governance and foreign policy decisions. By analyzing key Chinese investment projects and the broader geopolitical context, the study aims to shed light on how Serbia functions as a Balkan gateway for China's strategic ambitions. In doing so, it highlights the complex interplay between economic pragmatism and political alignment, and the ways in which external actors are reshaping Southeastern Europe.

1 Chinese Infrastructural Investments and Strategic Projects in Serbia

China's growing presence in Serbia is exemplified by its strategic infrastructural investments, which not only enhance local connectivity but also reflect Beijing's broader geopolitical and economic ambition. According to Hermann (2024), China's flagship investment is the Mihajlo Pupin Bridge, a 1,507-meter-long road bridge in Belgrade that connects the neighbourhoods of Zemun and Borča. Even before the large-scale construction project began, the bridge was colloquially called the "Chinese Bridge", later it was named after the inventor, electrical engineer and physicist Mihajlo Idvorski Pupin. The bridge was constructed by the China Road and Bridge Corporation at a cost exceeding \$360 million, with 85% of the funding provided through loans from the EXIM Bank of China. Dimitrijević (2022) emphasizes, that the Mihajlo Pupin bridge was China's first big infrastructure investment on the European continent. Shortly before its ceremonial opening the Chinese partners installed a commemorative slab made out of black marble marking the opening date, but it sparked controversy: the inscription contained grammatical errors and the slab resembled a traditional Serbian gravestone. Following public protests, it was replaced (Nikolic, 2014).

Politically, the Mihajlo Pupin Bridge symbolizes the consolidation of the strategic partnership between Serbia and China. As one of the earliest major undertakings within the "16+1 Cooperation Framework," later integrated into the China - Central and Eastern Europe Initiative (China – CEE Initiative), the project has been consistently highlighted by Serbian officials as evidence of the countries' "iron-clad friendship" (srb. čelično prijateljstvo). For Serbia, the bridge represents both an infrastructural achievement and a diplomatic statement, an affirmation of its policy of balancing relations among key global actors, including the People's Republic of China. For Beijing, it underscores the success of its soft-power and diplomacy. However, the project also raises questions concerning transparency and debt exposure. According to Stanojević (2025), the absence of a comprehensive investment-screening mechanism leaves potential risks to national security and governance oversight insufficiently addressed. In this context, the Mihajlo Pupin Bridge exemplifies the dual nature of Chinese infrastructural involvement in the Western Balkans: it provides tangible developmental benefits while simultaneously embedding Serbia more deeply within China's

expanding economic and geopolitical framework. The bridge, therefore, functions as both a physical and symbolic conduit, linking two nations bound by mutual strategic interests.

A comparable example of China's strategic investment in Serbia is the E-763 "Miloš Veliki" highway (Preljina-Požega section). The E-763 was completed in 2025 by the China Communications Construction Company (CCCC) and it includes Serbia's two longest road tunnels: Laz (2,858 meters) and Munjino Brdo (2,861 meters). According to president Vučić the project reflects Serbia's transformation into a strong and modern state with safe and quality highways. During the opening ceremony that took place on July 5th 2025 at the entrance of the Munjino Brdo tunnel, Alexander Vučić emphasized strategic role of the newly constructed highway in linking Western and Central Serbia and eventually connecting the country to Montenegro and the Adriatic Sea. He also announced plans to extend the highway in the future and construct new branches from Požega and throughout Western Serbia. With a total investment exceeding 520 million U.S. dollars, the Preljina-Požega segment of the E-763 ranks among Serbia's largest infrastructure projects.

Among the most significant Chinese infrastructural projects in Europe is the construction of the Belgrade-Budapest rail route which connects the capital cities of Serbia and Hungary. China, Hungary and Serbia reached an agreement for the construction of the Belgrade-Budapest high-speed railway project at the summit of the "16+1 initiative" that took place in Belgrade in December 2014. The construction of the modern high-speed railway, undertaken by the China Railway International and the China Communications Construction Company, cost \$2.89 billion and it is the first stage of the planned route from Budapest to Athens. Hermann (2024) considers it a strategic link between the Port of Piraeus (an important Chinese foothold in Greece) with the heart of Europe. Thus, for China, the project represents a key segment of the Belt and Road Initiative, enabling faster and more efficient transportation of goods (Qianyu, 2023). Lazaj et al. (2024) consider it a demonstration of Beijing's capability to operate within the European Union's immediate neighbourhood and to cultivate partnerships that challenge traditional Western dominance in the region.

Within the European Union, concerns have been raised about the project's compliance with EU procurement regulations, transparency standards, and the potential for debt dependency. Serbia, as a non-EU member state, has pursued a more flexible approach to cooperation with China, engaging in the project to accelerate domestic development while maintaining political autonomy from Brussels. Hungary, on the other hand, has positioned the project as a cornerstone of its own "Eastern Opening" policy, which seeks to balance EU membership with closer ties to strong Asian economies (Peragovics & Szunomar, 2024). According to Peragovics and Szunomar (2024), the Belgrade - Budapest railway exemplifies the geopolitical ambitions embedded in China's European infrastructure strategy. It is not merely an economic corridor but also a political statement of China's capability to influence decision-making across Southeast and Central Europe. The integration of the Athenian Port of Piraeus, now majority-owned by the large Chinese state-owned enterprise COSCO Shipping, into this corridor further illustrates the consolidation of Chinese logistical networks across the Balkans and the Mediterranean.

2 The Novi Sad Tragedy and the Public Perceptions of Chinese Influence

The deepening ties between Beijing and Belgrade extend far beyond finance and construction, influencing Serbia's foreign policy orientation, governance practices, and even public perceptions of global power dynamics (Ivanović & Zakić, 2023). Serbian president, Aleksandar Vučić, frequently praises China as an alternative to what he views as the slow, inefficient and conditional approach of the European Union. This narrative strengthens domestic political legitimacy while allowing China to project soft power and gain a foothold in the region (Dimitrijević, 2020; Ivanović & Zakić, 2023; Siniša, 2024).

In an interview with China Central Television (CCTV) Vucić expressed his strong admiration for the country, stating, “I love China; as you can see, I’m not hiding it”. He further emphasized, “The country that I dedicated and devoted my life to is Serbia. But if you ask me whether I like China, I can tell you I love China” (Global Times, 2025). This narrative strengthens domestic political legitimacy while allowing China to project soft power and gain a foothold in the region (Benedetto, 2024). However, the deepening relationship between Beijing and the Serbian government has not been without controversy. The reconstruction of the Novi Sad railway station, involving Chinese companies China Railway International Co and China Communications Construction Co, led to a tragic roof collapse. As reported by Stanicek (2025),

“On 1 November 2024, a renovated concrete canopy collapsed at the railway station in Novi Sad, Serbia's second-largest city, killing 14 people on the spot and injuring several others (two more people died later, the 16th victim being a 19-year-old student). Just two days before the Novi Sad station collapse, the Commission's 2024 report on Serbia (in Chapter 5 on 'public procurement') warned that 'Serbia has a tendency to circumvent its legislation in this area [of public procurement] through intergovernmental agreements and special laws'. Observers note that, as the reconstruction of the railway station in Novi Sad was part of a 'capital state project' – the construction of a high-speed railway from Belgrade to Budapest – it was based on the bilateral agreement between Serbia and China and not subject to the Law on Public Procurement” (p. 1).

Moreover, investigations revealed fraudulent overbilling amounting to \$115.6 million, benefiting the Chinese consortium by \$18.8 million (Reuters, 2025). This tragic incident sparked widespread anti-government protests, with calls for accountability and early elections. Vujović (2025) emphasizes that, while „Novi Sad mourned the victims of the railway station tragedy by lighting candles, Serbian Prime Minister Miloš Vučević chose to travel to Shanghai. His apparent priority was to mitigate public outrage against the Chinese companies involved in the station’s reconstruction (para. 4).“ In the aftermath of this tragedy, the public opinion of Chinese investment projects shifted dramatically as people began questioning the safety standards and transparency of investment projects executed by Chinese companies (Vujović, 2025).

Conclusion

Over the past decades, China has emerged as a formidable global actor whose influence extends far beyond Asia. As part of its Belt and Road Initiative, Beijing has sought to expand its global presence through a combination of loans, trade agreements and strategic investments in numerous strategically important regions. China’s expanding engagement in Serbia illustrates the complex interplay between economic opportunity, political influence and public perception. Over the last two decades, Beijing has leveraged infrastructure projects, industrial investments, and financial cooperation to solidify its presence in the country, positioning Serbia as a key gateway for its Belt and Road Initiative into Southeast Europe (Benedetto, 2024; Stojanović-Višić et al., 2023; Stanojević, 2025). The construction of the Mihajlo Pupin Bridge, the E-763 “Miloš Veliki” highway, and the Belgrade - Budapest high-speed railway demonstrate China’s capability to deliver large-scale infrastructure projects while simultaneously cultivating political goodwill and strategic leverage.

According to the Prague Security Studies Institute (2019), Chinese firms have acquired several major Serbian companies and invested over USD 2 billion in greenfield projects, contributing significantly to the country’s economic development. At the same time, the growing Chinese presence in Serbia has sparked debates regarding transparency, debt exposure, environmental impact, and the implications for democratic governance (Petkova, 2021; Stojanović-Višić et al., 2023; Stanojević, 2025; Siniša, 2024). Chinese investments are often tied to opaque contractual terms, preferential treatment for Chinese firms,

and limited opportunities for local businesses to compete. Incidents like the Novi Sad railway station tragedy have exposed vulnerabilities in governance, regulatory oversight, and public accountability, triggering widespread criticism and reshaping public perceptions of Chinese investment (Vujović, 2025). Moreover, the political embrace of Beijing by Serbian authorities raises questions about the country's trajectory as it balances between its EU ascension aspirations and deepening relations with China and Russia (Stanojević, 2025; Tahirović, 2024).

References:

- Benedetto, A. (2024). The Chinese influence in Serbia and the implications for its EU accession process. In A. Bogoni & B. F. G. Fabrègue (Eds.), *The dragon at the gates of Europe: Chinese presence in the Balkans and Central-Eastern Europe* (pp. 584). Blue Europe.
- Bogoni, A., & Fabrègue, B. F. G. (Eds.). (2023). *The dragon at the gates of Europe: Chinese presence in the Balkans and Central-Eastern Europe* (Blue Europe ed.). Blue Europe. ISBN 979-8989739806
- Dimitrijević, D. (2018). Achievements and challenges for China investments in Serbia (Перспективы и проблемы привлечения китайских инвестиций в экономику Србии). *Administrative Consulting*, 88–101. <https://doi.org/10.22394/1726-1139-2018-6-88-101>
- Dimitrijević, D. (2020). Contemporary relations of Serbia and China in a changing world. In A. J. Lazić & A. Troude (Eds.), *Security challenges and the place of the Balkans and Serbia in a changing world* (pp. 246–272). Institute of International Politics and Economics; Faculty of Security Studies Belgrade. https://doi.org/10.18485/iipe_balkans_rssc.2020.ch16
- Dimitrijević, D. (2022). Chinese investments in Serbia – A joint pledge for the future of the New Silk Road. *Baltic Journal of European Studies*, 7(1), 71. <https://doi.org/10.1515/bjes-2017-0005>
- Dimitrijević, D., & Jokanović, N. (2016). Chinese investments in Serbia and the New Silk Road. In D. Dimitrijević (Ed.), *Danube and the New Silk Road* (pp. 326–351). Institute for International Politics and Economics.
- Global Times. (2025, September 11). 'I love China': Serbian President Vucic says in interview. *Global Times*. <https://www.globaltimes.cn/page/202509/1343255.shtml>
- Hermann, K. (2024). Strategic partnership of the Republic of Serbia and the People's Republic of China: The political and economic implications of cooperation from Serbia's perspective. *SE*, 28, 179–193. <https://doi.org/10.33067/SE.3.2024.10>
- Imsirovic, M., Kapo, A., Olemanu Lohalo, G., & Saleh, E. (2024). Sino-Russian coexistence in Serbia: Strategic symmetry. *Jurnal Politik Profetik*, 12, 170–201. <https://doi.org/10.24252/profetik.v12i2a5>
- Ivanović, V., & Zakić, K. (2023). Belt and Road investments in Serbia: Is China a new saviour or a new threat? *Međunarodni problemi*, 75, 65–92. <https://doi.org/10.2298/MEDJP2301065i>
- Jović, E., Stevanović, S., & Beraha, I. (2020). Serbia-China bilateral trade relations: Major challenges and opportunities. *Economic Analysis*, 53, 133–144. <https://doi.org/10.28934/ea.20.53.2.pp133-144>
- Lazaj, A., Teta, J., & Xhafka, E. (2024). Economic growth and foreign direct investment in Balkans. *Economics of Development*, 23, 8–17. <https://doi.org/10.57111/econ/3.2024.08>
- Li, Q. (2023). New development in the Belt and Road Initiative: A case study of cooperation between China and Hungary. *Advances in Economics, Management and Political Sciences*, 6, 312–320. <https://doi.org/10.54254/2754-1169/6/2022152>

- Mali, S. (2024). Economic cooperation of the Republic of Serbia and the People's Republic of China. *Napredak*, 5, 89–104. <https://doi.org/10.5937/napredak5-49719>
- Milacic, F. (2025). Democratic backsliding through legislative capture in Serbia: A one-man show. *The Annals of the American Academy of Political and Social Science*, 712, 47–60. <https://doi.org/10.1177/00027162251316346>
- Nikolić, I. (2014, December 18). New bridge's grave look upsets Belgraders. *Balkan Insight*. <https://balkaninsight.com/2014/12/18/belgrade-replaces-gravestone-looking-panel/>
- Peragovics, T., & Szunomar, A. (2024). The Great Connection – The Budapest-Belgrade railway project and its significance for Hungary's foreign policy identity. *Asian Perspective*, 48, 253–275. <https://doi.org/10.1353/apr.2024.a928616>
- Prague Security Studies Institute. (2019). Comparative analysis of the approach towards China: V4+ and the One Belt One Road. <https://www.pssi.cz/projects/48-comparative-analysis-of-the-approach-towards-china-v4-and-the-one-belt-one-road>
- Reuters. (2025, August 1). Six arrested over Serbia railway station roof collapse. Reuters. <https://www.reuters.com/world/six-arrested-over-serbia-railway-station-roof-collapse-2025-08-01/>
- Rogers, S. (2022). Illiberal capitalist development: Chinese state-owned capital investment in Serbia. *Contemporary Politics*, 28(3), 347–364. <https://doi.org/10.1080/13569775.2021.2022876>
- Stanojević, I. (2025). Serbia: Waiting on the EU to spark horizontal coordination. https://doi.org/10.1007/978-3-031-83567-4_15
- Stanicek, B. (2025). Serbia: Public procurement and high-risk infrastructure projects (EPRS Report No. PE 775.906). European Parliamentary Research Service. [https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/775906/EPRS_ATA\(2025\)775906_EN.pdf](https://www.europarl.europa.eu/RegData/etudes/ATAG/2025/775906/EPRS_ATA(2025)775906_EN.pdf)
- Stojanović-Višić, B., Jelisavac Trošić, S., & Simić, M. (2023). Development of the Belt and Road Initiative in Serbia. *Ekonomika Preduzeća*, 71, 230–242. <https://doi.org/10.5937/EKOPRE2303230S>
- Tahirović, M. (2024). The main security challenges and threats in the Western Balkans and possible model for solving them in the process of European integration. *SE*, 28, 27–55. <https://doi.org/10.33067/SE.3.2024.2>
- Vujović, M. (2025, February 1). Blood on their hands: Uncovering Serbia's railway station tragedy (A. Dragic & F. Bernabeu Fornara, Eds.). EuroProspects. <https://europrospects.eu/blood-on-their-hands-uncovering-serbias-railway-station-tragedy/>
- Zubaľová, Ľ., Drieniková, K., Ujlaky, L., & Durčeková, E. (2023). The European Union and China trade presence in Serbia. *Journal of Liberty and International Affairs*, 9, 370–405. <https://doi.org/10.47305/JLIA2393370z>
- Zakic, K. (2024). Serbian development path of FDIs: Navigating between the EU and China. In *IPE Dijalozi Kina* (pp. 421–458). https://doi.org/10.18485/iipe_dijalozi_kina.2024.4.2.ch21

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THE AFRICAN DEBT CRISIS?

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Abstract: The paper aims to analyse current trends in African countries' debt, compare them with past debt crises of the 1970s and 1980s, and assess whether present conditions indicate a new wave of debt distress that might again require international relief efforts. The study is primarily based on data from the International Monetary Fund and World Bank, examining indicators such as gross government debt and external debt, complemented by the latest Debt Sustainability Analysis. The research finds that African debt levels have been rising since 2014. While the continent's overall debt ratio remains below the global average, almost half of the evaluated countries face a high or moderate risk of debt distress. Current trends in Africa indicate increasing vulnerability and fiscal pressure.

Keywords: external debt, HIPC Initiative, Africa

JEL: F34, H63, N27

Introduction

The question of African debt is growing in importance once again. Following several debt relief initiatives in the early 2000s, prompted by the debt crises of the 1970s and 1980s, the level of debt in African countries is once again increasing. This prompted the organisation of the African Union Conference on Debt, organised by the African Union in May 2025.

In this paper, we look at the current trends in African countries' debt. We describe the current situation, recent developments in African debt and the new trends in the African debt problem. We compare the current situation with the crisis in the 70s and 80s, and we specifically focus on the characteristics of current debt, including the focus on Chinese-owned debt in several countries. This paper also addresses the concept of odious debt.

In this paper, we work with the data from International Monetary Fund, which is the best source of data on the debt of individual countries and their data offer detailed look at the current situation, including the data on the debt owners and the cost of debt service in African countries. The aim of this paper is to identify current trends in African debt, and to evaluate whether we are facing the new crisis in African countries that will potentially warrant another global initiative to alleviate the debt.

1 Literature review

The interest in the African debt problem has been overshadowed by the debt crisis in the European Union after the global financial crisis in European countries. Mainly so-called PIIGS countries (Portugal, Ireland, Italy, Greece, Spain) faced increasing debt, and this situation has led to significant changes in the European Union law and fiscal instruments available for the Member States.

Meanwhile, the developing countries have gone through a period of dangerously high levels of debt in the 70s and 80s. Unmanageable debt burden resulted in the creation of the Heavily Indebted Poor Countries (HIPC) Initiative by the International Monetary Fund and World Bank in 1996. The need for debt relief arose from the fact that many developing countries have been paying more in that service than they were getting from international development assistance. The HIPC Initiative successfully helped countries that received this debt relief in lowering their debt service by about 1.5 percentage points of GDP.

The HIPC Initiative has been funded by the IMF, other multilateral institutions and bilateral creditors. Out of 37 countries that successfully completed the programme for debt relief, 32 were from Africa. (IMF, 2023a) The latest country to reach the completion point under the HIPC Initiative was Somalia in 2023. (IMF, 2023b)

Over the years, however, many scientific papers have been published evaluating the usefulness of the HIPC Initiative and its impact on debt in African countries, its impact on the overall economic performance of African countries and other aspects of African economies.

Already in 2012, Mathieu Petithomme (2013) concluded in his paper that structural adjustment programs and the Heavily Indebted Poor Countries Initiative have not been successful in reducing the external debt of countries in sub-Saharan Africa, and that many countries still pay more in debt service than they receive as official development assistance.

Not all evaluations of the HIPC Initiative were so critical. For example, Keith Hinchliffe (2004) concluded that expenditure for education and health has increased in monetary value and also as a share of GDP based on the data from 20 countries that underwent debt relief under HIPCI. This has been one of the primary motivations for this initiative, as its creators reasoned that declining costs of debt service will enable the governments to use the funds for development investments like healthcare and education instead.

M. Nureldin Hussain and Bernhard G. Gunter (2005) studied the effect of the HIPC Initiative in 18 countries that benefited from it. They studied the impact of debt relief on economic growth and poverty. The results were positive for the HIPC Initiative, as it increased the levels of growth in all 18 countries, though to a different degree. The same results were achieved in reducing the poverty level. Although authors claim that these gains have been minimised by the worsening of the terms of trade of these heavily indebted countries.

The evaluations of the HIPC Initiative were often connected to the achievement of the Millennium Development Goals, specifically the reduction of poverty. For example, Arsene Honore Gideon Nkama (2006) concluded that in Cameroon, the HIPC Initiative pushed the country closer to this goal. The problem, however, was that the government did not follow the accompanying Poverty Reduction Strategy Paper.

On the contrary, Hulya Dagdeviren and John Weeks (2001) calculated that in selected 23 countries, the HIPC Initiative could not achieve poverty reduction, and additional policies are necessary, most importantly, redistribution measures. If the debt relief bonus were used entirely on investment, the results would improve, but not sufficiently to meet the Millennium Development Goal.

Nihal Bayraktar and Hippolyte Fofack (2011) calculated in 2011 that even after the HIPC Initiative, without other substantial external funding (e.g. significant increase in official development assistance), Ethiopia would not achieve real income growth, and the level of debt would rise again to the pre-HIPC Initiative levels.

Shreya Jose Maliakal (2024) compiled studies on the impact of the HIPC Initiative, and she highlighted some of the negative results. For example, she cites papers that showed that the impact on economic growth is mixed or even negative in the case of some countries. She also claimed that most sources conclude that the availability of more resources did not lead to increased investment in developmental agendas, except for access to safe drinking water in Africa. Another positive impact she found was the impact on gross enrollment in primary education, the ratio of female to male primary enrollment and primary completion rate. However, even the positive effects that the HIPC Initiative had on infant mortality, poverty gap, and maternal mortality rates have diminished in the long run.

Although most cited economists have not criticised the HIPC Initiative fundamentally, they were sceptical about its potential to bring significant change to African economic development and improvement of other economic and social indicators. Unfortunately,

the studies evaluating the results some years after the HIPC Initiative supported these sceptical predictions. Furthermore, current trends in Africa's debt situation are even more worrisome, as we describe in the following section of this paper.

2 Recent trends in African debt

During the previous years, the question and potentially the problem of debt in Africa has gained increased attention, which was exacerbated by a series of crises (global economic crisis, COVID-19, war in Ukraine). All these have, to a certain extent, influenced the levels of debt in African countries and, as some authors argue, pushed African countries' debts closer to the unsustainable levels.

Some authors even compare the current situation with the 1990s, when the levels of debt in low-income countries warranted the HIPC Initiative. Dennis Essers and Danny Cassimon even called their paper "Towards HIPC 2.0? Lessons from past debt relief initiatives for addressing current debt problems". (Essers & Cassimon, 2023) Their conclusions highlight important differences between the situation in the 90s and now. Firstly, the levels of debt are not yet so critical. Secondly, the distribution of debt among creditors is now more complicated, and any debt relief negotiation between them would probably be impossible. The most significant change has been the increased share of private creditors on African debt, which is the trend seen in all developing countries, not only in Africa. In Africa, the share of private creditors grew from 30% in 2010 to 44% in 2021, while in all developing countries this share grew from 47% to 62% during the same period. (UNCTAD, 2023) These changes affect some countries more negatively, as they are not perceived as reliable debtors and are facing higher interest from private creditors as a result. According to Benno J. Ndulu and Stephen A. O'Connell (2021), increasing debt service obligations are limiting the availability of funds for development activities in African countries. Especially fragile economies face these problems, with fragility stemming from civil strife, natural disasters or commodity dependency.

Another trend changing the creditor composition in African countries is the increasing share of China. Currently, China is the biggest bilateral lender in Africa and Chinese share increased from 11% in 2009 to 40% in 2023. (Ngundu & Cilliers, 2025) Two main institutions are responsible for the overwhelming majority of this debt: China Development Bank and Export-Import Bank of China. Chinese loans are especially crucial for Angola; other major beneficiaries are Ethiopia, Kenya, Zambia, Egypt, Nigeria, Sudan, South Africa, Cameroon and Ghana. (de Kluiver, 2023) Despite a significant increase in Chinese loans to African countries, studies show that Chinese loans contribute to long-term economic growth in Africa (Mutai et al., 2024), that Chinese loans contribute to the achievement of Sustainable Development Goals in Africa (Bo et al., 2024) and that Chinese loans help address infrastructure bottlenecks in African economies. (Wang & Xu, 2023) Many of the papers studying the impact of Chinese loans in Africa refer to the term "debt-trap diplomacy", coined in 2017 by Brahma Chellaney (2017). Chellaney criticises China for using excessive loans for developing countries to gain political influence and control over strategic infrastructure projects, especially in Asian countries. Ajit Singh (2020) analysed studies about Chinese loans and concluded that the debt trap is a myth. According to Singh, Chinese loans do not significantly drive debt distress, it is not predatory, and provide policy autonomy for developing countries, unlike cooperation with the US.

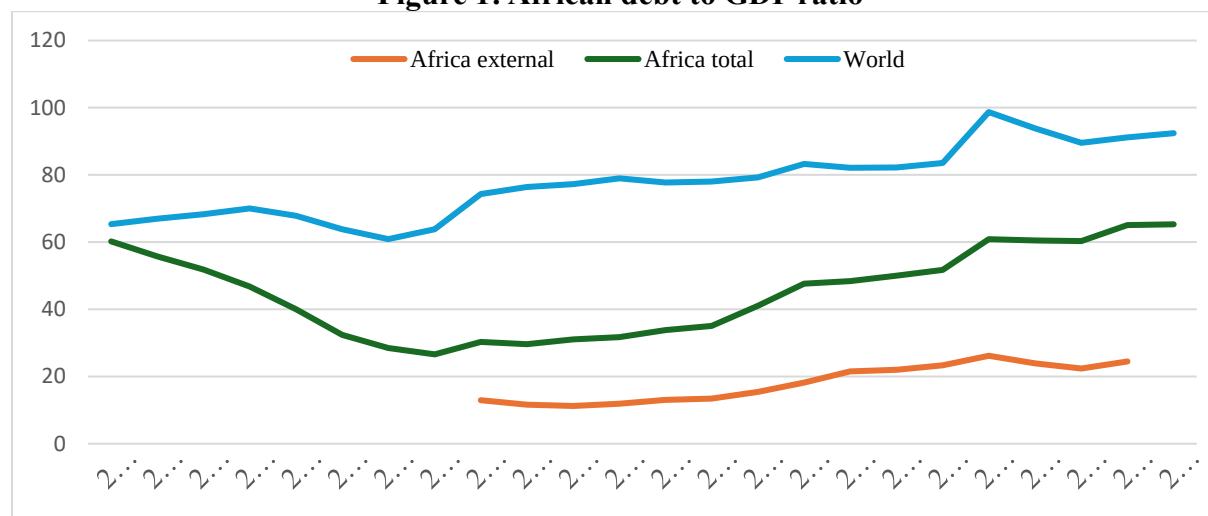
In the following part, we are analysing the data on African countries' debt situation to see how the described trends are manifesting in the data on individual countries and Africa in general.

3 Current debt in Africa

In this part of the paper, we analyse the data on external debt of African countries as a percentage of GDP and gross general government debt as a percentage of GDP. We describe

the development of these indicators at the African level and compare them to global levels in Figure 1.

Figure 1: African debt to GDP ratio



Source: Made by author based on data from “General government gross debt”, by IMF, World Economic Outlook, 2025, and “African Debt”, by ONE Data, 2025.

Figure 1 shows several interesting trends. Starting in 2001 (based on data availability), the levels of debt compared to GDP in Africa were similar to the global level. Mainly due to the HIPC Initiative that lowered the debt for African countries, the debt continued to decline in Africa; meanwhile, the trend was not followed globally. However, easy access to global financial markets, affordable interest rates and a decline in commodity prices made loans for African countries both accessible and necessary, resulting in increased levels of debt since 2014. (Canuto et al., 2023) Another spike in both African debt to GDP and global debt to GDP came in 2020 with COVID-19. The levels of debt in Africa and in the world converged during the period of the last 15 years, but the levels for Africa are still lower (65.3% in Africa, 92.4% in the world in 2024).

According to the African Economic Outlook 2021, the levels of debt in African countries are expected to grow further, reflecting the trends mentioned in the second part of this paper—changes in creditor composition towards a higher proportion of commercial creditors. Therefore, the interest expenses are growing and are expected to grow even further in the future. Currently, the indicator of debt to GDP is growing slowly owing to the higher levels of economic growth, but the deficits and debts are increasing. The report recommends caution in deciding what projects to finance through loans in the future, as these investments should generate enough return to cover the payoff of these debts in the future.

1.1 Debt of African countries

To evaluate the debt of individual African countries, we will describe two indicators. We compare the gross government debt as a percentage of GDP, which is the indicator that we also used to describe the debt of Africa and compared it to the global levels of debt. Then we also look at how sustainable the debt situation is in each country, which is based on the evaluation by the International Monetary Fund. The International Monetary Fund publishes the so-called Debt Sustainability Analysis (World Bank, 2025) for individual countries, divided into two different frameworks: one for market access countries and one for low-income countries that have benefited from debt relief in the past. The latest DSA ratings are from October 2025, and they evaluate two categories: risk of external debt distress and risk of overall debt distress. In each of these categories, countries can get a rating of low risk, moderate risk,

high risk or in debt distress. Not all African countries are evaluated in this debt sustainability analysis, as this is only for low-income countries that graduated from a debt relief programme. Therefore, 39 countries from Africa are part of this analysis. However, one of these countries doesn't have any current data available, and this country is Eritrea, where the lack of data has been a continuous problem.

Table 1: Debt Sustainability Analysis of African countries

	Risk of external debt distress	Risk of overall debt distress
Low	0	0
Moderate	17	15
High	14	16
In distress	7	7

Note: The graph shows the number of African countries in each category. The total is 38 countries.

Source: Made by the author based on data from "Debt Sustainability Analysis", World Bank, 2025.

As seen in Table 1, among 38 countries from Africa that were evaluated, seven are in the worst category of distress both in terms of external debt and overall debt: Djibouti, Ethiopia, Malawi, Republic of Congo, Sao Tome and Principe, Sudan and Zimbabwe. Only two other countries outside Africa are in this category. As the number of countries in categories moderate and high in both columns is not identical, some countries' external debt is less risky than the overall debt. In cases of Cabo Verde and Liberia, the risk for external debt distress is moderate, while overall debt distress is high.

Debt Sustainability Framework for low-income countries evaluates the levels of external debt to GDP, the levels of total public debt to GDP, but also external debt service to GDP. (IMF, 2025b) Therefore, the countries in distress are not necessarily those with the highest levels of debt.

In 2024, four African countries had debt surpassing 100% of GDP: Eritrea (261.4%), Sudan (128.4%), Senegal (114.9%) and Zambia (111.2%). Out of these, only Sudan is evaluated by the IMF as a country in debt distress. Although Eritrea is not evaluated at all due to the lack of data. The other countries evaluated by the IMF as countries in debt distress have varying levels of overall debt, from lowest to highest, it is Ethiopia (32.7%), Djibouti (32.9%), Sao Tome and Principe (64.8%), Zimbabwe (73%), Malawi (87.6%) and the Republic of Congo (98%).

Another dimension of DSA evaluation is the distinction between whether the debt is sustainable or unsustainable (IMF, 2025c), which only covers countries with a high risk of external debt distress or already in debt distress. In the latest round of evaluation, X African countries were evaluated in this dimension. According to the IMF, X African countries have sustainable levels of external debt (Burundi, Cameroon, Central African Republic, Chad, Comoros, Gambia, Ghana, Guinea-Bissau, Kenya, Mozambique, Niger, the Republic of Congo, Sao Tome and Principe, Sierra Leone, South Sudan, Sudan and Zambia) while X countries' debt is deemed unsustainable (Djibouti, Ethiopia, Malawi and Zimbabwe).

These results show that the evaluation of African countries' debt is more complex than just comparing the indicators standardly used in developed countries. The levels of debt in Africa are increasing and potentially creating another crisis in African economies.

Conclusion

The last section concludes the paper – it discusses the results of research, presents its importance and contributions to the literature and mentions its possible shortcomings. The conclusion should not include any important information that has not been previously mentioned in the text.

This paper has examined the current state of African debt in the context of its historical evolution and in comparison, with the debt crises of the 1970s and 1980s. The analysis, based on International Monetary Fund and World Bank data, confirms that while African debt levels remain, on average, below the global average, the trend since the mid-2010s shows a steady increase in both gross government debt and debt-to-GDP ratios. Our findings also highlight that the composition of debt has shifted since the HIPC Initiative era. The share of private creditors and commercial debt has grown substantially, and China has emerged as the dominant bilateral lender. These developments have significant implications for debt sustainability and the potential for coordinated relief efforts in the future.

The research results demonstrate that although the levels of debt distress in Africa are not yet comparable to those of the 1980s crisis, the warning signs are clear. According to the latest IMF Debt Sustainability Analysis, almost half of low-income African countries face a high or moderate risk of debt distress, with seven countries already in distress. The debt burdens are again constraining public finances and limiting the capacity of governments to invest in development priorities such as health, education, and infrastructure.

This study contributes to the existing literature by connecting the historical and contemporary dimensions of African indebtedness and by identifying the key structural changes in creditor composition that distinguish the current situation from previous crises. It also synthesises the academic debate on the HIPC Initiative's long-term effects. It also offers an updated and data-driven assessment of whether Africa is heading toward a new debt crisis and what differentiates this phase from past experiences. However, the scope of this paper is limited. It focuses primarily on quantitative indicators and does not explore in depth the political or governance dimensions that may influence debt management and sustainability. The paper highlights the growing relevance of the African debt question.

References:

- Bayraktar, N., & Fofack, H. (2011). *Post-HIPC Growth Dynamics in Sub-Saharan Africa* (SSRN Scholarly Paper No. 1977750). Social Science Research Network. <https://papers.ssrn.com/abstract=1977750>
- Bo, H., Lawal, R., & Sakariyahu, R. (2024). China's infrastructure investments in Africa: An imperative for attaining sustainable development goals or a debt-trap? *The British Accounting Review*, 101472. <https://doi.org/10.1016/j.bar.2024.101472>
- Canuto, O., Dinh, H. T., El Aynaoui, K., Ghanem, H., & Mandri, B. (2023). Addressing Africa's Persistent Debt Problem. In *Cape Town Chronicles* (pp. 23–34). Observer Research Foundation. <https://www.policycenter.ma/publications/addressing-africas-persistent-debt-problem>
- Chellaney, B. (2017, January 23). *China's Debt-Trap Diplomacy*. Project Syndicate. <https://www.project-syndicate.org/commentary/china-one-belt-one-road-loans-debt-by-brahma-chellaney-2017-01>
- Dagdeviren, H., & Weeks, J. (2001). *How much poverty could HIPC reduce* [Monograph]. University of Hertfordshire. <https://uhra.herts.ac.uk/id/eprint/11920/>
- de Kluiver, J. (2023). *Africa's debt dilemma: China's role and implications for development*. Institute for Security Studies. <https://www.jstor.org/stable/resrep62597>
- Essers, D., & Cassimon, D. (2023). Towards HIPC 2.0? Lessons from Past Debt Relief Initiatives for Addressing Current Debt Problems. *Journal of Globalization and Development*, 13(2), 187–231. <https://doi.org/10.1515/jgd-2021-0051>
- Hinchliffe, K. (2004). *Notes on the impact of the HIPC initiative on public expenditures in education and health in African countries* (Departmental Working Paper No. 32803; Human Development Department Africa Region, p. 34). World Bank.

- <https://documents.worldbank.org/en/publication/documents-reports/documentdetail/358451468201600604>
- Hussain, M. N., & Gunter, B. G. (2005). External Shocks and the HIPC Initiative: Impacts on Growth and Poverty in Africa. *African Development Review*, 17(3), 461–492. <https://doi.org/10.1111/j.1017-6772.2006.00124.x>
- IMF. (2023a). *Debt Relief Under the Heavily Indebted Poor Countries Initiative*. IMF. <https://www.imf.org/en/About/Factsheets/Sheets/2023/Debt-relief-under-the-heavily-indebted-poor-countries-initiative-HIPC>
- IMF. (2023b). *Somalia: Enhanced Heavily Indebted Poor Countries Initiative-Completion Point Document* (IMF Country Report No. 23/424; p. 80). International Monetary Fund. <https://www.imf.org/en/Publications/CR/Issues/2023/12/18/Somalia-Enhanced-Heavily-Indebted-Poor-Countries-Initiative-Completion-Point-Document-542591>
- IMF. (2025a). *General government gross debt*. World Economic Outlook. https://www.imf.org/external/datamapper/GGXWDG_NGDP@WEO
- IMF. (2025b). *IMF-World Bank Debt Sustainability Framework for LIC*. IMF. <https://www.imf.org/en/About/Factsheets/Sheets/2023/imf-world-bank-debt-sustainability-framework-for-low-income-countries>
- IMF. (2025c). *List of LIC DSAs for PRGT-Eligible Countries*. International Monetary Fund. <https://www.imf.org/external/Pubs/ft/dsa/DSAlist.pdf>
- Jose Maliakal, S. (2024). *Debt Relief Initiatives: HIPC and MDR* [Report]. The Institute of Development Studies and Partner Organisations. <https://doi.org/10.19088/K4DD.2025.050>
- Mutai, N. C., Cuong, N. M., Dervishaj, V., Kiarie, J. W., Misango, P., Ibeh, L., Popoola, O. M., & Lallmahamood, M. (2024). Examining the sustainability of African debt owed to China in the context of debt-trap diplomacy. *Scientific African*, 24, e02164. <https://doi.org/10.1016/j.sciaf.2024.e02164>
- Ndulu, B. J., & O’Connell, S. A. (2021). Africa’s Development Debts. *Journal of African Economies*, 30(Supplement_1), i33–i73. <https://doi.org/10.1093/jae/ejab021>
- Ngundu, M., & Cilliers, J. (2025, 6). *Indebted and underfunded*. African Futures & Innovation Programme. <https://futures.issafrica.org/blog/2025/Indebted-and-underfunded>
- Nkama, A. H. G. (2006). Analysing the Poverty Impact of the HIPC Initiative in Cameroon. *African Development Review*, 18(3), 330–352. <https://doi.org/10.1111/j.1467-8268.2006.00146.x>
- ONE Data. (2025). *African Debt*. <https://data.one.org/analysis/african-debt>
- Petithomme, M. (2013). Much ado about nothing? The limited effects of structural adjustment programmes and the highly indebted poor countries initiative on the reduction of external debts in sub-Saharan Africa: An empirical analysis. *African Journal of Political Science and International Relations*, 7(2), 107–120. <https://doi.org/10.5897/AJPSIR12.006>
- Singh, A. (2020). The myth of ‘debt-trap diplomacy’ and realities of Chinese development finance. *Third World Quarterly*, 42(2), 239–253. <https://doi.org/10.1080/01436597.2020.1807318>
- UNCTAD. (2023). *A world of debt: Regional stories*. UN Trade and Development (UNCTAD). <https://unctad.org/publication/world-of-debt/regional-stories>
- Wang, Y., & Xu, Y. (2023). China and Africa: A new narrative on debt sustainability and infrastructure financing. *Journal of Infrastructure, Policy and Development*, 7(1), 2181. <https://doi.org/10.24294/jipd.v7i1.2181>
- World Bank. (2025). *Debt Sustainability Analysis*. World Bank. <https://www.worldbank.org/en/programs/debt-toolkit/dsa>

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CRYPTOCURRENCIES AS A FACTOR OF TRANSFORMATION IN INTERNATIONAL FINANCIAL RELATIONS¹

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Abstract: Cryptocurrencies have evolved from a niche innovation into a significant driver of transformation in international financial relations. This paper analyzes their role in reshaping cross-border capital flows, international trade, financial stability, and geopolitical dynamics. The research applies a comparative analysis of international reports (IMF, BIS, World Bank) and academic studies, combined with case-based examination of regulatory frameworks across jurisdictions. The findings indicate that cryptocurrencies, particularly stablecoins and decentralized finance (DeFi), enhance financial inclusion and efficiency, yet pose systemic risks to monetary sovereignty and global financial stability. The paper concludes that cryptocurrencies represent both an opportunity and a challenge for the future architecture of international finance, necessitating coordinated regulatory responses.

Keywords: cryptocurrencies, international financial relations, stablecoins, financial stability, regulation

JEL: F33, G15, O19

Introduction

Cryptocurrencies have transitioned from an experimental innovation to a pivotal force reshaping international financial relations. This paper examines their impact on cross-border capital flows, international trade, financial stability, and geopolitical dynamics. Employing a comparative analysis of international reports from institutions such as the International Monetary Fund (IMF), Bank for International Settlements (BIS), and World Bank, alongside academic studies and case-based examinations of regulatory frameworks across jurisdictions, the research highlights how cryptocurrencies, particularly stablecoins and decentralized finance (DeFi), drive financial inclusion and efficiency while posing systemic risks to monetary sovereignty and global financial stability. The findings underscore the dual nature of cryptocurrencies as both enablers of economic resilience and potential sources of geopolitical and financial disruption, necessitating coordinated global regulatory responses. The paper is structured as follows: Section 1 provides the theoretical background and fundamental concepts of cryptocurrencies within the context of international finance, Section 2 explores their practical applications in cross-border transactions and financial flows through case studies of economic instability in Venezuela, Argentina, and El Salvador—selected for their representation of hyperinflationary environments and pioneering adoption policies in Latin America—and Section 3 evaluates the regulatory and geopolitical implications through cases of sanctions evasion in Russia and Iran, chosen to illustrate the interplay between cryptocurrencies and global power dynamics. The concluding section summarizes key findings and offers policy recommendations for navigating the evolving role of cryptocurrencies in global finance. This selection of cases ensures a balanced examination across diverse

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economic and geopolitical contexts, drawing on comparative analysis to highlight patterns of empowerment and risk.

1 Theoretical Background and Concepts

Cryptocurrencies, defined as digital assets secured by cryptographic protocols and operating on decentralized blockchain networks, have reshaped international financial relations since Bitcoin's launch in 2009 (Nakamoto, 2008). In contrast to fiat currencies, which depend on central banks and state authority, cryptocurrencies apply distributed ledger technology to guarantee transparency, immutability, and security without intermediaries, thereby challenging conventional monetary systems and government control over financial flows (Financial Stability Board, 2024). To assess their transformative influence on cross-border payments, capital mobility, and geopolitical dynamics, this section applies the three-phase evolutionary framework proposed by Venturini et al. (2025) for Bitcoin—exploration (2009–2012), adaptation (2012–2015), and stabilization (from 2015 onward)—to the broader cryptocurrency ecosystem. This framework establishes clear temporal boundaries, showing how technological innovation and network expansion have redefined global finance, enhanced efficiency and inclusion while also generating systemic risks (CoinMarketCap, 2025).

The development of cryptocurrencies, extending beyond Bitcoin to encompass altcoins, smart contracts, and decentralized finance (DeFi), follows the three-phase network evolution model outlined by Venturini et al. (2025), offering a structured perspective for analysing their role in reshaping international finance.

The exploration phase (2009–2012) was marked by experimentation and limited adoption, initiated by Bitcoin's creation as a peer-to-peer electronic cash system in the aftermath of the 2008 financial crisis, which exposed weaknesses in centralized banking (Nakamoto, 2008). Bitcoin's network expanded from a handful of nodes to several thousand, enabling thrustless transactions with a market capitalization of about \$143.6 million by the end of 2012, based on 10.61 million coins in circulation at \$13.53 per coin on December 31, 2012 (StatMuse, 2025). This stage laid the groundwork for cryptocurrencies as alternatives to conventional financial systems, especially in cross-border remittances for regions with restricted banking access.

The adaptation phase (2012–2015) built upon these foundational elements, as exemplified by early use cases like the symbolic pizza transaction and the emergence of exchanges such as Mt. Gox. The first widely acknowledged transaction occurred in May 2010, when programmer Laszlo Hanyecz exchanged 10,000 BTC for two pizzas—an event described by Popper (2015) as the point when Bitcoin shifted from a theoretical concept to a medium of exchange with real value. At the same time, the rise of early exchanges, particularly Mt. Gox, created the infrastructure for Bitcoin to expand beyond small online communities. According to Investopedia (2024), Mt. Gox became the dominant platform, processing 70% to 80% of global Bitcoin trades at its height. However, its security weaknesses and eventual collapse in 2014 exposed vulnerabilities within the emerging crypto ecosystem, emphasizing the need for greater scalability and security.

In the sphere of international financial relations, the adaptation phase became especially evident during the Eurozone sovereign debt crisis, which escalated between 2010 and 2012 and continued to affect the region through 2015 (Council on Foreign Relations, 2015). This crisis impacted countries such as Greece, Portugal, Ireland, Spain, and Cyprus, resulting in bailouts, strict austerity measures, and widespread banking instability. Cryptocurrencies, particularly Bitcoin, were seen as a hedge and an alternative to failing traditional systems, allowing individuals to store value and execute cross-border transfers beyond capital controls and bank levies (Luther & Salter, 2017). A notable early case was the 2013 Cyprus banking

crisis, where a bailout deal imposed a one-time levy on uninsured bank deposits to rescue failing institutions, sparking a surge of interest in Bitcoin as depositors sought secure, decentralized solutions (Wells, 2013). Downloads of Bitcoin apps in Cyprus increased dramatically—for example, the Bitcoin Gold app climbed from rank 498 to 72 in a single day—reflecting a broader trend in troubled Eurozone economies where Bitcoin was viewed as a safeguard against government intervention and currency devaluation. This was followed by the deepening of the Greek debt crisis in 2015, where capital controls limited withdrawals to €60 per day, driving many Greeks to Bitcoin to protect wealth and maintain international transactions amid fears of a “Grexit” (Canellis, 2025). Trading platforms reported increased activity among Eurozone users, positioning Bitcoin as a store of value against deflation, bailouts, and possible euro collapse, while simultaneously bypassing slow and costly systems like SWIFT for remittances and trade (Kwan, 2015). These events highlighted the growing role of cryptocurrencies in protecting personal finances during global financial instability, promoting diversification beyond centralized fiat currencies. An analysis of Bitcoin’s volatility during this phase, with annualized levels between 80–100% (Dwyer, 2015), reveals a correlation with global financial instability events, such as the Eurozone crisis, where spikes in Bitcoin trading volumes coincided with capital control implementations in Cyprus and Greece. This suggests that cryptocurrencies not only served as hedges but also amplified speculative behaviours, potentially exacerbating exchange rate fluctuations in vulnerable economies by diverting capital from traditional systems.

This phase also focused on scalability and diversification, with Bitcoin’s network expanding to more than 10,000 nodes, though still struggling with transaction delays (Dwyer, 2015). The introduction of Ethereum in 2015 became a pivotal moment, introducing smart contracts—self-executing agreements that automated processes such as trade settlements and escrow services (Buterin, 2014). This breakthrough spurred the rise of decentralized applications (dApps), with more than 3,000 created by 2020, strengthening the role of cryptocurrencies in international trade by reducing reliance on intermediaries (DappRadar, 2020). Smart contracts reduced the cost of cross-border transactions, enabling small businesses in emerging markets to participate in global supply chains, where systems like SWIFT typically involved delays and fees of \$20–50 per transfer (SWIFT, 2015). However, Bitcoin’s strong volatility, with annualized levels between 80–100%, presented risks to financial stability, as speculative bubbles influenced exchange rate movements (Dwyer, 2015).

The stabilization phase (2015 onward) represents the maturation and broader acceptance of cryptocurrencies, with Bitcoin’s active nodes stabilizing at around 15,000 by 2023 and the overall crypto market capitalization climbing to \$3.86 trillion by September 2025 (CoinGecko, 2025). Non-fungible tokens (NFTs) surged in 2021, reaching \$24.9 billion in sales, reshaping digital ownership in creative economies worldwide (NonFungible, 2022). Decentralized finance (DeFi) expanded rapidly, locking in \$129 billion of value by late 2024, enabling borderless lending and trading (DeFi Pulse, 2024). Stablecoins, linked to fiat currencies, exceeded \$161 billion in market capitalization by August 2024, stabilizing cross-border payments and remittances, which totalled between \$26–52 billion annually by 2023 (Chainalysis, 2024).

In terms of international financial relations, the stabilization phase has positioned cryptocurrencies as crucial tools for sanctioned economies such as Russia and Iran, which relied on digital assets to bypass U.S.-led restrictions in 2024–2025, with Russia legalizing crypto in cross-border settlements to sustain trade with partners like China (Hirtenstein & Chen, 2025), thereby challenging the efficacy of traditional financial sanctions and illustrating how DeFi and stablecoins extend the adaptation phase’s innovations into geopolitical strategies. This development challenged the global financial system and spurred stricter regulatory responses. Venezuela experienced hyperinflation that peaked at 10 million percent in 2018

(Chainalysis Team, 2020). During this period, the country relied on cryptocurrencies like Bitcoin and Ethereum as key tools for preserving value and enabling secure remittances, which reached \$5.4 billion in 2022 (Chainalysis Team, 2023). Likewise, in Argentina, where inflation surpassed 100% in 2023, Bitcoin and stablecoins such as USDT gained popularity as tools for savings protection and efficient cross-border transfers, with the country leading Latin America in crypto value received—about \$91.1 billion between July 2023 and June 2024 (Chainalysis, 2024). El Salvador became the first country to adopt Bitcoin as legal tender in September 2021 under President Nayib Bukele’s strategy, aiming to modernize its economy and attract fintech investment, resulting in 1.9% of remittances (\$96.3 million) flowing through crypto channels by 2022 (Morris, 2022). The initial implementation faced challenges, including technical issues and unrealized losses from government Bitcoin purchases totaling around \$425 million (Sigalos, 2022).

In summary, the three-phase trajectory of cryptocurrencies—exploration, adaptation, and stabilization—illustrates their evolution from niche experiments into essential components of global finance, disrupting traditional monetary systems while improving efficiency in cross-border transfers and financial inclusion. This framework shows how innovations such as smart contracts, DeFi, and stablecoins have addressed some weaknesses of centralized banking, particularly in crisis-prone regions, while also raising challenges related to volatility and regulatory gaps. As cryptocurrencies continue to shape international financial relations, their dual role as instruments of empowerment and evasion highlights the necessity of balanced regulation, laying the foundation for further exploration of their impact on trade flows and geopolitical strategies in the following sections.

2 Role of Cryptocurrencies in Cross-Border Transactions and International Financial Flows

Understanding the three-phase trajectory of cryptocurrencies—from exploration to adaptation and stabilization—allows us to examine how these technological shifts have concretely reshaped international financial relations. While the first part of this paper described the theoretical evolution of cryptocurrencies, this section focuses on practical case studies that demonstrate both positive applications, such as lowering remittance costs, expanding access to capital, and improving resilience during crises, and negative uses, such as enabling capital flight, sanctions evasion, and speculative instability. The analysis highlights how cryptocurrencies are increasingly integrated into global flows of money and trade, shaping the dynamics of financial inclusion, monetary sovereignty, and geopolitical competition. Drawing on data from the International Monetary Fund (IMF), Bank for International Settlements (BIS), Financial Stability Board (FSB), Chainalysis, and World Bank, alongside real-world examples, this section balances the transformative benefits against emerging risks, projecting remittances to low- and middle-income countries (LMICs) to reach \$685 billion in 2024—larger than foreign direct investment (FDI) and official development assistance (ODA) combined—where crypto channels are capturing a growing share (Ratha, Plaza, & Kim, 2024). A comparative examination of these cases—Venezuela’s hyperinflation-driven grassroots adoption, Argentina’s stablecoin-focused hedging, and El Salvador’s state-led legalization—reveals common patterns: cryptocurrencies reduce remittance costs by up to 80% in developing regions (World Bank, 2024), yet their integration varies by institutional context, with grassroots models showing higher resilience in sanctioned environments compared to top-down approaches that face implementation challenges.

Cryptocurrencies function simultaneously as tools of empowerment and potential destabilizers. On the positive side, they can democratize financial access by reducing reliance on costly intermediaries, lowering barriers for small and medium-sized enterprises (SMEs) to engage in international trade, and increasing the efficiency of global remittance corridors,

where the World Bank estimates average costs at 6.4% for a \$200 transfer in Q4 2023—far above the UN Sustainable Development Goal (SDG) target of 3%—with digital alternatives like stablecoins offering pathways to cut this by up to 80% in developing regions (World Bank, 2024). On the negative side, cryptocurrencies can undermine monetary sovereignty, facilitate large-scale capital flight, and provide sanctioned actors with alternative payment systems outside global oversight, as highlighted by the IMF and FSB (2023), which emphasize risks to macroeconomic stability, including exchange rate volatility and fiscal sustainability if adoption surges without regulation. Understanding this dual role requires a comparative look at diverse national experiences, from hyperinflationary economies leveraging crypto for survival to sanctioned states using it for evasion.

2.1 Venezuela: Survival Strategy under Hyperinflation and Sanctions

Venezuela represents one of the most extreme cases of crypto-driven financial adaptation. By 2018, hyperinflation had reached an annual rate of over 1,000,000% according to IMF estimates, though some analyses, like Steve Hanke's, peg it at 80,000%, effectively destroying the value of the bolivar and collapsing banking access amid U.S. sanctions (Hanke, 2019). As formal financial systems faltered amid hyperinflation and sanctions, Venezuelan citizens increasingly relied on Bitcoin, Ethereum, and stablecoins for basic transactions, savings protection, and remittances, driven by a strong inverse relationship between the bolívar's USD value and monthly crypto inflows, with adoption surging 110% year-over-year from July 2023 to June 2024 (Chainalysis, 2024). In 2023, total remittances to Venezuela reached \$5.4 billion—up from \$4.2 billion in 2022—supporting 2.5 million households (29% of citizens) from a diaspora of over 7 million, with crypto capturing up to 9% (\$461 million) via retail wallets despite government bans on Binance P2P and mining (Vasileva, 2024; Chainalysis, 2024). This grassroots adoption surged 110% year-over-year by 2025, with private sector transactions hitting \$119 million in July 2025 alone, enabling low-fee international transfers that bypassed capital controls and traditional banks. The BIS (2025) notes that such flows enhance financial inclusion in sanctioned environments but amplify risks, including illicit financing if unregulated.

The Venezuelan government attempted to harness blockchain for geopolitical purposes by introducing the Petro in 2018, a state-backed cryptocurrency allegedly pegged to oil reserves, aiming to circumvent sanctions and raise \$5 billion through an ICO (Roy & Cheatham, 2025). The Petro faced significant market rejection due to its lack of transparency and unclear backing, as critics highlighted the absence of verifiable oil collateral, undermining its credibility (Bracci Roa, 2020; Sharma, 2018). International scepticism, especially from the United States, which imposed OFAC sanctions to prohibit Petro transactions, further eroded its acceptance on the global stage. This negative reception culminated in the Petro's abrupt discontinuation in 2024, with adoption remaining minimal and sales reaching only about \$3.3 billion, well below the intended targets. As a result, the Petro failed to gain meaningful traction, while citizens continued to prefer decentralized cryptocurrencies like USDT for daily resilience, highlighting the FSB's (2023) warnings on state-issued tokens' credibility risks in unstable economies.

The case of Venezuela exemplifies the dual nature of cryptocurrency: while grassroots adoption surged 110% year-over-year by 2025, capturing 9% of \$5.4 billion in remittances (Chainalysis, 2024), it afforded citizens mechanisms for coping with an economic collapse; however, the Petro's failure, with sales reaching only \$3.3 billion against a \$5 billion target (Roy & Cheatham, 2025), highlights the limitations of state-backed initiatives in contexts lacking public trust, thereby exacerbating concerns regarding sanctions evasion and underscoring the FSB's (2023) warnings on credibility risks.

2.2 Argentina: Stablecoins as a Hedge against Monetary Instability

Argentina has long struggled with chronic inflation, which exceeded 211.4% annually in 2023—the highest in 32 years—driving a devaluing peso and eroding savings amid strict capital controls (Rey, 2024). Faced with these pressures, Argentines increasingly turned to stablecoins such as Tether (USDT) and USD Coin (USDC) as substitutes for dollar savings, with Chainalysis (2024) reporting over \$91.1 billion in cryptocurrency value received between July 2023 and June 2024, leading Latin America in adoption and reflecting a 42.5% regional growth rate. This “crypto-dollarization” peaked with stablecoins comprising 61.8% of transaction volume—above the global average of 44.7%—as citizens hedged against peso volatility (Chainalysis, 2025). New regulations under CNV Resolution 1058/2025 formalized adoption, enabling unbanked populations (over 40% in poverty) to engage in efficient cross-border commerce, yet raising FSB concerns over fragmented regulation amplifying systemic risks (Bourgi, 2025).

The Argentine case illustrates how cryptocurrencies can simultaneously offer short-term financial relief—stimulating fintech investments and hybrid DeFi ecosystems resembling stabilization-phase protocols—while posing long-term policy challenges, as dependence on foreign-pegged stablecoins, comprising 61.8% of transaction volume (Chainalysis, 2025), can undermine national monetary sovereignty and contribute to capital flight, potentially intensifying fiscal instability if unregulated.

2.3 El Salvador: Bitcoin as Legal Tender

El Salvador became the first country globally to recognize Bitcoin as legal tender, sparking significant worldwide interest in cryptocurrencies, particularly in Latin America. This move was part of President Nayib Bukele’s broader strategy to modernize the nation’s economy, which faces high inflation and low GDP growth. Like other Latin American countries, cryptocurrencies like Bitcoin and stablecoins (e.g., Tether) have become popular tools for preserving asset value and facilitating cross-border transactions. In El Salvador, they serve as an alternative to hedge against the devaluation of the U.S. dollar, widely used in the country, especially during periods of high inflation. Following the implementation of the Bitcoin Law in September 2021, the number of cryptocurrency users in the country surged, boosting the fintech sector and digital payments. The law’s adoption also streamlined international money transfers, reducing fees, with 1.9% of remittances (\$96.3 million) to El Salvador processed through cryptocurrencies (Morris, 2022).

However, like other Latin American nations, the introduction of Bitcoin was not without challenges. The initial rollout was chaotic and poorly communicated, causing confusion among citizens and businesses. The government invested approximately \$425 million in the project, but these investments led to unrealized losses and a lack of transparency regarding Bitcoin purchases (Sigalos, 2022). Due to technical issues, security risks, and concerns about economic stability, negative feedback emerged in the country. Negotiations with the IMF for loans faced skepticism over the Bitcoin policy, impacting international relations. President Bukele’s increasingly authoritarian approach, intensified after the Bitcoin Law, along with efforts to suppress press freedom through digital surveillance, raised concerns about political liberties in the country (Blitzer, 2022).

The adoption of Bitcoin as legal tender brought numerous challenges but also positioned El Salvador as an experimental case study for a nation attempting to leverage cryptocurrencies to address economic issues (Chebotkova, 2025), demonstrating how stabilization-phase technologies like Bitcoin can enhance remittance efficiency (1.9% of \$96.3 million processed via crypto in 2022; Morris, 2022) while exposing vulnerabilities such as unrealized losses of \$425 million (Sigalos, 2022), which mirror the volatility risks identified in the adaptation phase.

3 Regulatory and Geopolitical Dimensions of Cryptocurrency Adoption

While the preceding analysis of Venezuela, Argentina, and El Salvador illustrates how cryptocurrencies can serve as instruments of economic resilience and financial inclusion in contexts of hyperinflation, monetary instability, and modernization efforts, these cases also underscore the potential for more pronounced negative implications when digital assets intersect with broader geopolitical tensions. Building on the dual role of cryptocurrencies as tools of empowerment and destabilization outlined in Section 2, this section shifts focus to the regulatory and geopolitical dimensions, examining how sanctioned economies leverage decentralized networks to evade international restrictions. Through case studies of Russia and Iran, the discussion highlights the challenges posed to global financial governance, including threats to monetary sovereignty, the facilitation of illicit flows, and the erosion of sanction efficacy, as noted in reports from the IMF and FSB. These examples reveal how the stabilization phase of cryptocurrency evolution—characterized by mature DeFi ecosystems and stablecoins—enables state actors to circumvent traditional oversight mechanisms, prompting calls for enhanced international coordination to mitigate systemic risks without stifling innovation.

Following Western sanctions after the 2022 invasion of Ukraine, Russia increasingly relied on cryptocurrencies to sustain trade relations, particularly with China and India, legalizing crypto for cross-border settlements in energy exports by July 2024 (Browne, 2024). Pilot programs began at the end of 2024, with full-scale implementation planned for 2025 under an experimental regime coordinated by the Central Bank (Browne, 2024). This approach supported approximately \$192 billion in annual oil trade (Reuters, 2025), using Bitcoin (BTC), Ethereum (ETH), and Tether (USDT) to convert yuan and rupees into rubles via offshore intermediaries, processing tens of millions in transactions monthly (Hirtenstein & Aizhu, 2025). Comparing Russia's formalized cross-border settlements, supporting \$192 billion in annual oil trade (Reuters, 2025), with Iran's mining-driven revenue generation (4.5% of global hashrate in 2021–2022; Gottsegen, 2021), highlights how cryptocurrencies in the stabilization phase enable diversified evasion strategies: Russia's approach leverages DeFi for liquidity, while Iran's focuses on energy-subsidized mining, both challenging sanction efficacy but introducing vulnerabilities like volatility and regulatory scrutiny (Reinsch & Palazzi, 2022).

Iran similarly pursued crypto-based strategies, with Bitcoin mining accounting for roughly 4.5% of the global hashrate in 2021–2022, generating substantial revenue through inexpensive, subsidized energy (Gottsegen, 2021). However, its growth was later constrained by blackouts and regulatory crackdowns (Turak, 2021; Kia, 2025). In 2022, Iran completed its first official \$10 million import using Bitcoin, amending laws to permit locally mined cryptocurrencies for imports as a means to circumvent sanctions (Ibrahim, 2022).

The cases of Russia and Iran demonstrate how cryptocurrencies can be leveraged to circumvent sanctions and challenge dominant currencies in international trade (Reinsch & Palazzi, 2022; Kennedy, Bryan, Ploom, & Veebel, 2025), while also revealing significant vulnerabilities: reliance on volatile assets, limited global liquidity, and increasing regulatory scrutiny (Reinsch & Palazzi, 2022). Although these mechanisms help sustain economic activity—such as Russia's \$192 billion oil trade—they carry the risk of creating spillover instability if left unregulated (Kennedy et al., 2025). In conclusion, the regulatory and geopolitical dimensions of cryptocurrency adoption, as exemplified by Russia and Iran, amplify the transformative yet contentious impact of digital assets on international financial relations, extending the patterns of empowerment and evasion observed in earlier case studies; these instances highlight how cryptocurrencies, in their stabilization phase, not only facilitate cross-border resilience but also pose profound challenges to global stability by enabling sanctioned entities to bypass established financial architectures, potentially leading to spillover

effects such as increased illicit flows if not addressed through coordinated monitoring, thereby underscoring the urgent need for responses from institutions like the BIS, IMF, and FSB.

Conclusion

This paper has explored the transformative role of cryptocurrencies in reshaping international financial relations, highlighting their dual nature as both instruments of empowerment and potential sources of systemic risk. Through a comparative analysis of international reports from institutions like the IMF, BIS, and World Bank, alongside academic studies and case-based examinations of jurisdictions such as Venezuela, Argentina, El Salvador, Russia, and Iran, the research demonstrates how cryptocurrencies—particularly stablecoins and decentralized finance (DeFi)—enhance financial inclusion, reduce transaction costs, and provide resilience in economically unstable environments, while simultaneously challenging monetary sovereignty, facilitating capital flight, and enabling sanctions evasion. Section 1 established the theoretical foundation, tracing the evolution of cryptocurrencies through exploration, adaptation, and stabilization phases, which laid the groundwork for their global impact. Section 2 illustrated their practical applications in cross-border transactions, showing how countries like Venezuela, Argentina, and El Salvador leverage digital assets to address hyperinflation, monetary instability, and modernization needs, albeit with risks of volatility and regulatory gaps. Section 3 extended this analysis to the geopolitical sphere, examining how Russia and Iran use cryptocurrencies to circumvent sanctions, underscoring the need for coordinated global oversight to mitigate spillover effects on financial stability.

The significance of this study lies in its comprehensive examination of cryptocurrencies' multifaceted impact on international finance, bridging theoretical insights from the three-phase evolutionary framework with real-world applications across selected jurisdictions. By analysing diverse national experiences, it contributes to the literature on digital currencies by highlighting their context-dependent roles—such as accelerating financial inclusion in LMICs through reduced transaction costs (World Bank, 2024) while eroding sanction mechanisms in geopolitically tense regions—thus fostering a nuanced understanding that informs policy debates on balancing innovation with stability. The case studies underscore the necessity of balanced regulatory frameworks that maximize the benefits of financial inclusion and efficiency while addressing risks like illicit financing and monetary disruption, potentially through harmonized standards that adapt to the stabilization phase's mature ecosystems.

References:

- Bank for International Settlements. (2025). *BIS annual economic report June 2025*. <https://www.bis.org/publ/arpdf/ar2025e.pdf>
- Blitzer, J. (2022, September 5). The rise of Nayib Bukele, El Salvador's authoritarian president. *The New Yorker*. <https://www.newyorker.com/magazine/2022/09/12/the-rise-of-nayib-bukeles-authoritarian-president>
- Bourgi, S. (2025, March 14). Argentina finalizes rules for virtual asset providers. *Cointelegraph*. <https://cointelegraph.com/news/argentina-finalizes-rules-virtual-asset-providers>
- Bracci Roa, L. (2020). The Petro: Is it a 'shuddering failure' and a 'laughing stock'? What can we expect? *Venezuelanalysis*. <https://venezuelanalysis.com/analysis/14642/>
- Browne, R. (2024, July 30). Russia approves law allowing use of crypto for global payments as it faces ongoing sanctions. *CNBC*. <https://www.cnbc.com/2024/07/30/russia-considers-legalizing-crypto-as-a-form-of-payment-amid-sanctions.html>
- Buterin, V. (2014). *Ethereum: A next-generation smart contract and decentralized application platform*. <https://ethereum.org/en/whitepaper/>

- Canellis, D. (2025, July 19). The Greek crisis made Europeans flock to bitcoin. Are we seeing the same thing today? *Blockworks*. <https://www.blockworks.co/news/greek-debt-crisis-bitcoin>
- Chainalysis. (2024, August). *The 2024 geography of cryptocurrency report*. <https://www.chainalysis.com/blog/2024-geography-of-cryptocurrency-report/>
- Chainalysis Team. (2020, August 27). Hyperinflation and sanctions evasion: What on-chain data tells us about Venezuelans' trust in cryptocurrency. *Chainalysis*. <https://www.chainalysis.com/blog/venezuela-cryptocurrency-market-2020/>
- Chainalysis Team. (2023, October 11). Latin America: Venezuela and Argentina stand out as examples of crypto's unique utility. *Chainalysis*. <https://www.chainalysis.com/blog/latin-america-cryptocurrency-adoption/>
- Chainalysis Team. (2024, October 9). Latin America's search for economic stability: The rise of stablecoins amid volatility. *Chainalysis*. <https://www.chainalysis.com/blog/2024-latin-america-crypto-adoption/>
- Chebotkova, A. (2025). *Cryptocurrencies and their place in international financial relations*. Bratislava University of Economics and Business, Faculty of International Relations. <https://opac.crzp.sk/?fn=detailBiblioForm&sid=68B910E799EADD7B0A763BCCC4B9>
- CoinGecko. (2025, September). *Cryptocurrency market capitalization report: September 2025*. <https://www.coingecko.com/en/overall-market>
- CoinMarketCap. (2025). *Global cryptocurrency market capitalization report*. <https://coinmarketcap.com>
- Council on Foreign Relations. (2015, February 11). The Eurozone in crisis. *CFR Backgrounder*. <https://www.cfr.org/backgrounder/eurozone-crisis>
- DappRadar. (2020). *The state of blockchain applications: DappRadar 2020 report*. <https://dappradar.com/blog/2020-dapp-industry-report>
- DeFi Pulse. (2024, December). *DeFi total value locked: Q4 2024*. <https://defipulse.com/>
- Dillard, J. P. (2020). Currents in the study of persuasion. In M. B. Oliver, A. A. Raney, & J. Bryant (Eds.), *Media effects: Advances in theory and research* (pp. 115–129). Routledge. <https://doi.org/10.1037/0000120-016>
- Dwyer, G. P. (2015). The economics of Bitcoin and similar private digital currencies. *Journal of Financial Stability*, 17, 81–91. <https://doi.org/10.1016/j.jfs.2014.11.006>
- Financial Stability Board. (2024). *G20 crypto-asset policy implementation roadmap: Status report*. <https://www.fsb.org/2024/10/g20-crypto-asset-policy-implementationroadmap-status-report/>
- Gottsegen, W. (2021). Iran's Bitcoin mining could be generating \$1 billion in annual revenue: Study. *Decrypt*. <https://decrypt.co/71676/iran-bitcoin-mining-elliptic>
- Hanke, S. H. (2019, January 1). Venezuela's hyperinflation hits 80,000% per year in 2018. *Forbes*. <https://www.forbes.com/sites/stevehanke/2019/01/01/venezuelashyperinflation-hits-80000-per-year-in-2018/>
- Hirtenstein, A., & Chen, A. (2025, March 14). Russia leans on cryptocurrencies for oil trade, sources say. *Reuters*. <https://www.reuters.com/business/energy/russia-leans-cryptocurrencies-oil-trade-sources-say-2025-03-14/>
- Ibrahim, A. (2022). Iran concludes \$10 million import using crypto. *Bitcoinist*. <https://bitcoinist.com/iran-concludes-10-million-import-using-crypto/>
- Investopedia. (2024). *What was Mt. Gox? Definition, history, collapse, and future*. <https://www.investopedia.com/terms/m/mt-gox.asp>
- Kennedy, J., Bryan, E., Ploom, I., & Veebel, V. (2025, August 7). Russia's use of crypto schemes. *RAND Corporation*. <https://www.rand.org/pubs/commentary/2025/08/russias-use-of-crypto-schemes.html>

- Kia, S. (2025, May 26). Bitcoin mining in Iran, IRGC operations and the power grid crisis. *National Council of Resistance of Iran*. <https://www.ncr-iran.org/en/publications/special-reports/bitcoin-mining-in-iran-irgc-operations-and-the-power-grid-crisis/>
- Kwan, C. (2015, July 9). How the Greece debt crisis showed the world that Bitcoin is a store of value. *Cointelegraph*. <https://cointelegraph.com/news/how-the-greece-debt-crisis-showed-the-world-that-bitcoin-is-a-store-of-value>
- Luther, W. J., & Salter, A. W. (2017). Bitcoin and the bailout. *The Quarterly Review of Economics and Finance*, 66, 50–56. <https://doi.org/10.1016/j.qref.2017.01.005>
- Morris, D. Z. (2022, September 15). 1 year of Bitcoin in El Salvador: The bad, the good and the ugly. *CoinDesk*. <https://www.coindesk.com/layer2/2022/09/15/one-year-of-bitcoin-in-el-salvador-the-bad-the-good-and-the-ugly>
- Nakamoto, S. (2008). *Bitcoin: A peer-to-peer electronic cash system*. <https://bitcoin.org/bitcoin.pdf>
- NonFungible. (2022, January). *NFT market report 2021*. <https://nonfungible.com/market/report/2021>
- Popper, N. (2015). *Digital gold: Bitcoin and the inside story of the misfits and millionaires trying to reinvent money*. Harper.
- Ratha, D., Plaza, S., & Kim, E. J. (2024). In 2024, remittance flows to low- and middle-income countries are expected to reach \$685 billion, larger than FDI and ODA combined. *People Move, World Bank Blogs*. <https://blogs.worldbank.org/en/peoplemove/in-2024-remittance-flows-to-low-and-middle-income-countries-ar>
- Reinsch, W. A., & Palazzi, A. L. (2022, December 20). Cryptocurrencies and U.S. sanctions evasion: Implications for Russia. *Center for Strategic and International Studies*. <https://www.csis.org/analysis/cryptocurrencies-and-us-sanctions-evasion-implications-russia>
- Rey, D. (2024, January 12). Argentina's annual inflation soars to 211.4%, the highest in 32 years. *AP News*. <https://apnews.com/article/argentina-inflation-december-annual-milei-economic-measures-68f27bf0473590fabb5b6c1aff80579f>
- Roy, D., & Cheatham, A. (2025). Venezuela: The rise and fall of a petrostate. *Council on Foreign Relations*. <https://www.cfr.org/background/venezuela-crisis>
- Sharma, R. (2018). Why Venezuela's cryptocurrency, Petro, is a failure. *Investopedia*. <https://www.investopedia.com/news/why-venezuelas-cryptocurrency-petro-failure/>
- Sigalos, M. (2022, June 25). El Salvador's \$425 million bitcoin experiment isn't saving the country's finances. *CNBC*. <https://www.cnbc.com/2022/06/25/el-salvador-bitcoin-experiment-not-saving-countrys-finances.html>
- StatMuse. (2025). *What is the market cap of Bitcoin in 2012?* <https://www.statmuse.com/money/ask/what-is-the-market-cap-of-bitcoin-in-2012>
- SWIFT. (2015). *SWIFT pricing and fees for cross-border payments*. <https://www.swift.com/our-solutions/pricing-and-billing>
- Turak, N. (2021, May 26). Iran bans bitcoin mining as its cities suffer blackouts and power shortages. *CNBC*. <https://www.cnbc.com/2021/05/26/iran-bans-bitcoin-mining-as-its-cities-suffer-blackouts.html>
- Vasileva, H. (2024, December 12). Venezuela crypto remittances accelerate despite Binance ban. *Cryptopolitan*. <https://www.cryptopolitan.com/venezuela-crypto-remittances-accelerate/>
- Venturini, M., García-Costa, D., Álvarez-García, E., Grimaldo, F., & Squazzoni, F. (2025). Mapping network structures and dynamics of decentralised cryptocurrencies: The evolution of Bitcoin (2009–2023). *PLOS ONE*, 20(8), 1–18. <https://doi.org/10.1371/journal.pone.0329617>

Wells, P. (2013, March 21). Spaniards turn to Bitcoin amid Cyprus contagion. *Australian Financial Review*. <https://www.afr.com/markets/debt-markets/spaniards-turn-to-bitcoin-amid-cyprus-contagion-20130321-iltke>

World Bank. (2024, June 26). Remittances slowed in 2023, expected to grow faster in 2024. *World Bank Press Release*. <https://www.worldbank.org/en/news/press-release/2024/06/26/remittances-slowed-in-2023-expected-to-grow-faster-in-2024>

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ISLAM AS A POLITICAL-ECONOMIC FACTOR IN POST-SOVIET UZBEKISTAN¹

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Abstract: This paper examines the interrelated role of Islam in post-Soviet Uzbekistan as both a political-cultural stabilizer and an emerging economic factor within the framework of Islamic finance. The article argues that Uzbekistan's officially secular state has developed a unique system of state-managed religiosity that integrates Islam into nation-building, social regulation, and political legitimacy while simultaneously maintaining strict control over religious expression. The paper also analyses the evolution of Islamic finance in Uzbekistan, with emphasis on the Islamic Development Bank's (IDB) strategic involvement, the state's cautious legislative reforms, and the slow emergence of Sharia-compliant financial instruments. The study demonstrates that Islamic finance has become a supplementary vehicle for development, while constrained by institutional, legal, and ideological factors rooted in Uzbekistan's secular political identity. The paper concludes that the tension between secular statehood and Islamic economic modernization constitutes one of the defining dynamics of Uzbekistan's post-Soviet development trajectory.

Keywords: Islam in Uzbekistan, state-managed religiosity, secularism, political legitimacy, Islamic finance, Islamic Development Bank (IDB)

JEL: P26, P47, Z12

Introduction

Since gaining independence in 1991, Uzbekistan has undergone a significant socio-political and economic transformation shaped by the legacy of Soviet secularism, the revival of Islamic tradition, and the state's attempt to balance modernisation with cultural and religious heritage. Islam represents one of the most decisive and historically embedded identity markers in the region, yet its position within the Uzbek political system remains carefully regulated (Akiner, 2003; Alimov, 2002; Kangas, 2025). This regulated presence of religion has produced a model of state-managed religiosity, wherein the government seeks to prevent politicization of Islam while simultaneously deploying it as a tool of national cohesion, legitimacy, and social order.

A key research objective of this article is to explore how Islam operates in both political-ideological and economic spheres of post-Soviet Uzbekistan. While the political dimension has been extensively examined in the broader literature on Central Asia (Atkin, 1992; Ahrari & Beal, 1996; Roy, 2000), significantly less scholarly attention has been devoted to the emergence of Islamic finance as a driver of development in secular, predominantly Muslim post-Soviet states. Uzbekistan constitutes a revealing case: despite having the largest population in Central Asia and deep Islamic roots, it joined the Islamic Development Bank (IDB) only

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in 2003 and remained institutionally distant from Islamic finance until 2016 (Khusanov, 2019; IDB, 2024).

Recent reforms under President Shavkat Mirziyoyev, however, have opened new prospects for the integration of Islamic economic instruments into the national development agenda. This process occurs within a broader ideological framework that frames secular state identity (*dunyoviy davlat*) in relation to selective engagement in Islamic socio-economic practices.

This article analyses Islam as a political-economic factor in contemporary Uzbekistan. It presents a concise literature review on Islam, secularism, and Islamic finance, examines the political context of state-managed religiosity. The empirical section combines quantitative analysis comparing Islamic Development Bank financing with the World Bank lending trends, alongside with the qualitative analysis of Islam as reflected in the official receptions of the president of Uzbekistan. The conclusion considers the implications of these findings for understanding development trajectories in Muslim-majority secular states.

1 Literature Review

1.1 Islam and National Identity

The academic literature positions Islam as a central yet contested element of Central Asian identity. Scholars trace the historical development of Islamic tradition in the region to successive layers of Arab, Turkic, Persian, and Soviet influences (Aslan, 2005; Atkin, 1992). In Uzbekistan, Islam persisted despite Soviet atheistic policies, largely sustained through family networks, community structures, and cultural institutions, with the mahalla system being particularly important in ensuring the continuity of religious practices and social norms (Sartori, 2024; Prozorov, 1998).

The post-Soviet revival of Islam in Uzbekistan is described as a multifaceted process involving institutional reconstruction, the redefinition of social and political identities, and strategic state involvement (Akbarzadeh, 2005; Pottenger, 2004). Research indicates that under Islam Karimov, the state promoted a narrative of “traditional Islam” to differentiate it from radical or politically oriented interpretations (Alimov, 2002; Roy, 2000). This distinction continues under Mirziyoyev’s administration, accompanied by rhetoric emphasizing reform, modernization, and selective integration of Islamic practices within the framework of a secular state.

1.2 Secularism and State-Managed Religiosity

This article contributes to the literature by building on Salim’s (2019) analysis of state-managed religiosity, a model in which religion is institutionalized yet depoliticized, regulated, and mobilized to serve state objectives. The Uzbek Constitution guarantees freedom of belief while clearly separating religion from the state (Constitution of the Republic of Uzbekistan, 2024). Nevertheless, the state maintains extensive control over religious institutions, curricula, clergy education, and theological interpretation.

This governance reflects broader scholarly observations of personalized and hierarchical political structures in Uzbekistan (Ilkhamov, 2007; Juza, 2006), as well as the continuing influence of clan networks and local community structures in mediating religious authority.

1.3 Islamic Finance

Islamic finance has expanded globally in recent decades, particularly through sukuk markets, Islamic banking, and investment protection institutions (Musa, 2011; Islamic Finance Report, 2023; Mohamed & Al Taitoon, 2024). In Uzbekistan, scholarly works identify three main obstacles – legislative gaps, Limited institutional capacity, and Insufficient public awareness of Islamic financial principles (Asadov, 2024; Asadov & Turaboev, 2023; Imam

Nazarov, 2024). The Islamic Development Bank plays a crucial role in promoting Islamic finance infrastructure in member states by financing development projects, supporting capacity building, and advising on regulatory reforms (Al Jasser, 2025; IDB, 2024).

1.4 The Legacy of Soviet Secularization, Change under Mirziyoyev

Soviet policies fundamentally transformed Islamic institutions in Central Asia through repression, co-optation, and selective tolerance. Uzbekistan emerged from the Soviet period with a weakened yet resilient Islamic tradition (Sartori, 2024; Prozorov, 1998). Following independence, Islamic practice experienced a revival however, the political leadership remained cautious of potential radicalization and implemented a range of legal and institutional constraints.

Under Karimov, Islam was framed primarily as a cultural and historical heritage rather than as a political force (Akbarzadeh, 2005; Roy, 2000). Religious activity was incorporated into national ideology but restricted from political engagement, an approach reinforced through rigorous regulation of religious education, oversight of mosque registration, and formal evaluation and approval of clergy appointments. This model reflects broader patterns of state-managed religiosity described in the literature, emphasizing both institutional control and the persistence of local community networks (Salim, 2019; Ilkhamov, 2007).

President Mirziyoyev's reforms have moderated the previously securitized approach to religion, enabling the expansion of religious education institutions, rehabilitation of individuals previously accused of extremism, and increased international cooperation with Islamic organizations (ICESCO, 2024; President.uz, 2024). As noted by Salim (2019), these changes reflect a continuation of the state-managed model of religiosity, with selective adaptations to support social stability and international engagement.

The state's overarching control remains. The principle of *dunyoviy davlat* (secular state) continues to guide governance, ensuring that initiatives such as Islamic finance operate within a secular framework (Sartori, 2024; Akbarzadeh, 2005). Scholars also emphasize that hierarchical political structures and local community networks persist in mediating religious authority (Horák, 2005; Juza, 2022), indicating that Mirziyoyev's reforms modify but do not overturn the institutionalized patterns established under first president Karimov.

2 Islam in the Political Development of Independent Uzbekistan

2.1 Uzbekistan on the Road to Political and Religious Freedom

In the late Soviet period, fears of an "Islamic threat" in Central Asia did not materialize (Klokava, 2015). Although the Soviet–Afghan war and 1980s liberalization heightened Moscow's concerns no mass Islamist mobilization appeared as the USSR weakened. The Union collapsed without notable destabilization from its Muslim populations. In the March 1991 referendum, over 94% of voters in Uzbekistan supported preserving the Soviet Union (Central Commission of the USSR for the Referendum, 1991). Since roughly 88% of the republic's population was Muslim, this result demonstrated that the "Islamic factor" was not driving political opposition. Most people associated stability with remaining in the Union (Office of International Religious Freedom, 2023).

Uzbekistan declared independence in August 1991, and Communist Party leader Islam A. Karimov became the first President. At his inauguration, Karimov swore on both the Qur'an and the Constitution, symbolically combining secular and Islamic traditions. Despite adopting new national symbols such as replacing the Soviet emblem with the Huma bird and Islamic crescent the regime largely maintained Soviet-style governance. The KGB was renamed the National Security Service (SNB), and the first multiparty elections of 1991 resulted in Karimov winning 86% of the vote. International observers later noted the absence of free elections throughout his rule (Freedom House, 2015; OSCE, 2015).

A brief “Glasnost” period (1988-1992) allowed the emergence of new groups, including Islamic-inspired movements like “Islam Lashkari” and “Adolat,” but they were quickly suppressed. The nominal opposition party Erk remained largely symbolic (Nelvin, 2000). In this early independence context, an ideological vacuum enabled the return of Islamic practices as society rediscovered its religious heritage (Kodirova-Huynh, 2023, pp. 33-34). This revival was mainly moderate and cultural, with no immediate rise of radical fundamentalism.

Nonetheless, uncertainty and repression contributed to the emergence of some extremist groups, especially in the Ferghana Valley. The most significant was the Islamic Movement of Uzbekistan (IMU), formed in the mid-1990s partly in reaction to state policies (Holmuchammedova, 1998, p. 27). Thus, from independence onward, Uzbekistan faced a delicate balance between a predominantly Muslim society searching for identity and a secular authoritarian regime intent on maintaining control.

2.2 The Islamic Factor under President Islam Karimov

President Karimov’s administration (1991-2016) combined strict control of religion with its instrumental use for regime legitimacy. The Tajik civil war fought between former communist elites and an Islamist-led opposition strongly shaped Tashkent’s early policies. Fearing a similar scenario in Uzbekistan, the government quickly tightened its approach to Islam (Gamza & Jones, 2021, p. 205). Citing the chaos in Tajikistan, the regime consolidated power, repressed opposition, and targeted groups with Islamic tendencies. By the mid-1990s, political life had been fully centralized under Karimov’s People’s Democratic Party. Opponents were exiled or neutralized. Muhammad Salih fled in 1993, and even independent mufti Muhammad Sodik was pressured into resignation and exile. After a short post-independence opening, mosque closures and restrictions on Muslim communities intensified. Karimov justified these measures as necessary to prevent conflict, consistently warning about “Islamic fundamentalists” (Breitner-Czuma, 2000).

To further entrench power, Karimov held a 1995 referendum extending his presidential term. It passed with 99.3% approval and 99.6% turnout, creating what scholars’ term “soft authoritarianism „institutions of democracy remained, but their substance was hollowed out (Nelvin, 2000). With secular opposition suppressed, Islam became one of the few channels for dissent. Analysts noted that by the mid-1990s it had become the only meaningful and symbolic tool of resistance to one-party rule (Levitsky & Way, 2002).

Throughout the late 1990s and 2000s, the regime remained highly suspicious of Islam’s political potential. Independent religious activity was often equated with extremism. A 1998 law criminalized unregistered religious gatherings (Lex.uz, 1998). That same year Karimov declared that those he called terrorists “must be shot” (Karimov, 1998). After the February 1999 Tashkent bombings, authorities launched mass arrests and purges, blaming the Islamic Movement of Uzbekistan (IMU). The IMU responded with a jihad manifesto invoking Quranic scripture to justify overthrowing the secular state. In September 2000, the United States designated the IMU a Foreign Terrorist Organization (State.gov, 2000). Following 2001, Uzbekistan joined the Global War on Terror: Karimov allowed U.S. use of a military airbase to support operations in Afghanistan (The White House, 2002). Yet domestic repression of pious Muslims grew, as moderate leaders observed widespread arrests of ordinary believers.

The hardline approach culminated in the Andijan massacre on 13 May 2005, when security forces violently dispersed a mass protest in the Ferghana Valley. The government attributed the unrest to Islamist insurgents from the Akromiya group and reported 187 deaths, framing the crackdown as an anti-terrorist action. Tashkent never released results of its internal investigation, and Andijan remains taboo in national media. The international backlash was severe. In response, Karimov distanced himself from the West, expelled U.S. forces

from Uzbekistan in late 2005, and renewed closer ties with Russia ending the short-lived strategic partnership with Washington (Honig, 2023, p. 197).

2.3 Islam in Uzbekistan's Political Development since 2016

After Islam Karimov's death in 2016, Prime Minister Shavkat Mirziyoyev assumed the presidency. Initially viewed as Karimov's chosen successor, he did not immediately change the authoritarian character of the system, which still exhibited "continuation of authoritarian governance, limited civil and political freedoms, absolute state control of elections, facade pluralism, and power structured around clan balance. Over time, however, Mirziyoyev consolidated his own authority, dismantled Karimov's personality cult, and introduced a reform agenda branded as the "New Uzbekistan, which included a recalibration of state religion relations.

One of Mirziyoyev's early priorities was easing state control over Islam. In 2018, a revised Law on Freedom of Conscience and Religious Organizations relaxed several restrictions, including lifting the public hijab ban and simplifying the registration process for religious groups by reducing the required number of adult members from 100 to 50. Observers saw these reforms as overdue steps toward respecting basic rights in a Muslim-majority society (USCIRF, 2021). Mirziyoyev framed them within broader constitutional reforms aimed at strengthening citizens' freedoms and marking a break from Karimov's rigid secularism.

Beyond legal changes, the government adopted a more open attitude toward everyday religious practice. Official discourse shifted from Karimov's emphasis on repression toward education and prevention. Mirziyoyev's administration promoted the "enlightenment of young people against ignorance" as its main tool against extremism, embedding this approach into state programs. The state also supported renewed interest in Uzbekistan's Islamic scholarly heritage through research initiatives and new Islamic educational institutions. While Uzbekistan remains a secular state, Mirziyoyev has loosened restrictions on faith, portraying a well-educated Muslim public as a national asset rather than a threat (*O'zbekiston xalqaro islom akademiyasi*, 2024).

These reforms, however, do not constitute a full political opening. Religious activity remains tightly monitored, and political Islam is still prohibited. Still, since 2016 Uzbekistan has experienced relative liberalization: the "Islamic factor" is managed with a lighter touch, and religion is increasingly used to promote social cohesion and project an international image of a moderate Muslim-majority country.

2.4 Islam as a Tool of Political Legitimacy and Social Stability

Under both Karimov and Mirziyoyev, Islam has been carefully managed by the state to reinforce political stability and legitimacy. Scholars describe this system as "state-managed religiosity," in which religion is institutionalized under government oversight, kept apolitical, and used to support national identity. Official Islamic bodies such as the Muftiate operate within a state-controlled framework, while independent or oppositional religious expressions are restricted.

During Karimov's era, Islamic symbolism was incorporated into national ideology even as deviant forms of Islam were suppressed. State emblems and ceremonies invoked Islamic motifs (such as the crescent and star), and the regime revived historical narratives linking Islam with Uzbek cultural glory. Karimov celebrated Amir Timur as a national hero and displayed the Qur'an of Othman to emphasize continuity with Islamic civilization. By promoting a controlled Islamic heritage, the state portrayed itself as guardian of the nation's spiritual traditions. Simultaneously, Karimov framed political Islam as an existential danger, regularly invoking "Islamic fundamentalists" to justify repression. For a population wary of instability in Tajikistan and Afghanistan, this securitized narrative enhanced state legitimacy. Thus, Islam

served both positively as a symbol of unity and negatively as a justification for maintaining authoritarian control.

Mirziyoyev has continued this dual strategy, though more softly. The state still monopolizes religious authority, allowing only sanctioned clerics and institutions to operate freely. At the same time, it promotes a moderate Islamic discourse often described as “Enlightened Islam” to strengthen social cohesion and present Uzbekistan internationally as a modern, peaceful Muslim-majority state. Reforms such as easing restrictions on hijab and religious education help the government align itself with public sentiment while upholding secular principles. Both administrations therefore treat Islam as a strategic resource: harnessing its moral authority to bolster legitimacy while preventing it from becoming a political force. This balance integrating Islam into the national narrative but excluding it from oppositional politics remains central to the political role of Islam in independent Uzbekistan.

3 Economic Dimension of Islam in Uzbekistan

3.1 Strategic Role of the Islamic Development Bank (IDB)

The Islamic Development Bank (IDB) has become the principal driver of Islamic finance initiatives in Uzbekistan and the country’s key source of Islamic capital and expertise. Uzbekistan became a full IDB member in 2003, and a permanent regional office has operated in Tashkent since 2007. By 2025 the active project portfolio amounted to about USD 4.5 billion, underscoring the strategic nature of this partnership (Khasanov, 2025). In line with its mandate, the IDB supports the emerging Islamic financial ecosystem in three main areas: banking services, capital markets and philanthropic finance.

1. *Islamic banking.* A core priority is helping Uzbekistan build a legal and institutional framework for Sharia-compliant banking. As of the mid-2020s, draft legislation on Islamic banking was under review by the Presidential Administration. The IDB has facilitated capacity-building by organizing training for regulators and bankers in countries with developed Islamic finance sectors such as Malaysia and the UAE. The Central Bank of Malaysia’s International Center for Education in Islamic Finance (INCEIF, founded as a university in 2006) has partnered with Uzbekistan to train specialists in Islamic banking and takaful. Through this cooperation, Uzbekistan seeks to address its shortage of qualified Islamic finance personnel (Kun.uz, 2022).

2. *Islamic capital markets (sukuk).* The second pillar is developing Islamic capital markets, especially sukuk (Islamic bonds). Priority has been given to “green sukuk” for environmentally beneficial projects, while other structures such as sukuk al-murabaha, sukuk al-ijara and sukuk al-istisna are considered for infrastructure and public works. In 2022 Uzbekistan established the National Agency for Perspective Projects (NAPP) to regulate and develop capital markets, insurance, digital assets and alternative financing. Together with the IDB, UNDP and the Astana International Financial Centre, NAPP has been drafting a new Capital Markets Law with a dedicated chapter on alternative instruments, including Islamic products (NAPP, 2025). This aims to provide the legal basis for sukuk issuance in line with international standards.

3. *Waqf and social finance.* A third area is reviving waqf - Islamic endowments - as a tool of social finance. Under Soviet secularism, waqf assets largely stagnated. Today, the government seeks to use them for community development and poverty reduction with IDB guidance. The Committee for Religious Affairs (CRA) has been tasked with proposing legislation on more transparent waqf management, including trust-law-type mechanisms so that waqf assets can be managed for public benefit with limited direct state interference (Lex.uz, 1992). According to IDB Tashkent director Khusan K. Vakhabovich Khasanov, promoting waqf aligns with Islamic values of charitable giving and the belief that “good deeds” will weigh heavily in afterlife judgment (Khasanov, 2025).

Overall, the IDB's role in Uzbekistan goes beyond financing isolated projects: it helps legitimize Islamic financial practices, supports law-making and trains personnel. For Uzbekistan, the IDB diversifies capital sources and modernizes the financial system. For the IDB, Uzbekistan is a high-potential market and a gateway to Islamic finance in Central Asia. By 2025, cooperation had produced concrete outcomes such as a pending Islamic banking law and pilot sukuk initiatives, though implementation remained in early stages.

3.3 Comparative Trends: IDB versus the World Bank in Uzbekistan

Uzbekistan's engagement with the IDB has developed alongside its longer relationship with the World Bank, revealing distinct yet complementary trajectories. The country joined the World Bank in 1992, soon after independence, but acceded to the IDB only in 2003. Throughout the 1990s and early 2000s, development assistance came mainly from conventional institutions, with the World Bank establishing itself as a key partner. The IDB's presence is more recent and operates on Islamic financing principles.

Cooperation with the World Bank Group (WBG) began immediately after independence and quickly expanded to a broad, multisectoral portfolio. The WBG, including the International Finance Corporation, has supported structural reforms, public finance management, infrastructure and banking-sector restructuring. By contrast, the first IDB projects appeared only after 2003. Cumulative World Bank lending still far exceeds IDB financing, and as of 2025 the World Bank remained Uzbekistan's largest official development financier in terms of active portfolio, particularly in education, water, energy and economic policy reform (World Bank, 2023, p. 15). The IDB had approved about USD 340 million in new financing in 2023, roughly 2% of all IDB commitments to Uzbekistan since 2003, indicating that it's more than USD 4 billion portfolio still complements rather than replaces conventional assistance.

The IDB, in contrast, is guided by Islamic solidarity and Sharia-compliant modes of financing. Its loans and grants avoid interest and often target projects consistent with Islamic ethical norms, such as agriculture, education and infrastructure with public benefit. Accordingly, the World Bank tends to support a broader range of sectors, including policy-based lending, whereas the IDB focuses on specific projects and on building Islamic financial capacity. The two institutions overlap in areas such as infrastructure and agriculture, but the IDB structures funding via Islamic contracts (e.g. leasing, profit-sharing) instead of conventional interest-bearing loans.

Uzbek authorities regard both the World Bank and the IDB as strategic partners, but with different comparative advantages. The World Bank is a long-term source of capital and policy advice, deeply integrated into the reform agenda. The IDB is valued both for financing and for legitimizing Islamic financial practices in a state that only recently began to explore them. IDB involvement carries geopolitical and cultural significance, reconnecting Uzbekistan with the Muslim world and facilitating investment from wealthy Muslim-majority states. Islamic financial services show very low penetration, and institutional capacity within IDB-related programs is limited. Uzbekistan joined the Islamic Corporation for the Insurance of Investment and Export Credit (ICIEC) only in 2019, as the 46th member (ICIEC, 2024), illustrating the gradual and cautious nature of this integration.

In sum, Uzbekistan's development path reflects dual engagement with secular and Islamic multilaterals. The World Bank anchors Uzbekistan in the global secular economy, while the IDB integrates it into the Muslim economic community. Rather than competing, the two institutions address different needs and together broaden Uzbekistan's development options.

3.4 Prospects and Constraints of Islamic Finance in a Secular State

The expansion of Islamic finance in Uzbekistan offers clear opportunities but also significant challenges, particularly given the country's secular identity and post-Soviet legacy. Recent reforms demonstrate strong political interest, yet regulatory gaps, limited capacity and ideological caution still hinder rapid growth.

Reform initiatives and opportunities. Under President Shavkat Mirziyoyev, Uzbekistan has explicitly embraced Islamic finance as part of its modernisation agenda. The Uzbekistan 2030 Development Strategy (adopted in 2023) calls for integrating Islamic finance into the banking system, stipulating that by 2030 at least three commercial banks should offer Islamic products and that a full legal framework be established. These aims build on the 2017-2021 National Action Strategy. A key step was the 2019 agreement with the IDB and UNDP to introduce Islamic financial services Al Ansari (2020) at the time anticipated a “significant entry” of Uzbekistan into the Islamic finance arena.

The academic literature supports this optimism. Abrorov and Imamnazarov (2021) argue that Islamic finance can catalyse growth and efficiency in dual-finance economies by increasing competition with conventional banks (Abrorov & Imamnazarov, 2021, pp. 665-666). Toymuxamedov et al. (2023) highlight access to additional IDB resources as the main advantage for Uzbekistan, potentially improving lending efficiency, financial sustainability and crisis resilience (Toymuxamedov et al., 2023, pp. 37-38). Local analysts stress that Islamic banking could unlock new capital flows and attract investors from the Muslim world.

Islamic finance is also perceived as an ethical alternative aligned with the values of a more than 90% Muslim population. Surveys suggest that many Uzbeks avoid conventional bank loans due to religious objections to interest and distrust of complex credit products. Sharia-compliant finance could mobilise “hidden” savings into the formal sector. Some commentators describe Islamic finance as “a foundation of Uzbekistan's bright future,” combining increased foreign investor interest with the country's deep Islamic cultural roots and the government's readiness to use that heritage (Sotiboldievich, 2022, p. 56). Absamatov (2024) likewise argues that Uzbekistan's cultural-religious specifics and ongoing financial liberalisation create favourable conditions for Islamic finance. Principles such as risk-sharing, asset-backing and the prohibition of excessive speculation are seen as consistent with prevailing social norms and potentially conducive to financial inclusion and trust. (Absamatov, 2024).

Structural and ideological constraints. Despite these advantages, several obstacles persist. First, the legal and regulatory framework remains incomplete. As of 2025, laws enabling Islamic banking, sukuk issuance and takaful were still in draft or pilot form, creating uncertainty for domestic banks and foreign investors. Conventional banks cannot fully offer profit and loss sharing deposits or Sharia-compliant loans until the banking law is amended. There is also no fully established supervisory architecture or national Sharia board to oversee products.

Second, institutional capacity is limited. Banks and regulators have little practical experience with Islamic finance, and domestic Sharia scholars and practitioners are scarce. Training initiatives with institutions such as INCEIF aim to address this, but building a critical mass of expertise will take time. Public awareness is also low after decades of state-enforced secularism, leading to misunderstandings about how Islamic banking works and whether it is profitable. Toymuxamedov et al. (2023) emphasise that low awareness may initially constrain demand. Conventional banks, moreover, have often been reluctant to allocate major credit lines under Islamic modes, partly due to perceived risks and the absence of appropriate liquidity-management tools.

At a deeper level, the country's political-ideological context remains decisive. Uzbekistan's socio-political order has been shaped by Soviet and post-Soviet secularism, with Islam strictly controlled and excluded from formal politics. Under Islam Karimov (1991-2016), “Islamic activism” was largely viewed as a security threat. This legacy has produced cautious

institutional attitudes toward any form of political or economic Islam. Although Mirziyoyev is more open, the state continues to guard against perceived “Islamisation.” As Gresh (2008) notes, the Soviet atheist legacy, authoritarian governance and strict secularism historically slowed Islamic finance. These factors still dampen political will for rapid reform. Official discourse stresses that Islamic finance will develop while maintaining the secular nature of the state reflecting a careful balancing act (Sagitov, 2021, p. 2).

Concerns also exist that expanded Islamic financial institutions could empower independent religious networks or external Islamic actors. Elite and clan interests may perceive new Islamic banks and funds as competitors in the financial sphere. If dominant networks see Islamic finance as a threat to patronage systems, they may obstruct its growth (Abrorov & Imamnazarov, 2021, p. 666; Absamatov, 2024).

Current outcome and outlook. So far, this cautious approach has produced slower-than-expected progress. By the end of 2024, Uzbekistan still lacked a full-fledged Islamic bank, though a few conventional institutions had opened small “Islamic windows.” The anticipated surge of Islamic investment has yet to materialise both domestic and foreign Islamic capital remain limited.

There are, however, signs of gradual movement. In late 2023, a draft Islamic banking law was submitted to parliament, and in 2024 the central bank announced that the “bill on Islamic finance is ready” for approval (Kun.uz, 2024). These developments suggest that a comprehensive Islamic finance framework could be adopted by the mid-2020s, after which the IDB and other partners may help operationalise Islamic institutions relatively quickly.

Conclusion

Islam in post-Soviet Uzbekistan has served both as a source of political stability and as a controlled cultural resource. Successive governments have strategically managed religion to reinforce national identity and regime legitimacy while preventing independent political mobilization. Under Islam Karimov, this took the form of strict regulation and repression of unsanctioned religious activity, combined with the promotion of a state-approved “traditional Islam.” Shavkat Mirziyoyev has softened this model by easing certain restrictions, yet the core framework of a secular state supervising religious life remains intact. Islam is encouraged as part of cultural heritage and moral renewal, but political Islam continues to be excluded from the public sphere.

Economically, the gradual rise of Islamic finance illustrates Uzbekistan’s pragmatic approach to integrating Islamic instruments into a secular development strategy. Cooperation with the Islamic Development Bank has introduced Islamic banking services, sukuk initiatives, and waqf-based projects, diversifying financial options without altering the dominant secular financial system. Islamic finance thus functions as a complementary tool that attracts investment and reflects societal preferences in a predominantly Muslim country. Overall, Uzbekistan’s trajectory demonstrates a deliberate balance between secular governance and selective Islamic modernization an equilibrium likely to shape its future political stability and economic development.

References:

- Absamatov, O. (2024). Islomiy moliyalashtirishning O‘zbekistondagi rivojlanish istiqbollari (Perspectives of Islamic finance development in Uzbekistan). *Journal of Islamic Economics*, 10(4), 4890-4900.
- Ahrari, M. E., & Beal, J. (1996). The new great game in Muslim Central Asia (McNair Paper No. 47). Institute for National Strategic Studies, National Defense University.
- Akbarzadeh, S. (2005). *Uzbekistan and the United States: Authoritarianism, Islamism and Washington’s security agenda*. Bloomsbury.

- Akiner, S. (2003a). Islam and post-Soviet Uzbekistan: The emerging role of Islam in national identity. *Religion, State & Society*, 31(2), 123-137.
- Akiner, S. (2003b). The politicisation of Islam in post-Soviet Central Asia. *Religion, State & Society*, 31(2), 97-122.
- Al Ansari, R. (2020). Islamic finance development report 2020. Refinitiv Islamic Finance Analytics.
- Alimov, R. M. (2002). State and Islam. *Medzinárodné otázky*, 11(1), 80-92.
- Aslan, R. (2011). *No god but God*. Arrow Books.
- Atkin, M. (1992). Religious and other identities in Central Asia. In J. A. Gross (Ed.), *Muslims in Central Asia: Expressions of identity and change*. Duke University Press.
- Constitution of the Republic of Uzbekistan. (2023). O'zbekiston Respublikasi Konstitutsiyasi. Constitution.uz. <https://constitution.uz/uz>
- Gamza, D., & Jones, P. (2021). The evolution of religious regulation in Central Asia, 1991-2018. *Central Asian Survey*, 40(2), 197-221.
- Gresh, A. (2008). Muslim Uzbekistan? In J. Esposito (Ed.), *The Oxford encyclopedia of the Islamic world* (Vol. 2, pp. 155-159). Oxford University Press.
- Honig, J. (2023). Military sanctions: The war on terror and the case of Uzbekistan. *Journal of Liberty and International Affairs*, 9(1), 189-203. <https://doi.org/10.47305/JLIA2391193h>
- Holmukhammedov, A. (1998). Islamskij faktor v Uzbekistane. *Svobodnaja mysl'*, 14(6), 27-28.
- Islamic Corporation for the Insurance of Investment and Export Credit. (2024). ICIEC annual report 2023. ICIEC.
- IIAU.UZ. (2024, February 7). History of the Academy. International Islamic Academy of Uzbekistan. <https://iiau.uz/en/news/2900>
- Ilkhamov, A. (2007). Neopatrimonialism, interest groups and patronage networks: The impasses of the governance system in Uzbekistan. *Central Asian Survey*, 26(1), 65-84. <https://doi.org/10.1080/02634930701243491>
- Juza, P. (2006). Klany a klamy Uzbekistanu. *Medzinárodní politika*, (1), 10-12.
- Juza, P. (2022). Politické režimy v Strednej Ázii. *PeIn*.
- Khasanov, K. V. (2025). Director, IDB Regional Office Tashkent - Personal interview by the author, May 19-22, 2025.
- Klokava, A. (2015). *Komparace politických režimů ve vybraných zemích Střední Ázie: Kazachstán, Uzbekistán, Kyrgyzstán* (Doctoral dissertation). Vysoká škola ekonomická v Praze. <https://vskp.vse.cz/eid/82369>
- Kodirova-Huynh, A. (2023). The revival of Islam in Uzbekistan after independence: Advantages and disadvantages. *Universum*, 100(9), 29-35.
- Kun.uz. (2022, August 1). Uzbekistan, Malaysia to exchange best practices in the field of Islamic finance. Kun.uz. <https://kun.uz/en/news/2022/08/01/uzbekistan-malaysia-to-exchange-best-practices-in-field-of-islamic-finance>
- Law of the Republic of Uzbekistan on Freedom of Conscience and Religious Organizations, No. 638-I. (1998, May 1). On freedom of conscience and religious organizations. https://www.legislationline.org/download/id/6329/file/Uzbekistan_law_freedom_conscience_1998_en.pdf
- Lex.uz. (1992). Zákon o slobode svedomia a náboženských organizáciách [Law on Freedom of Conscience and Religious Organizations] (Law No. 770-XII, in effect from 18 June 1992).
- Lex.uz. (2023). Prezident farmoni PF-158, 11.09.2023: O'zbekiston - 2030 [Decree of the President of Uzbekistan No. PF-158 "On the Uzbekistan - 2030 Strategy"]. Lex.uz.
- Maenza, N. et al. (2022). Zaključennye po Religioznym i Političeskim Motivam v Uzbekistane. [Prisoners on religious and political grounds in Uzbekistan] *United States Commission*

- on *International Religious*, 2022. 76 p. <https://www.uscirf.gov/sites/default/files/2022-04/2021%20Uzbekistan%20Report%20%28RU%29.pdf>.
- National Agency for Perspective Projects. (2025). Draft law on capital market (alternative financial instruments). NAPP.
- Pottenger, J. R. (2004). Civil society, religious freedom, and Islam Karimov: Uzbekistan's struggle for a decent society. *Central Asian Survey*, 23(1), 55–73.
- Prozorov, S. M. (1998). Islam na territorii byvšej Rossijskoj imperii. In Islam na territorii byvšej Rossijskoj imperii: Entsiklopedičeskij slovar' (Vol. 1, p. 103). Vostočnaja literatura RAN.
- Roy, O. (2000). The new Central Asia: The creation of nations. I. B. Tauris.
- Sagitov, R. (2021). Vlijanie rosta religioznogo soznanija graždan na ekonomičeskie processy na primere vnedrenija sistemy islamskogo finansirovanija v Uzbekistane [The influence of the growth of citizens' religious consciousness on economic processes: The case of implementing an Islamic finance system in Uzbekistan] *NUZ Ekonomika i Biznes*, July 11, 2021.
- Sotiboldievich, S. S. (2022). Islomiy moliya - O'zbekiston yorqin kelajagining omili [Islamic finance as a factor of Uzbekistan's bright future]. *Ma'rifat*, (4), 55-57.
- Toymuxamedov, I., Norov, B., Ibodullaeva, N., & Ashurov, Z. (2023). Opportunities and challenges for Islamic banking services in Uzbekistan. *Finance and Technology International Journal*, 5(1), 35-40.
- U.S. Department of State. (2000). Foreign terrorist organizations. <https://www.state.gov/foreign-terrorist-organizations/>
- White House. (2002, February 21). Uzbekistan president to visit Washington. The White House. <https://georgewbush-whitehouse.archives.gov/news/releases/2002/02/20020221-8.html>

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Section 3 CURRENT ISSUES OF WORLD POLITICS

CURRENT STATE OF ISLAMIC FINANCE IN CENTRAL ASIA

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Abstract: This article aims to explain the Sharia-compliant aspects of Islamic finance, which are applied in the post-Soviet countries of Central Asia. From the broader perspective, the author of the paper focuses on the analysis of Islamic finance mechanisms and instruments, development trends, regulatory frameworks, and the main challenges faced by financial institutions and stakeholders in Central Asia. The article presents practical recommendations and strategic visions concerning regional characteristics, including regulatory harmonisation, institutional capacity building, innovative product development, and information campaigns. When it comes to methodology, the author used analysis and synthesis, which, together with the method of description helped accomplish content objectives of the paper.

Keywords: Islamic finance, characteristics of Islamic finance, development of Islamic finance

JEL: F55, G15, G21

1 Key principles of Islamic Finance

There is currently no clear definition of the term “Islamic finance” in economic and legal sciences, as its main feature is its religious nature. In accordance with the constitutions of Eastern (primarily Asian) countries, where Islamic finance is most established, religious sources of law, such as the Quran and Sunnah, are considered to be acts of the highest legal force. The principles of the Quran concerning commercial transactions were adopted in the Sunnah, which is an expression of the deeds and actions of the Prophet Muhammad. The Sunnah is a model and guide for every Muslim and, together with the Quran, forms the immutable foundation of Islam. The Prophet’s observations and guidance regarding the conduct of commercial transactions form the fundamental basis of Islamic finance practices (Čech, 2019). Unlike the priorities of a market economy, where profit maximisation is the main goal of the entire production process, reproduction, distribution, and other processes, in the Islamic financial model, the methods by which profit is achieved are important and necessary for its functioning. There is one important aspect that distinguishes it from the traditional economic system - it is a moral orientation based on the ethical constraints of religion. The main criterion in this case is compliance with Islamic law.

Firstly, the scope of activities of Muslim entrepreneurs is limited to permitted businesses. This means that it is forbidden to engage in business activities in the field of gambling or to do business based on production of alcohol and drugs. Islam also prohibits the use of property and income obtained from these activities and property valuation is directly related to religious criteria.

Secondly, from the perspective of Islamic law, the economic and financial conduct of market participants must comply with the principle of maximum honesty and conscientiousness. This requires the mandatory establishment of:

- the subject matter, terms and obligations of the contract,
- prohibition of coercion in concluding a contractual relationship,
- mandatory compliance with the contract and willingness of contracting parties to cooperate in good faith,
- free access to the market for trade participants,
- honesty in business relationships,
- availability of complete and reliable information on price, quality, quantity of goods, and terms and conditions of trade.

Negative factors such as fraud, speculation, dumping, and monopoly are also unlawful. In this sense, the Islamic financial system acts as a regulator of legal and economic relations in society. The Quran and Hadith offer an extensive set of guidelines and prohibitions governing socio-economic relations, including the application of business rules and principles prescribed by Sharia.

The Islamic financial model based on Islamic values and worldview is only part of the entire Islamic system, in which ethical norms prevail and through which economic activity is integrated into social life, setting standards for social behaviour. This system not only explains socio-economic phenomena but also corrects economic and financial conduct.

2 Islamic finance instruments and tools applied in Central Asia

As we mentioned in the previous chapter, the Islamic financial system is based on real assets, rejecting usury, derivatives, and other speculative instruments. The absence of such instruments prevents various crisis situations. In the traditional commercial financial system, there are many elements that help inflate the financial bubble - various complementary derivatives allow debts to be repaid with debt, etc.

By strictly prohibiting interest, Islam allows for a more equitable distribution of the debt burden. When it comes to various investment instruments, we can therefore talk about the principles of social justice. A renowned theorist researching Islamic finance states in his studies that the economy cannot be truly effective if it is not based on the principles of social justice and responsibility (Haron, 1998). The uniqueness of the Islamic financial model is not so much expressed in certain quantitative indicators, in the level of income and expenditure, in import and export volumes, or in other statistical data. It is conditioned by moral and ethical requirements, the prohibition of certain “unfair” commercial transactions, the prohibition of the use of income from these areas, and restrictions on economic behaviour (prohibition of deceiving customers and partners, prohibition of charging and paying interest, payment of zakat, etc.). This means that, in addition to maximising profits, the conditions and methods of achieving profits are also relevant.

Sharia contains basic concepts and principles that determine the institutional characteristics of Islamic finance:

1) Zakat – a type of property tax for the benefit of poorer Muslims. Zakat is included in the list of the most important duties of Muslims – the five pillars of Islam. The obligation to pay zakat is enshrined in the Quran.

2) Riba (from Arabic – increment, surplus, usury) – means the prohibition of interest on loans, usury, and any unjustified capital gain in the conduct of commercial and financial transactions. Any predefined rate depends on the term and amount of the loan and does not depend on the success of the investment. Despite the prohibition of interest rates, Islam allows and encourages investment in specific projects to generate profit. However, it requires that the process of capital formation and accumulation in the economy reflect the development of its real sector.

3) Gharar (from Arabic hazard, risk) – introduces a prohibition on elements of uncertainty, randomness, or ambiguity in the subject matter and terms of a contract, including

price – that is, in general, anything that could imply a risk of speculative gain. The definition of gharar includes maysir – all types of lotteries, casinos, and gambling. In Islamic Sharia law, the presence of excessive gharar in a contract leads to its cancellation. However, no clear and uniform criteria have yet been developed to determine the degree of gharar that would clearly define the need to terminate a contract.

Regardless of moral and ethical considerations, from a purely economic perspective, the above restrictions lead to regular cost increases, placing Islamic businesses at a disadvantage in a free market economy. A much more serious limiting effect of the Islamic model of finance is related to the institutions listed below, which are related to the Islamic understanding of property relations.

The Quran formulates basic principles that describe the ideal model of financial and economic relations in Muslim society:

- condemnation of excessive wealth (surah 104, surah 102);
- condemnation of usurers and interest on loans (surah 3, ayah 130; surah 2, ayahs 275 - 278);
- promotion of trade (surah 11, verse 85; surah 17, verse 35);
- property relations (surah 2, verse 5);
- the right to inherit (surah 4, verses 7 - 12, 176);
- property relations between spouses (surah 4, verses 127 - 129);
- alms (surah 2, verses 263–281);
- contractual obligations (surah 2, verses 282 - 283);
- accumulated expenses (surah 2, verses 274 - 281).

In Sharia, all prohibitions related to the use of personal property to the detriment of the interests of society (umma) do not restrict ownership itself, but rather the objectives and methods of its use. In order to achieve compliance with the above principles, Islam offers a set of operations, mechanisms, and tools:

1) Bai (from Arabic – sale) – a purchase agreement whereby the seller agrees to transfer goods and ownership to the buyer. The buyer is obliged to pay the agreed price and take delivery of the purchased goods.

2) Bai Salam – a contract for the sale of goods with deferred delivery, under which the buyer pays the agreed price for a specific product as a deposit, and the seller delivers the goods to the buyer at a specified time in the future. The quantity and the characteristics of the goods to be transported, as well as the time of delivery to the buyer, must be specified. In addition, the agreed price of the goods must be paid in full during the term of the contract. The subject matter of this contract is mainly tangible property the price of which can be estimated on the basis of quality, quantity, and the work invested in its production, except for gold, silver, and other goods that can replace money. A significant difference between Bai Salam and the contract of istisna (see point 8) is that payment for the goods is made in the form of a one-off advance payment rather than in stages.

3) Bai Bithaman Ajil (from Arabic sale at a deferred sale) – a purchase and sale agreement at a deferred price. Under the terms of this agreement, the seller acquires the goods and sells them to the buyer at an agreed price, including the costs incurred by the seller. The money for the goods will be paid in the future, either in a lump sum or in instalments.

4) Mudaraba is a joint venture in which one party (usually an Islamic bank) provides capital and the other provides business skills and capabilities. The partners share the profits according to agreed terms. In the event of a loss, the investor bears all risks associated with the loss of the invested money, except in proven cases of intentional concealment of profits by the entrepreneur.

5) Musharakah (from Arabic partnership, joint venture) – a partnership agreement between two or more parties, where each partner contributes a certain share of financial resources or tangible assets. Musharakah requires all partners to contribute capital, ideas,

expertise, or services to the partnership. The prerequisite is therefore a partnership of equal parties, in which all partners are entitled to manage the affairs of the partnership and act on its behalf. It is possible to deviate from this rule by delegating powers, which the partners use to redistribute tasks in such a way that the creditor/financing partner (who only wants to provide capital to the partnership) refrains from active involvement in the business and delegates the task of actively managing the financed business activity to the “debtor” (i.e., the partner who needed capital and who brought their idea or skills to the partnership) is delegated the task of actively managing the financed business activity or acquired assets.

6) Murabaha (from Arabic, meaning “resale, profit”) – similar to Musharakah, a contract for the sale of goods between a seller and a buyer at an agreed price, which includes a profit from the sale of the goods. The seller (e.g., a bank) purchases raw materials or equipment on behalf of the buyer (client) and then resells it at a higher price. The buyer pays the required amount in full or in instalments. The seller bears all costs associated with the sale of goods, as well as all risks until the goods are delivered to the buyer. The difference between Murabaha and regular banking operations is that in this case, the bank’s income serves as a profit from trading, not as a percentage of the loan.

7) Ijarah (from Arabic lease) – in Islamic banking, an analogy for our leasing operation, a type of lease agreement. Under the agreement, one party acquires tangible assets at the client’s request and then leases them. The lease term and rent amount are agreed by the parties when the contract is concluded and are not subject to change over time. After payment, the assets are transferred from the bank’s assets to the client’s ownership.

8) Istisna (loosely translated from Arabic – “tailor-made”) – a type of purchase agreement where the subject matter does not exist at the time the agreement is concluded. The manufacturer produces goods specifically at the customer’s request. The necessary conditions for the validity of the agreement are the predetermined price of the manufactured goods and their main characteristics. In addition, payment for the goods is provided in stages as the manufacturer performs the work. It is mainly used to finance long-term projects.

9) Qard al-hassan (from Arabic - kind loan) – an interest-free loan provided for charity or for short-term financing of a potentially profitable project. The lender provides the client with a loan for a certain period without charging interest. Collateral may be required as a guarantee of debt repayment. If it is clear to the lender that the borrower is obviously unable to repay the debt, then the funds provided in this form may be considered a voluntary or mandatory donation (sadaka, zakhat).

10) Takaful (translated as mutual guarantee) – Islamic insurance. A system based on the principles of solidarity and mutual assistance, in which the parties to the contract provide mutual support in the event of damage caused to any of them (including, in particular, monetary compensation). Takaful is divided into two types:

- general takaful, which includes commercial property insurance. The policyholder can claim a portion of the insurer’s profits from investing the funds paid out.
- family takaful, which mainly relates to personal insurance and has certain specific features.

11) Sukuk – a debt financial certificate documenting the rights of holders to specific real assets. Some experts believe that sukuk is closer to investment fund shares than to bonds. Sukuk cannot be linked to interest on loans and is always secured by assets – this is called Islamic securitisation of assets (replacing non-marketable loans and/or cash flows with securities freely traded on capital markets).

In current Islamic practice, the above-mentioned methods of bank investment account for about 20% of their activities. A proportionate share of the bank’s total profit is distributed to depositors’ accounts according to their share of total deposits in the bank. If banks do not have their own business opportunities, they act as depositors in transactions with third parties, but under stricter conditions than those under which they obtained the money, which is often

contrary to Islamic law. Furthermore, banks often use a modification of mudaraba, known as musharakah, which assumes joint investment by both parties and proportional sharing of profits and losses. This philosophy is strikingly similar to our legal form of limited liability company.

3 The beginnings and development of Islamic finance in Central Asia

The first Islamic financial institutions in Central Asia were established in the 1990s. The development of this sector and its economic system was initiated by countries in the region that first became members of the Islamic Development Bank (IDB). The contribution of Central Asian countries to the global Islamic finance sector remains relatively modest. In 2023, the total value of Islamic financial assets in Central Asia reached USD 699 million (Buduščeje islamskovo financirovanija v Centralnoj Aziji, 2025), which represents 0.01% of the global total.

According to the 2024 edition of the Islamic Finance Development Report, Kazakhstan occupies a leading position in the Central Asian Islamic finance market and ranked 19th in 2023 (ICD - LSEG Islamic Finance Development Report: From Niche to Norm, 2024). The Kyrgyz Republic, Uzbekistan, and Tajikistan ranked 32nd, 63rd, and 82nd in the global ranking. Turkmenistan lags significantly behind other Central Asian countries, ranking 111th. Nevertheless, given the significant Muslim population in Central Asian countries (85% of the total population on average), there are very good prospects for the development of the Islamic finance industry in the region.

The main actors in the region's Islamic finance market are large Islamic banks and Islamic windows. An Islamic window is the name given to a specialised branch or section of a conventional bank that offers financial products and services in accordance with the principles of Islamic law (sharia). This involves a ban on interest (riba) and a ban on investments in prohibited activities, such as alcohol production and gambling. The aim is to appeal to Muslim clients who want to use traditional banking services while adhering to their faith. It should be noted that Islamic capital market instruments (such as sukuk) are developing more slowly than Islamic financial institutions.

Other market players are as follows:

- operators of Takaful, which is an Islamic-complaint cooperative system of compensation or reimbursement in the event of loss, used as an alternative to the traditional insurance system,
- microfinance institutions,
- investment companies,
- Ijarah (leasing) companies
- Islamic fintech companies, such as digital banks and asset management systems.

The Islamic Development Bank Institute¹ states in its 2025 report that there are 18 Islamic banks and functioning Islamic banking windows operating in the region, 14 Islamic non-banking institutions, and 3 countries have a regulatory framework for Islamic finance (Buduščeje islamskovo financirovanija v Centralnoj Aziji, 2025).

4 Differences between the current state of Islamic finance development in the countries of Central Asia

Kazakhstan joined the IDB in 1995. Since then, it has made significant progress in developing Islamic finance, including the establishment of the country's first Islamic bank (Al Hilal Islamic Bank JSC in 2010), which is part of the Abu Dhabi Commercial Bank Group. The Kazakh Islamic banking sector is the largest in the region. There are currently two Islamic banks operating in the country (Al Hilal and Zaman Bank) with total assets of USD 621 million as of January 1, 2025 (National Bank of Kazakhstan. Financial performance, 2024). The significant increase in assets, which almost tripled from USD 208 million in 2022, is mainly

due to the adoption of new financial reporting regulations for Al Hilal Bank. This important change resulted from relevant amendments to the resolution of the National Bank of the Republic of Kazakhstan, which came into effect in December 2023. Under these changes, all Islamic banks are required to fully comply with the IAS 8 requirements (IFRS, IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors. 2024) – specifically, to report all liabilities from Islamic investment deposits and assets financed from such deposits in their balance sheets. The banks concerned were therefore required to retrospectively reassess these indicators from previous years.

In addition, Kazakhstan has one leasing company (ijarah), four Islamic banks, one Islamic digital bank, and several investment companies. Islamic fintech companies have also entered the Kazakh market. For example, the country uses a halal investment app from Wahed Invest, which has opened an office in Astana, the capital of Kazakhstan.

However, deposits in Islamic banks in Kazakhstan are not guaranteed by the state (Are Deposits in Islamic Banks Guaranteed? Kazakhstan Deposit Insurance Fund, 2022), as national legislation does not allow for the creation of Islamic financing windows (only conventional or Islamic banks are permitted). The first sukuk was issued in 2012 by the Development Bank of Kazakhstan for \$61 million and was listed on the Malaysian Stock Exchange (Kazakhstan financial hub eyes sovereign sukuk, central sharia board, 2018). The first tenge-denominated sukuk issuance followed in 2023, through which The Islamic Corporation for the Development of the Private Sector (ICD) raised 2 billion tenges (USD 4.45 million). This sukuk issuance was listed on the Kazakhstan Stock Exchange. In addition, sukuk issued by Qatar International Islamic Bank and the Islamic Development Bank (IDB) were cross listed on the Astana International Exchange, Kazakhstan's financial and trading platform.

The Astana International Financial Centre, founded in 2015, has gained prominence throughout Central Asia (Islamic banking in Kyrgyzstan: stages of formation and further development, Kyrgyzstan Newslines, 2023). According to the National Bank of the Kyrgyz Republic, 14 financial institutions operate in Kyrgyzstan based on the principles of Islamic finance: one pilot bank, four banks with an Islamic window, five Islamic microcredit companies, two microcredit companies with an Islamic window, one microcredit agency with an Islamic window, and one Islamic credit union. The volume of financing based on Islamic principles reached 6.1 billion soms (2.2% of the total volume of loans issued by banks) in 2023, which is a 1.3-fold increase compared to 2019. The total volume of Islamic banking assets in Kyrgyzstan reached \$59 million in 2024.

There are several state-owned enterprises operating in the country that provide Islamic financial services through specialised divisions (windows): one Islamic leasing company (ijarah), one state-owned mortgage company, and one guarantee fund. The first sukuk issue in the country was a mudaraba sukuk issued in 2023 by Intercascade Trade and Finance Ltd. worth 750 million soms - USD 8.4 million (Islamic banking in Kyrgyzstan: stages of formation and further development, Kyrgyzstan Newslines, 2023).

In 2022, Islamic financial instruments accounted for approximately 2% of the banking sector's loan portfolio and 5.0% of the loan portfolio of microfinance institutions operating in the country. The deposit portfolio of the banks that adhere to Islamic finance principles represents just over 1% of the total deposit portfolio of the banking sector.

Tajikistan embarked on the path of Islamic finance development in 1996, when it became a member state of the Islamic Development Bank (IDB). However, the first Islamic financial institution (ASR Leasing LLC) had not been established until 2013. The country's first Islamic bank, Tavhidbank, was created through the reorganisation of a traditional bank in 2019. The Tajik fintech company Alif Bank also offers digital Islamic banking services. According to the National Bank of Tajikistan, there is one Islamic bank and two microcredit companies with Islamic branches operating in the country, providing services in compliance

with the principles of Islamic finance. In addition, there are 5 branches and 33 banking service centres of Islamic credit institutions operating in the country's Islamic financial market.

Since 2020, the total assets of Tajikistan's Islamic banking sector have grown at an average annual rate of 29.3% and reached \$36 million in January 2025, which accounts for 0.9% of the banking system's total assets (Banking Statistics Bulletin, 01 (342), National Bank of Tajikistan, 2024). Furthermore, there is one Islamic leasing company (ijarah) and two microfinance companies offering Islamic financial services in the country.

Uzbekistan became a member state of the Islamic Development Bank in 2003. This country is actively developing its Islamic financial sector with the aim of providing financial services to members of the Muslim population, as many companies and individuals refuse to take out commercial loans due to their religious beliefs. In 2011, Taiba Leasing LLC, the first Uzbek Islamic leasing (ijarah) and finance company specialising in the leasing of machinery and equipment, began its operations. Uzbek Leasing International A.O. is also engaged in similar activities and offers murabaha services. In addition, there is one Islamic fintech company operating in Uzbekistan, and several commercial and wholesale conventional banks are planning to open Islamic finance windows. There is also one takaful operator in the country (Apex Insurance). It should also be noted that Trust Muamalat LLC, a subsidiary of Trustbank, provides Islamic leasing services, and 12 banks offer murabaha services (services involving the sale of assets at a predetermined price and premium) using funds from the lines of credit of the Islamic Corporation for the Development of the Private Sector (Kun.uz. The bill on Islamic finance is read — CB deputy head, 2024; Fakhriddinkhujaev, 2023).

Even though Turkmenistan became a member state of the IDB in 1994, the Islamic financial sector in the country is still in its infancy. Currently, Turkmenistan lacks active Islamic financial institutions and an appropriate regulatory framework. However, certain steps are being taken towards the development of Islamic finance. For example, Turkmenistan has decided to increase the total capital of the IDB (Turkmenportal, Turkmenistan will increase the total capital of the Islamic Development Bank, 2022) and has gained access to technical assistance programmes from the IDB regional centre in Almaty, whose specialists regularly consult with their Turkmen colleagues and organise various professional events (IsDB (2023). (Book Presentation Ceremony: "The Islamic Development Bank and Dr. Ahmad Mohammad Ali, History of an Institution and Journey of a President", 2023).

5 Legal, regulatory, and policy environment for Islamic finance development in Central Asia

The overall legal, regulatory, and policy environment governing Islamic finance in Central Asia is still in its early stages of development, particularly when compared to countries with highly developed Islamic banking systems, such as the United Arab Emirates and Malaysia. Of all the Central Asian countries, only Kazakhstan and the Kyrgyz Republic have made significant progress in establishing a legal and regulatory framework for Islamic finance. Kazakhstan has developed and implemented a comprehensive legal, regulatory, and policy framework that supports the growth of Islamic banking and finance at the national level. The country has introduced laws regulating domestic Islamic banking and financial operations, as well as regulatory guidelines for Islamic banks and Islamic financial institutions. In addition, since its launch in 2018, the Astana International Financial Centre has developed several regulations and incentives to facilitate the development of Islamic finance throughout the country. In this regard, financial regulators in Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan, and Uzbekistan have adopted a joint statement on the possibility of using the AIFC as a platform for the joint development of an Islamic financial system in the region (The IFN 2023 Annual Guide. Islamic Finance News, December 2022).

As we have already mentioned, Kyrgyzstan has taken a progressive approach to developing a legal framework for Islamic finance. In the first phase, basic legal acts regulating Islamic banking were approved. In the second phase, steps were taken to change the regulatory framework in order to create a level playing field for conventional and Islamic banks, introduce several changes in banking, civil, and tax law, and clarify the principles of cooperation with international organisations with the aim of developing the foundations of Islamic finance. Other Central Asian countries have made only modest progress in developing a legal framework to regulate domestic operations in Islamic banking and finance.

In 2014, Tajikistan adopted a law aimed at creating favourable conditions for the implementation of Islamic banking mechanisms. However, for a long time afterwards, no legislative or regulatory acts were adopted in the field of Islamic finance, except for the amendments to the tax code in 2022 to eliminate double taxation of Islamic banks (Ministry of Justice Republic of Tajikistan, Law of the Republic of Tajikistan of July 26, 2014 No. 1108 “About Islamic banking activity” as amended of the Law of the Republic of Tajikistan of 20.06.2019 No. 1627).

As far as Turkmenistan is concerned, a factual discussion concerning the state of Islamic banking and finance in the country is complicated due to the lack of a clear stance towards the establishment of a national legal framework in this area. Although Turkmenistan does not yet have existing legislative and regulatory legal acts relating to Islamic banking and finance, the country continues to participate in the process of analysis and discussion of such acts, including cooperation with international organisations that are members of the IDB group (ITFC Conducts its First Islamic Trade Finance Workshop in Turkmenistan. International Islamic Trade Finance Corporation, 2022). In 2023, there was no valid law regulating Islamic finance in Uzbekistan (Centil.Law, Islamic Banking and Capital Markets Ecosystem in the Republic of Uzbekistan, 2023).

6 Analysis of the legal, regulatory, and political environment for the development of Islamic finance by country

Kazakhstan is most actively involved in developing a national legal and regulatory framework for Islamic finance. Although Islamic banking assets accounted for only 0.4% of total domestic assets as of January 1, 2024, Kazakhstan has the basic legislative and regulatory legal acts necessary for the further growth of the Islamic finance market (National Bank of Kazakhstan, Islamic Finance Legal Framework 2024a). Since 2009, the government has passed several laws designed to ensure the development of domestic Islamic banking, the sukuk market, and other Islamic financial instruments. In addition, in the early 2010s, the International Financial Centre in Astana, with the assistance of the IBR and the Malaysian consulting company Zico Shariah, developed the “Strategic Plan for the Development of Islamic Finance in Kazakhstan for 2020-2025”. The plan contains several recommendations for the further development of Islamic banking and finance in the economic area (AIFC, Islamic Finance Master Plan for the Republic of Kazakhstan 2020–2025, 2020).

The Astana International Financial Centre has become a platform for applying English common law in resolving issues related to Islamic finance (as practised in the leading Islamic financial jurisdictions). It has implemented recommendations for the use of Islamic banking and financial products (AFCA, Islamic Banking Business, Astana Financial Services Authority, 2024). Although the AIFC’s strategic plan and recommendations are more general in nature (compared to the detailed regulatory documents published by leading regulatory authorities such as Bank Negara Malaysia), they can be used as a starting point for further improvements of the legal and regulatory framework in connection with the national market.

Kyrgyzstan has also demonstrated a progressive attitude to the establishment of an Islamic finance system. In 2009, amendments to the Law “On Banks and Banking Activities

in the Kyrgyz Republic” regulating Islamic banking and a regulation on takaful were adopted. The Kyrgyz Republic became the first country in Central Asia to amend its Civil Code, Tax Code, and Customs Code to adopt procedures for Islamic financial transactions (UNDP, Kyrgyz Republic Development Finance Assessment, June 2023). The key direction for the development of the banking system in the Kyrgyz Republic in the period between 2022 and 2025 envisages the development of an Islamic insurance market (i.e., the possibility for organisations to create a separate deposit insurance fund for financial and credit institutions operating in compliance with the principles of Islamic finance). The Islamic stock market is receiving more significant support, as is the implementation of measures to raise public awareness of Islamic finance. The aim is to increase the share of financial instruments that comply with Sharia principles to 5% of the financial system’s total loan portfolio.

As previously stated, Tajikistan adopted a law on Islamic banking in 2014. In 2022, amendments to the tax code were adopted to ensure compliance with the principles of Islamic finance. As far as we know, Turkmenistan has not adopted any regulations relating to Islamic banking and finance.

By 2023, several obstacles remained in Uzbekistan when it comes to the establishment of the legal framework for Islamic banking and finance. These included the absence of laws regulating Islamic banking and finance, the ongoing alteration of existing laws and regulations to the benefit of conventional financial institutions without taking into account the needs of Islamic financial institutions, and the lack of a clear legal basis for Islamic finance concepts and structures. For example, such basic concepts of Islamic finance as investment deposits and partnership agreements have not yet been reflected in any legal or regulatory document (Centil.Law, Islamic Banking and Capital Markets Ecosystem in the Republic of Uzbekistan. Overview, March 2023; Nagaev, R. - Jahangir, R., 2022). The “Uzbekistan 2030” strategy also sets targets for the implementation of Islamic finance criteria and procedures in at least three commercial banks, as well as for the creation of a legal framework for Islamic finance (The Government portal of the Republic of Uzbekistan, “Uzbekistan — 2030” Strategy, 2024). According to the Central Bank of Uzbekistan, the draft law on Islamic finance was submitted to the Cabinet of Ministers in 2024 and, after revision, will be submitted to parliament (Kun.uz, “The bill on Islamic finance is ready” — CB deputy head, 2024). Finally, amendments to the Law “On Non-Bank Credit Institutions and Microfinance Activities” were adopted, allowing the provision of Islamic financial services in Uzbekistan (Lex.Uz, Law of the Republic of Uzbekistan on Non-Bank Credit Institutions and Microfinance Activities No. LRU-765, 2022).

Conclusion

There are at least three significant issues hindering the growth of Islamic finance in Central Asia.

Firstly, it is the limited awareness of Islamic finance principles among the population. This hinders understanding of the nature of available products and services and the benefits of Islamic finance.

Secondly, the region still lacks qualified specialists with the necessary expertise, although their numbers are expected to increase in the coming years.

Thirdly, urgent harmonisation of regulatory documents at the regional level is needed, which will primarily require the establishment of an effective legal framework at the national level. The combined efforts of all stakeholders in addressing these challenges are essential for Central Asia’s successful transition to the next phase of Islamic finance development.

Owing to these fundamental issues, Central Asian countries are facing a problem characteristic of the early stages of Islamic finance development – low market share. For example, as of January 1, 2024, Islamic banking assets accounted for only 0.4% of total banking assets in Kazakhstan (National Bank of Kazakhstan, Chronicle of the development

of Islamic finance in Kazakhstan, 2024b) and by the end of 2022, Islamic assets accounted for approximately 2% of total banking assets in Kyrgyzstan and 1.1% in Tajikistan (The IFN 2024 Annual Guide. Islamic Finance News, December 2023) - despite the existence of the necessary regulations in Kazakhstan and Kyrgyzstan, as well as the operation of a pilot Islamic bank (EcoIslamicBank CJSC) and Islamic financing windows in three conventional banks – Bakai Bank, Commercial Bank KYRGYZSTAN OJSC, and Aiyl Bank OJSC (The IFN 2023 Annual Guide. Islamic Finance News, December 2022). Another regional challenge is the lack of empirical research into Islamic finance in Central Asian countries. Such studies could provide stakeholders with information on available market gaps and improve consumer perception of Islamic financial products and services. Despite these challenges, many opportunities could support growth in Islamic banking and financial sector in Central Asia (The IFN 2024 Annual Guide. Islamic Finance News, December 2023).

Firstly, given the current low base, there is a clear opportunity to increase the market share of Islamic banking and finance in the region. For example, creating a favourable legal and regulatory framework and providing certain incentives for Islamic financial transactions could help attract local and foreign market participants and thus stimulate market activity.

Secondly, adopting state-of-the-art technologies and digitalisation can also help Central Asian countries increase the market share of Islamic assets. For example, the development of end-user-focused applications (mobile banking, online platforms, digital solutions) can facilitate customer access to Islamic financial products and services and improve the user experience at various stages of interaction with the financial system. What is more, it might enable Islamic banks to optimise their operations while expanding their customer base, particularly by attracting younger users who are accustomed to digital technologies.

Thirdly, the application of Islamic finance in Central Asia can be expanded by establishing partnerships with institutions from more developed markets. These institutions and other stakeholders can share the experience, knowledge, and resources needed to develop Islamic banking and finance ecosystems in Central Asia. Such partnerships can be established with regional multilateral development institutions, such as the Eurasian Development Bank, which can act as knowledge brokers and regional partners for Islamic investors.

Fourthly, established and ongoing efforts to train regional specialists in Islamic finance can accelerate the development of this sector in the region. Examples include various seminars, training programmes with final certification, and other forms of advanced education in Islamic finance. Finally, the widespread interest in Islamic banking does not preclude the need for a holistic approach to the Islamic financial and economic system and the development of its other components, such as the Islamic deposit protection system, the Islamic microfinance system, and Islamic financial technologies. In particular, expanding access to Islamic banking and financial services for people living in rural and remote areas, as well as for members of socially vulnerable groups, and offering a greater number of Sharia-compliant financial solutions and small and medium enterprises financing mechanisms could give a new impetus not only to the Islamic financial industry but also to the entire economy of Central Asian countries.

References:

- AFCA (2024). *Islamic Banking Business*. Astana Financial Services Authority. <https://afsa.aifc.kz/en/islamic-banking-business>
- AIFC (2020). *Islamic Finance Master Plan for the Republic of Kazakhstan 2020–2025*. Astana International Finance Center, Nur-Sultan (Astana). <https://bc.aifc.kz/files/pages/721/documents/1/islamic-finance-master-plan-for-the-republic-of-kazakhstan-2020-2025.pdf>

- Buduščeje islamskovo financirovanija v Centralnoj Aziji (2025). Jevroazijskij bank razvitija i Institut Islamskovo banka razvitija. <https://isdbinstitute.org/product-category/reports/Centil.Law> (2023). *Islamic Banking and Capital Markets Ecosystem in the Republic of Uzbekistan*. Overview, March 2023. https://view.officeapps.live.com/op/view.aspx?src=https%3A%2F%2Falhudacibe.com%2Fcis2023%2Fimages%2Fpresentations%2FMR.%2520Jakhongir%2520Usmonov%2520AlHuda_Conference_JU_PPT_1_14032023.pptx&wdOrigin=BROWSELINK
- Čech, L. (2019). *Základné východiská islamského ekonomického modelu*. Bratislava, Vydavateľstvo EKONÓ, 2019. s. 14 -22. ISBN 978-80-225-4654-6.
- Fakhriddinkhujaev, S. (2023). *Can Islamic Finance Drive Banking Sector Development in Uzbekistan?* The Diplomat, August 30, 2023. <https://thediplomat.com/2023/08/can-islamicfinance-drive-banking-sector-development-inuzbekistan/>
- Haron, S. (1998): A Comparative Study of Islamic Banking Practices. *Journal of King Abdulaziz University: Islamic Economics*, 1998, Vol. 10. <https://ssrn.com/abstract=3093812>.
- ICD – LSEG (2024). *Islamic Finance Development Report 2024: From Niche to Norm*. November 2, 2024. <https://www.zawya.com/en/economy/islamic-reports/islamic-financedevelopmentreport-2024-from-niche-to-normpwqeoqow>
- IFN (2022). *The IFN 2023 Annual Guide*. Islamic Finance News, December 2022. <https://ceif.iba.edu.pk/pdf/ifn-guide-2023.pdf>
- IFRS (2024). *IAS 8 Accounting Policies, Changes in Accounting Estimates and Errors*. IFRS Accounting Standards Navigator. <https://www.ifrs.org/issued-standards/list-of-standards/ias-8-accounting-policies-changes-in-accountingestimates-and-errors/>
- IsDB (2023). Book Presentation Ceremony: “*The Islamic Development Bank and Dr. Ahmad Mohammad Ali, History of an Institution and Journey of a President*”. IsDB Regional Hub Almaty News, 12 July 2023. <https://www.isdb.org/hub/almaty/news/book-presentation-ceremonythe-islamic-development-bank-and-dr-ahmadmohammad-ali-history-of-an-institution-andjourney-of-a-president>
- ITFC (2022). ITFC Conducts its First Islamic Trade Finance Workshop in Turkmenistan. International Islamic Trade Finance Corporation, December 13, 2022. <https://www.itfc-idb.org/news-events/news/itfc-conducts-its-first-islamic-trade-financeworkshop-in-turkmenistan>
- KDIF (2022). *Are Deposits in Islamic Banks Guaranteed?* Kazakhstan Deposit Insurance Fund. <https://www.kdif.kz/press-tsentr/press-relizy/garantiruyutsya-li-depozity-v-islamskikh-bankakh/>
- Kun.uz (2024). “*The bill on Islamic finance is ready*” – CB deputy head. <https://m.kun.uz/en/news/2024/05/21/the-bill-on-islamic-finance-is-ready-cb-deputy-head>
- Kyrgyzstan Newslines (2023). *Islamic banking in Kyrgyzstan: stages of formation and furtherdevelopment*. <https://newslinesk.com/article/1107727/>
- Ministry of Justice Republic of Tajikistan (2014). Law of the Republic of Tajikistan of July 26, 2014. No. 1108 “*About Islamic banking activity*” as amended of the Law of the Republic of Tajikistan of 20.06.2019 No. 1627. <https://cis-legislation.com/document.fwx?Rgn=70095>
- Nagaev, R., Jahangir, R. (2022). *Islamic Finance in Central Asia and Russia*. Istanbul, Research Center for Islamic Economics (IKAM). Research Report No. 28.
- Bank of Kazakhstan (2024). *Financial performance*. Доступно на: <https://nationalbank.kz/ru/news/banks-performance/rubrics/2186>.
- National Bank of Kazakhstan (2024a). *Islamic Finance Legal framework*. <https://nationalbank.kz/en/page/zakonodatelnaya-baza>

National Bank of Tajikistan (2024). *Banking Statistics Bulletin, 01 (342)*. <https://nbt.tj/upload/iblock/bb1/e508cixbhsqj6j3sey30ehio60xlqfxe/BULL1.pdf>

Reuters (2018). *Kazakhstan financial hub eyes sovereign sukuk, central sharia board*. <https://www.reuters.com/article/markets/kazakhstan-financial-hub-eyes-sovereign-sukukcentral-sharia-board-idUSL5N1QO0BB/>

The Government portal of the Republic of Uzbekistan (2024). *“Uzbekistan — 2030” Strategy*. https://gov.uz/en/pages/2030_strategy/

Turkmenportal (2022). *Turkmenistan will increase the total capital of the Islamic Development Bank*. <https://turkmenportal.com/en/blog/46744/turkmenistan-will-increase-the-total-capital-of-theislamic-development-bank#:~:text=Turkmenistan%20will%20take%20part%20in,of%20the%20Turkmen%20Television%20reported>

UNDP (2023). *Kyrgyz Republic Development Finance Assessment*. UNDP, June 2023. https://www.undp.org/sites/g/files/zskgke326/files/2023-07/kyrgyz_republic_dfa_fin_july_2023-1.pdf

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MIGRATION DISCOURSE AS THE MAIN TOPIC OF THE 2023 ELECTIONS IN DISINFORMATION MEDIA¹

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Abstract: Using Critical Discourse Analysis (CDA), this paper examines how migration was represented in 2023 within the alternative online media outlet "Infovojna". The analysis reveals that migration is predominantly framed as a politicized and security-oriented issue, serving as a tool for mobilizing readers and reinforcing political polarization. Migrants are depicted mainly as a threat to Slovakia and Europe, symbolizing disorder and state failure, while their individual stories and the humanitarian dimension of migration are largely marginalized. This framing is strengthened by frequent citations of then opposition figures such as Robert Fico and others, who emphasize government incompetence and call for strict border protection. The discourse positions opposition actors as decisive defenders of national sovereignty, in contrast to the portrayal of then government representatives as passive or ineffective.

Keywords: migrants, CDA, alternative media, Robert Fico

JEL: F22, O15

Introduction

The popularity of alternative media has been increasing in Slovakia as well as in Europe and worldwide. The language used by these media is often linked to extremist rhetoric, with the aim of provoking fear, anger, and other negative emotions. Many of these media present strong anti-EU or anti-Western positions, especially targeting the European Union and the United States. As an EU Member State, Slovakia is concerned about the influence of such media on the public, which makes this topic important for academic and scientific research. It is necessary to study not only the language used in these texts, but also how alternative media shape reader's opinions through topic selection, framing, and the lack of certain themes or journalistic standards.

This paper focuses on how migration, migrants, and refugees are represented in the Slovak alternative online outlet "Infovojna". We chose this alternative media because it is one of the most popular alternative media among their readers. Another important reason is that "Infovojna" regularly hosts interviews with members of the Slovak government and their deputies from ruling parties, while opposition members rarely receive the same space. This situation is unique in Slovakia: it is the first time in Slovak history that government representatives repeatedly give video interviews to a disinformation outlet.

Our research follows the qualitative methodology, which according to Bednáriková (2013: 82) focuses on interpreting social behaviour rather than explaining it through strict causal rules. Therefore, we use qualitative methods, specifically Critical Discourse Analysis (CDA), to examine how migration is represented in alternative or disinformation media. CDA allows us to study how language, narratives, and media strategies may influence public (their readers) opinion, evoke fear, or support the ideological positions of readers. Our corpus consists of texts published in 2023. This paper is part of the research where texts were examined from

¹ This work was carried out with financial support from MSVVaM SR, Migration Discourse in V4 Countries through the Lens of Political Linguistics, Project APVV 23-0040.

2018-2025 after the 2015 migration crisis, but during ongoing immigration to the European Union from Syria, Lebanon, and several African countries. The aim of the paper is to show how "*Infovojna*" constructs the topic of migration, how migrants are portrayed, and what connotations the term "migrant" carries in this discourse.

In Slovakia, the term "disinformation media" became widely used during the COVID-19 pandemic due to the spread of misleading information that caused fear and anger. While the public often uses this term to distinguish them from traditional media, the academic community usually uses the term "alternative media." Many researchers, including Christian Fuchs, Olga Bailey, Marisol Sandoval, and John Downing—point out that there is no single clear definition of alternative media. Downing (2001) describes them as media that differ from mainstream outlets in content, production, or distribution. Fuchs (2010) views them as spaces that challenge the capitalist media system by producing critical content. Karas (2024) argues that definitions that are too broad or too narrow fail to capture their essence. For John Atkinson (2010), alternative media mainly refer to "non-mainstream" media. Because defining them only by what they are not leads to multiple interpretations, researchers often focus on ideology, content, or forms of production. Some scholars classify them as non-professional, pseudo-professional, or semi-professional media with specific ideological goals. Holt, Figenschou, and Frischlich (2019) describe them as media that position themselves in opposition to the mainstream.

In Slovakia, typical examples of such media include not only "*Infovojna*" but also "*Hlavné správy*, *Slobodný vysielateľ*, *Zem a Vek*" and others. The meaning of the term "alternative media" depends on who uses it. In mainstream media, it usually has a negative, critical tone and is associated with distorted worldviews. In contrast, within the alternative media sphere, the term carries a positive meaning, suggesting resistance to mainstream hegemony and the presentation of viewpoints missing from mainstream coverage. This difference reflects the strong polarization present both in the Slovak media environment and in Slovak society today.

1 Methodology

Critical discourse analysis (CDA) is characterized by a focus on texts and their linguistic interpretation, which is why most researchers concentrate on analyzing migration, racist, or xenophobic discourse. The approach stems from an understanding of language as an active element that shapes social reality, identity, and power relations, rather than as a neutral means of conveying information.

In the context of migration, it is the media that plays a key role in shaping public perceptions. Alternative sources often contribute to the spread of stereotypes, the intensification of fear, and the polarization of society, reinforcing xenophobic narratives. For this reason, critical discourse analysis was chosen as a method for studying how language and texts create meanings that legitimize certain social orders, revealing hidden ideologies and power asymmetries.

According to Fairclough (1995), discourse is a form of social practice embedded in a cultural and ideological context. In the field of migration, CDA allows us to show how the media (especially alternative media) use language to naturalize fear and threat, form an opposition between "us" and "them," and portray migrants as undesirable subjects. Wodak (2015) emphasizes the need for interdisciplinarity, including the analysis of genres, multimodality, argumentation, and rhetoric.

As an analytical tool, we used the discursive-historical approach of the Vienna School (R. Wodak, M. Reisingl, 2005: 44), which includes three dimensions: identification of argumentation, definition of discursive strategies, and analysis of linguistic means.

The empirical basis for our research consisted of 300 articles (330,000 words) published on the alternative resource *Infovojna.com* in 2018–2025, devoted to the topic of migration. The

analysis was carried out in stages: preliminary reading and identification of recurring narratives; identification of strategies such as demonization of migrants, opposition of “us” vs. “them,” generalization and emotionalization (fear, anger, disgust), as well as conspiracy frameworks; followed by analysis of vocabulary, metaphors, and narrative structures.

The result was the identification of ideological frameworks such as security, civilization, and politics, through which alternative media shape public perception of migration.

2 The year of 2023 and the perception of migrants

The research, which was carried out under the APVV project Migration Discourse in the V4 Countries through the Lens of Political Linguistics, highlighted various topics, aspects, and factors that influence the results themselves. The research consisted of an analysis of all texts published in the alternative internet media Infovojna between 2018 and 2025 that mentioned migration, migrants, or refugees in at least one word. Due to the length limit of the conference paper, we decided to present only part of our research, specifically texts published in 2023.

The aim of the research and our contribution was to highlight how, specifically through language, metaphors, phrases, narratives, and perhaps even absent topics, the alternative media outlet "Infovojna" creates an image of migrants or immigrants heading to the EU, living in Europe, or directly in Slovakia. The analysis of texts for 2023 drew attention to two opposing types of portrayals of migrants. The first portrayal had a negative undertone, using terms such as "illegal migrants," "unverified persons," "migrants caused a security risk," and "terrorists." Similarly, articles about migrants who have come to Slovakia only mention experiences where migrants "steal fruit, climb fences, swim in other people's pools," "start fires," or "leave a mess," which we assume may cause fear or aversion to this group of people in the reader. The second level consisted of a neutral portrayal of some passages showing migrants as people on the run who do not pose a threat but suffer from undignified conditions. These are texts that were directly quoted from traditional Slovak media but always supplemented with unflattering or possible threats that these people could pose in certain cases. The texts in Infovojna also have a factual framework, quoting from TASR, and the facts are verifiable and true, but the language used to present these facts carries extremist rhetoric. Another finding of our research was a security framework in which migrants are repeatedly associated with chaos, threats, crime, and health risks. The texts examined used expressions such as "migrant onslaught," "rebellion," "stealing crops," "roaring masses," "terrorists," "filth," "disease," "mess," and "threat to safety and property."

In the articles, migrants are mostly portrayed as young men who come to Europe or Slovakia without documents and have the same or similar names, which arouses suspicion and possible danger in the authors of the examined texts. The image of migrants is often dehumanized and anonymized; in the texts, they are referred to as "the masses," "they," "migrants," and it is said "about them," not "with them." The narrative associated with the image of migration in the articles is one of threat, which in a way legitimizes the authors' calls for "order" and "tough solutions."

The texts contain a conspiratorial-populist framework in which Slovakia is portrayed as a "victim" of foreign agendas such as Soros or the European Union, and migrants themselves are a tool in the hands of "globalists who want to destroy the sovereignty of nation states." The language used in the texts is often highly emotive, conflict-oriented, and even polarizing. We observe a division between "us" (Slovaks, local residents, the police, the state, which must be protected) and "them" (migrants, an anonymous mass of young men, a potential threat). The text also relies on the dramaturgy of crisis and threat in the form of capital letters, exclamation marks, and appeals to fear and anger. Another framework we identified during our analysis of the texts was an emotional-manipulative framework. The headlines and several

passages contain emotionally charged language such as "Migrants started a fire in the village amphitheater because they were cold," "the state cannot cope with the migrant crisis," and "Slovakia is flooded with migrants." The text uses dramatization and sensationalism to create an image of immigrants, for example with phrases such as "shocking situation," "not a single police officer in sight," "migrants kicked down the door," "they scattered across the road," and "furious."

In texts focused on foreign policy, Slovakia is depicted alongside Hungary, Poland, and the Czech Republic as countries that have rebelled against Brussels on the issue of migrants and are the "last defenders of sovereignty." Slovakia, together with the above-mentioned neighboring countries, is threatened by migration, and only "strong leaders" (Fico, Morawiecki, Szijjártó) can stand up to it.

3 Migration as a topic of the election campaign in the alternative internet media "Infovojna"

Although our research focused on texts mentioning migration, migrants, or refugees, during the analysis of texts from 2023, a specific context came to the fore, namely the pre-election period leading up to the early elections held in September 2023. We assume that the topic of migration was part of the pre-election campaign of the Smer-SD party in the alternative media outlet "*Infovojna*".

One of the main political actors mentioned in articles related to migrants was the current Prime Minister, Robert Fico. The texts portrayed him as active, informed, and present at the scene of the migrant problem, while the government and traditional media at the time remained silent. Robert Fico appears in the examined texts as the main actor in the political topic of migration, presented as decisive, critical, and a protector of Slovakia against illegal migration. The texts emphasize his forceful solutions, such as the idea of deploying the army, police patrols, and technology, and the restoration of controls on the border with Hungary. In the space provided to the current prime minister, the language is emotionally charged, and Robert Fico also expresses himself in a confrontational manner towards the government at the time: "totally open borders," "government failure," "migrants pose a security risk," and "illegal actions of the government at the time."

In the texts, the authors portray Robert Fico as strong, decisive, and someone who has solutions, while also accusing the government of incompetence and calling for tough security measures, pointing to the failure and indifference of "the government of President Čaputová and Prime Minister Ódor." His behavior is populist and confrontational in nature, and he is portrayed as a defender of citizens against "incompetent elites." In the text, he appears as the main critic of the then government and president and is portrayed as the one who responded to the migration crisis, the one who exposed the situation and "forced the state to act." The narrative, which depicts R. Fico as an active politician in the field, reinforces his image as a "man of action." With the help of criticism of the state: "the state only began to act after the problem had become apparent," he is positioned as a protector of citizens against an incompetent government. Analysis of the texts revealed a strong populist framework in which the authors appeal to chaos, government incompetence, and the need for order, thereby supporting the idea that only Robert Fico's party has the solutions.

As mentioned above, in the corpus of texts dealing with the topic of migration, the Smer party and its representatives were in most cases contrasted with representatives of the then government, when, paradoxically, the then president Zuzana Čaputová, despite the fact that the office of president in Slovakia is mostly only representative, was presented as part of Ľudovít Odór's government. In his texts, Robert Fico appears as a critic of the then government's policies, whose actions represented a security risk for Slovakia in the form of "totally open borders" and "unverified persons on the territory of the Slovak Republic," which were among

the many verbal narratives. According to Robert Fico, the government at the time: "is doing everything it can to get as many illegal migrants into Slovakia as possible" or "as part of Soros' migration policy" is allowing illegal migrants to stay in Slovakia, "Odór's government pretends that it is right to leave the borders open to every migrant," "is unwilling to restore controls at the Slovak borders, even though parliament could have passed a binding resolution," and issues certificates to illegal migrants "in violation of the law."

In his statements, which received the most coverage of any political representative in the online media outlet *"Infovojna"* in 2023, he repeatedly emphasized that his party had dealt with the migration crisis effectively in the past and detained illegal migrants at the borders. The texts repeatedly feature pre-election promises that if he becomes prime minister after the elections, he will deny migrants entry into the Slovak Republic. Robert Fico strategically uses criticism of foreign countries and previous governments to strengthen the position of his political party, Smer-SD, and his own authority.

Robert Fico is portrayed positively in the corpus of texts, as patriotic, decisive, with professional experience from the past, or as a dominant, active, and authoritative politician who knows "what needs to be done" to stop migration. In contrast, the government at the time is portrayed as a "progressive" government that is guilty of "deliberately bringing in migrants." His rhetoric is strongly populist and confrontational, as his statements include phrases such as "Soros' regime," "Soros' girl" (President Čaputová), "treason against the state," and "humanitarian catastrophe" caused by the government at the time. Robert Fico is cast in the role of protector of Slovakia and its borders. His party, Smer-SD, is presented as the only political force capable of real action, in contrast to the then government's "failure of the state" and "Slovakia suffering because of the incompetent Čaputová government." In texts featuring Robert Fico, the analysis pointed to the creation of an apocalyptic image: if the state "does not take immediate action," "an even bigger wave will come" and "Slovakia will collapse." In some texts, we observe conspiracy theories: "Čaputová and Ódor are 'deliberately allowing migration'" and "the EU is preventing Slovakia from acting."

Another politician who was given space in the corpus of texts was Robert Kaliňák. He is portrayed as an expert on security and migration who knows exactly what needs to be done. Strongly confrontational language is used in relation to him towards the then police president Hamran, whom he describes as "an incompetent ignoramus or liar," and the then government, which Robert Kaliňák describes as "incompetents." Like Robert Fico, he is also described as a "long-time expert who knows what he is doing and who has a track record of working with illegal migrants as a former interior minister on several occasions." During our analysis of the texts, we also noticed a strongly positive portrayal of him in contrast to Odór's government and former interior minister Roman Mikulec.

Tibor Gašpar, another member of the SMER-SD party, is not directly quoted in the text, unlike the previous two individuals, but he is implicitly present through the narrative, which refers to migrants as a threat, to the failure of the then state representatives, as well as to the need for "tough measures" and the involvement of the army in the issue of immigrants.

In contrast to politicians from the SMER-SD party stands Zuzana Čaputová, the then president of the Slovak Republic, who is referred to in the texts as "Soros's girl" and associated with a "progressive" government that, according to the texts, "exposes Slovakia to a migration crisis." As mentioned above, even though the office of president in Slovakia is a representative one, Zuzana Čaputová is criticized in the texts for failing to secure the Slovakian borders and for the lack of coordination during the migration crisis. We observe a highly misleading narrative in which the authors seek to portray Z. Čaputová in a negative light "the incompetent Čaputová-Ódor regime" in contrast to the positive policies of Smer.

The then Prime Minister Ľudovít Ódor is portrayed in the texts as a "Soros supporter" whom politician party SMER-SD blames for "pro-migration policies." According to Fico

and Smer, his government allows migrants to enter Slovakia without effective controls. He is criticized in the texts for not implementing the same security measures as during the pandemic or previous crises (even though he was not prime minister or a politician at the time, but an expert in state institutions). The language of the text portrays him as a rational figure, but a weak technocrat who points out the facts (that migration is only bypassing Slovakia for now) but does not convincingly address the crisis. His statements used in the corpus appear defensive, in contrast to the sharp, emotional statements of the then opposition (Fico). He is ridiculed or demonized: "Soros's man, a foreign puppet who betrayed Slovakia and deliberately invites migrants." The texts repeatedly emphasize his connection to "Open Society," "Soros University," or "the rainbow empire" to create the impression that Ódor is under foreign control and threatening national sovereignty.

Conclusion

Critical discourse analysis (CDA) has shown that migration in the texts examined appears primarily as a politicized and security-framed topic that can serve as a tool for mobilizing voters among readers of the alternative internet media outlet "Infovojna." In the texts examined, migrants in 2023 are presented predominantly as a security threat not only to Slovakia but to the whole of Europe, a symbol of disorder and proof of the incompetence of the state representatives at the time, while their own stories and the humanitarian dimension of the migration issue are pushed into the background. This dominant framework is reinforced in particular by quotes from representatives of the opposition at the time, such as Róbert Fico, Róbert Kaliňák, and Tibor Gašpar, who emphasize the narrative of government failure and the need for tough, decisive action.

The text strongly emphasizes political conflict: migration becomes a weapon in the battle between the government and the opposition. While leaders such as Robert Fico, Robert Kaliňák, and other opposition figures are portrayed as competent, active, and decisive defenders of Slovakia's borders and sovereignty, representatives of the government and institutions at the time (Ódor, Čaputová, and others) appear passive, helpless, or deliberately inactive. These contrasting images reinforce the polarization of society and create a black-and-white narrative in which the opposition takes on the role of protector of "Slavic or Slovak values" and state sovereignty, while the government is framed as weak and incompetent.

The result is a discourse in which migrants do not appear as subjects with their own issues, but as objects of political struggle. They represent a symbol of chaos and threat, which allows the authors of the texts, with the help of political actors, to mobilize fear, anger, and a sense of threat. The populist-security framing thus not only weakens a comprehensive understanding of migration processes and the issue itself but also contributes to the normalization of polarizing and confrontational political communication.

References:

- Atkinson, J. (2010). *Alternative Media and Politics of Resistance: A Communication Perspective*. New York: Peter Lang Publishing.
- Bailey, O., Cammaerts, B., Carpentier, N. (2008). *Understanding Alternative Media*. Maidenhead: Open University Press.
- Bednáriková, M. (2013). *Úvod do metodológie*. Trnava: Filozofická fakulta Trnavskej univerzity v Trnave. ISBN 978-80-8082-620-8.
- Downing, J. (2001). *Radical Media*. Thousand Oaks, CA: Sage Publications.
- Fairclough, N. (1993). *Discourse and Social Change*. Cambridge, Oxford, Malden: Polity Press. 10.1017/S0047404500017309.
- Fuchs, Ch. (2010). Alternative Media as Critical Media. *European Journal of Social Theory*, 13(2), 173–192. 10.1177/1368431010362294.

- Holt, K., Figenschou, T., Frischlich, L. (2019). Key Dimensions of Alternative News Media. *Digital Journalism*, 7(7), 860–869. 10.1080/21670811.2019.1625715.
- Karas, M. (2024). Characteristics of Alternative and Mainstream Media. *Economic, Political and Legal Issues of International Relations 2024*. Bratislava: Ekonóm, 142–146. ISBN 978-80-225-5150-2.
- Reisigl, M., Wodak, R. (2015). *Discourse and Discrimination: Rhetorics of Racism and Antisemitism*. Taylor & Francis. 10.4324/9780203993712
- Sandoval, M., Fuchs, Ch. (2010). Towards a Critical Theory of Alternative Media. *Telematics and Informatics*, 27(2), 141–150. 10.1016/j.tele.2009.06.011.
- Wodak, R. (2015). *The Politics of Fear: What Right-Wing Populist Discourses*. Los Angeles, London, New Delhi, Singapore, Washington DC: Sage.

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THE KNOWLEDGE MOSAIC: INTERCULTURAL PATTERNS IN INTELLECTUAL CAPITAL RESEARCH

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Abstract: This study explores the global research landscape linking intellectual capital and intercultural relations through bibliometric analysis. Using data from the robust academic database Web of Science, it shows how researchers from various fields and regions examine the relationship between knowledge, culture, and innovation. The findings indicate growing research networks, shifting themes, and new trends that connect organisational learning, human capital, and cultural intelligence. By visualising collaboration groups and conceptual connections, the study demonstrates how intercultural dynamics enhance intellectual capital theory and practice.

Keywords: intellectual capital, knowledge sharing, intercultural relations

JEL: O34

Introduction

In a world that is becoming more interconnected, knowledge is now the most valuable form of capital, and culture plays a key role in carrying it. As organisations, institutions, and societies engage with globalisation, they must manage intellectual capital (IC) and develop strong intercultural relations. Intellectual capital, which includes human, structural, and relational assets, represents the collective knowledge and intangible resources that fuel innovation and competitiveness. On the other hand, intercultural relations influence how this knowledge is generated, shared, and transformed across differences in language, identity, and worldview. The meeting point of these two areas creates an essential space for exploration, where knowledge and culture intertwine, making value creation a highly social and context-dependent process.

Bibliometric analysis provides a robust methodology for bridging this gap through systematically mapping the intellectual framework, thematic progression, and collaborative networks inherent in this burgeoning research domain. By examining publication trends, citation patterns, co-authorships, and keyword networks, a bibliometric study can elucidate the evolution of the discourse between intellectual capital and intercultural relations, identify areas of concentration, and discern emerging directions gaining prominence. This study explores the core concepts and emerging areas linking intellectual capital with intercultural relations. It focuses on identifying leading authors, influential sources, and key contributing countries; uncovering main thematic clusters and new topics; and tracking how scholarly interest has evolved over time. This approach enhances understanding of how knowledge creation and cultural exchange are interconnected — showing how global diversity challenges and enriches intellectual capital management and growth.

1 Literature review

The phenomenon of intellectual capital has become a core topic because of implementing a new knowledge-based economy. This knowledge-based economy moved attention to intangible assets owned by organisations and economics (Obeidat et al., 2016).

Researching intellectual capital has its roots in the topics of intangible assets. The pioneering work in the field of intellectual capital was established by John Kenneth Galbraith

in 1969 (Pedro et al., 2018). The critical role of intellectual capital and intangibles was described in the works about innovation by theoretical researchers such as Josef Alois Schumpeter (1983) and Peter Drucker (1954, 1993). Much attention to intellectual capital was paid in the 90s of the 20th century when intellectual capital began to be understood as a part of a knowledge-based economy (Manzari et al., 2012). Since the late 1980s, four main stages of intellectual capital development are identified in both literature and empirical research. The first stage, spanning the late 1980s to the 1990s, involved developing the theoretical framework. From 2000 to 2003, the next stage provided empirical evidence supporting the earlier theories. Since 2004, two stages have been occurring concurrently: one focusing on researching intellectual capital at the firm level, using the well-known triad of intellectual capital, and the other examining regional and national levels, referred to as national intellectual capital (Pedro et al., 2018).

In recent decades, management literature has employed the concept of IC to explain how knowledge serves as a crucial asset for creating value within organisations. IC encompasses the possession of knowledge, practical experience, organisational technology, customer relationships, and professional skills that give a company a competitive advantage in the marketplace (Edvinsson & Malone, 1997). Considering the human aspect of knowledge and innovation, HRM practices can significantly boost a company's IC and its ability to innovate. Knowledge-based human resource management systems seek to optimise the human, structural, and relational capital within the frameworks, processes, and systems of organisations (Kianto et al., 2017). Organisations do not own human capital, but employees with decades of experience hold valuable knowledge that influences outcomes. Effective systems to access and share this knowledge — such as HR practices like training, recruitment, and performance appraisal — are essential. Recognising and leveraging intellectual capital is especially crucial in intercultural relations, where diverse knowledge and perspectives foster innovation and better organisational integration (Lugar & Novićević, 2021).

Intercultural relations play a crucial role in driving intellectual capital by fostering diverse perspectives and enhancing innovative thinking within organisations. By bridging cultural differences, organisations can leverage a broader range of ideas and experiences, leading to more effective knowledge sharing and collaboration. This exchange not only enriches the intellectual capital available but also cultivates relational assets, such as trust and mutual respect, which are essential for sustained innovation. As teams learn to navigate and integrate diverse cultural insights, they can develop more creative solutions and adapt effectively to the global market, ultimately boosting their competitive advantage (Guardamino, 2024; Kasper et al., 2013; Olander et al., 2015; Suparwadi et al., 2024).

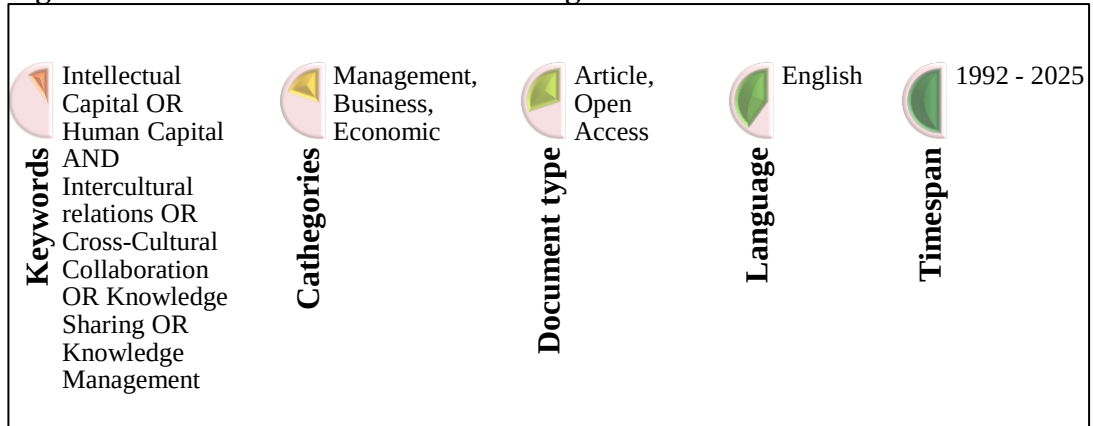
2 Data collection and methodology

The primary methodology employed in this research is bibliometric analysis, a quantitative approach used to assess scientific literature through statistical techniques. A. Pritchard (1969) introduced bibliometric analysis as “the application of mathematical and statistical methods to books and other means of communication”. Quantitative analysis of empirical data in published literature leads to a bibliometrics analysis of the research area of study and identifies major themes (Leung et al., 2017).

Bibliometric analysis is a valuable tool for uncovering the underlying connections, trends, and developmental directions within a specific research area. This method provides a comprehensive overview of the scholarly landscape by analysing publication patterns, citation networks, authorship collaborations, and keyword co-occurrences. It enables researchers to identify influential publications, emerging topics, and potential gaps in the existing literature, thereby guiding future research directions and informing scholarly decision-making.

The data were collected on October 8, 2025, from the Web of Science database. Its strict selection process ensures the reliability and quality of included publications. The filtering criteria used for this data are shown in Figure 1.

Figure 1: Set of criteria for data collecting in the Web of Science Database



Source: Own proceeding

The sample was cleaned to remove duplicates, ensuring accurate and reliable analysis. Using a de-duplicated sample is essential in academic research because it avoids data bias, improves result validity, and preserves scientific integrity. Eliminating duplicates allows researchers to interpret data correctly, draw valid conclusions, and produce reproducible, trustworthy results.

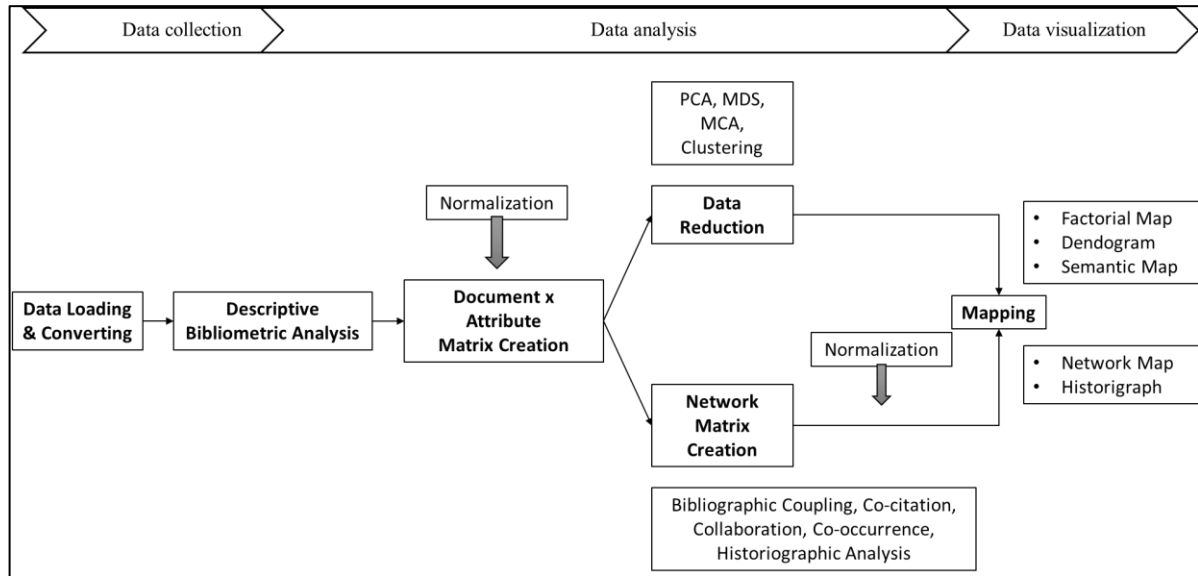
Table 1: General information about the collected sample

<i>Description</i>	<i>Results</i>
Sources (Journals, Books, etc.)	650
Documents	10,301
Annual Growth Rate	22.13%
Average citation per document	29.87
References	384,936
Keywords	21,841
Authors	23,560
International co-authorship	39.17%

Source: Own proceeding

The sample was analysed using the “Bibliometrix” package in RStudio, developed by Aria & Cuccurullo (2017), employing bibliometric methods like bibliographic coupling, co-citation, co-authorship, and co-word analysis. It offers various bibliometric tools, as detailed in Figure 2.

Figure 2: Tools from the “bibliometrix” package

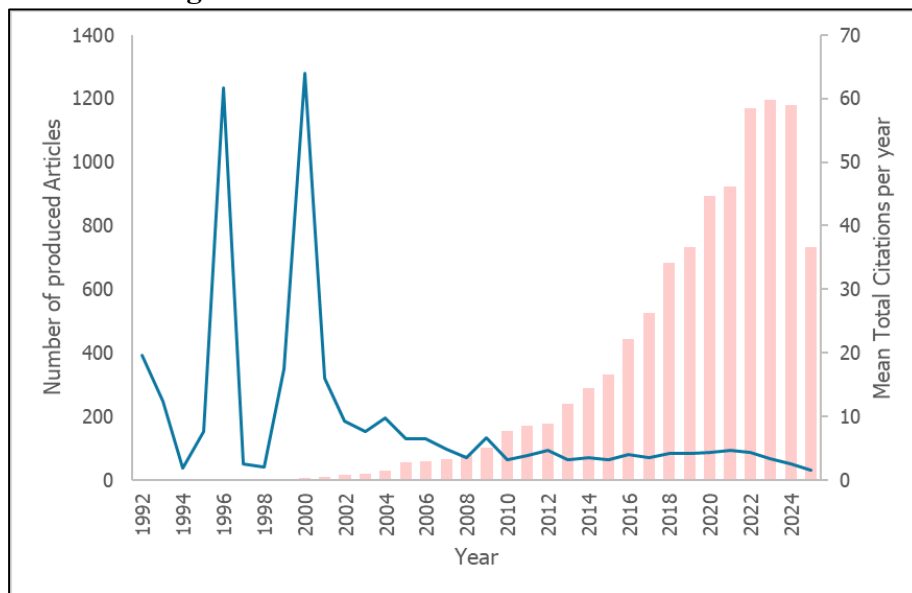


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3 Bibliometric Results

Interest in publishing on a particular topic is increasing. Figure 3 displays the annual number of articles and the average total citations from 1992 to 2025. The data shows that citation activity was low during the 1990s and early 2000s, with some noticeable fluctuations. Starting around 2010, the total number of citations grew steadily, peaking between 2022 and 2023. Meanwhile, the average citation rate per year remained fairly steady, with slight changes over time. This pattern indicates that although the total citations have risen significantly —showing growing academic interest — the average citations per publication have stayed relatively stable, suggesting a widespread and consistent scholarly attention rather than a concentrated surge.

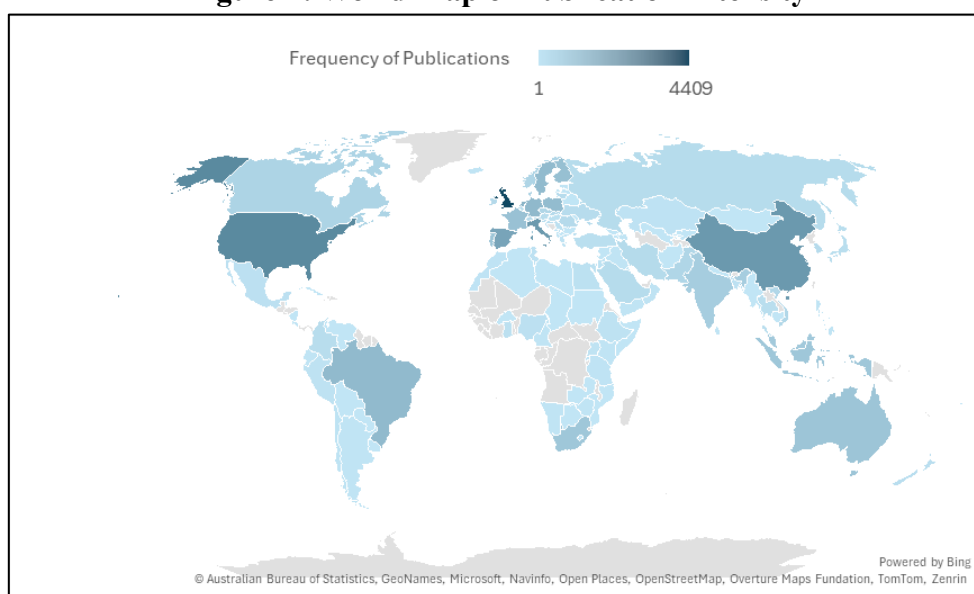
Figure 3: Publication and Citation Trends



Source: Own proceeding

Figure 4 illustrates the worldwide distribution of publications by country, based on publication counts. The data reveal a highly uneven research landscape, with the United States, China, and the United Kingdom leading in output. Countries like Canada, Australia, Germany, France, and Japan also show notable publication activity. Conversely, many nations in Africa, South America, and Asia have significantly lower publication rates. This pattern underscores a persistent global disparity in research productivity, with scholarly output predominantly centred in economically developed regions.

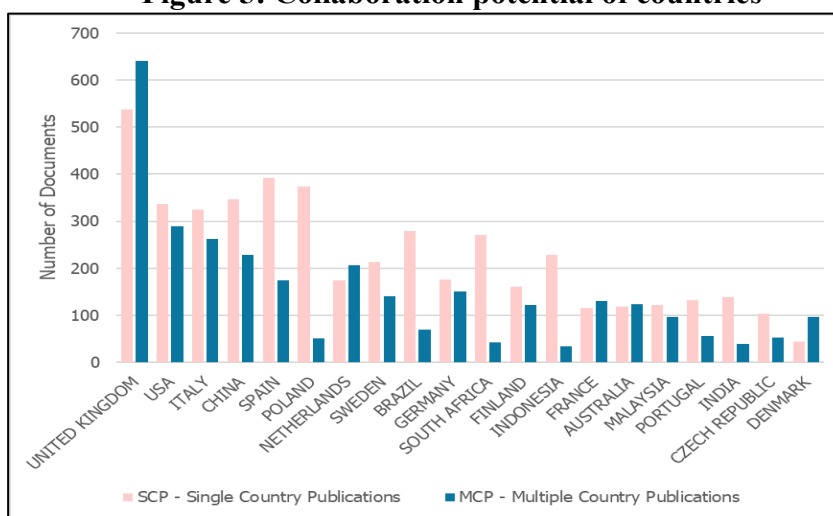
Figure 4: World Map of Publication Intensity



Source: Own proceeding

Beyond the volume of publications, the type of authorship shows notable differences. Single-country publications (SCPs) are most common in many regions, particularly in Poland, Brazil, Indonesia, Portugal, and India. Conversely, the UK, the Netherlands, France, and Denmark mainly publish through international collaborations (MCPs — multiple country publications). Analysis of international collaboration frequencies indicates the strongest partnership between the USA and the UK, with 31 instances.

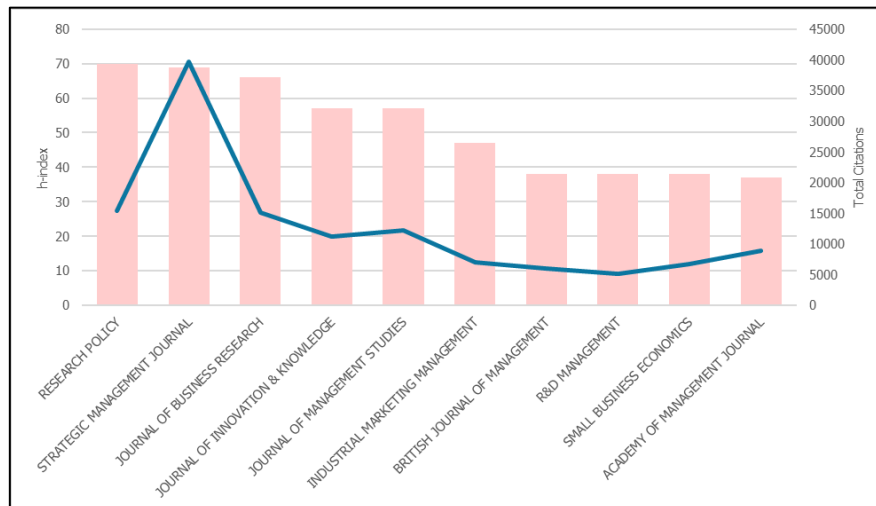
Figure 5: Collaboration potential of countries



Source: Own proceeding

While the number of publications indicates a journal's productivity, the h-index provides a more comprehensive view of its impact by considering both the number of articles published and how often they are cited. Comparing these metrics shows that publishing many papers does not necessarily equate to greater influence. Figure 6 displays the comparison between the h-index and total citations for the top 10 sources. For example, the Strategic Management Journal ranks first by total citations, but when looking at the h-index, Research Policy demonstrates a higher impact.

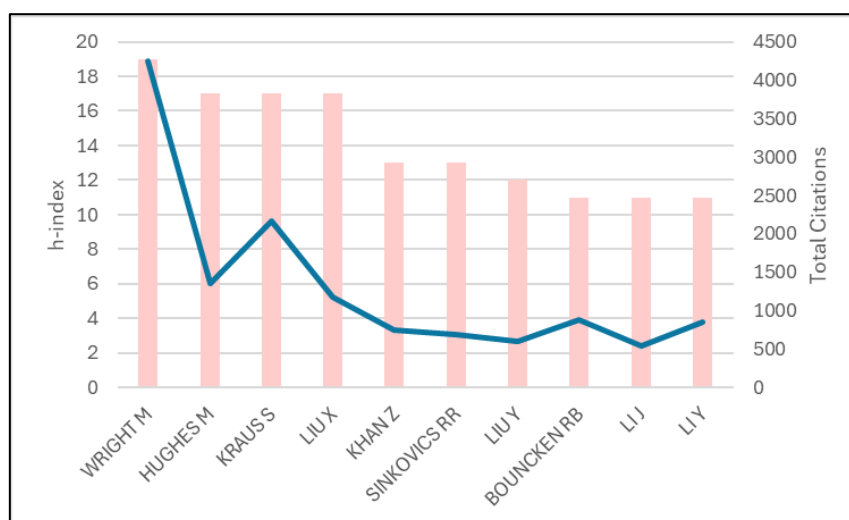
Figure 6: Top 10 Journals according to the Hirsch-index in comparison to their total citations



Source: Own proceeding

The same comparison we provided for authors in Figure 7 shows that Wright M. leads based on h-index and total citations, while other authors show fluctuating results.

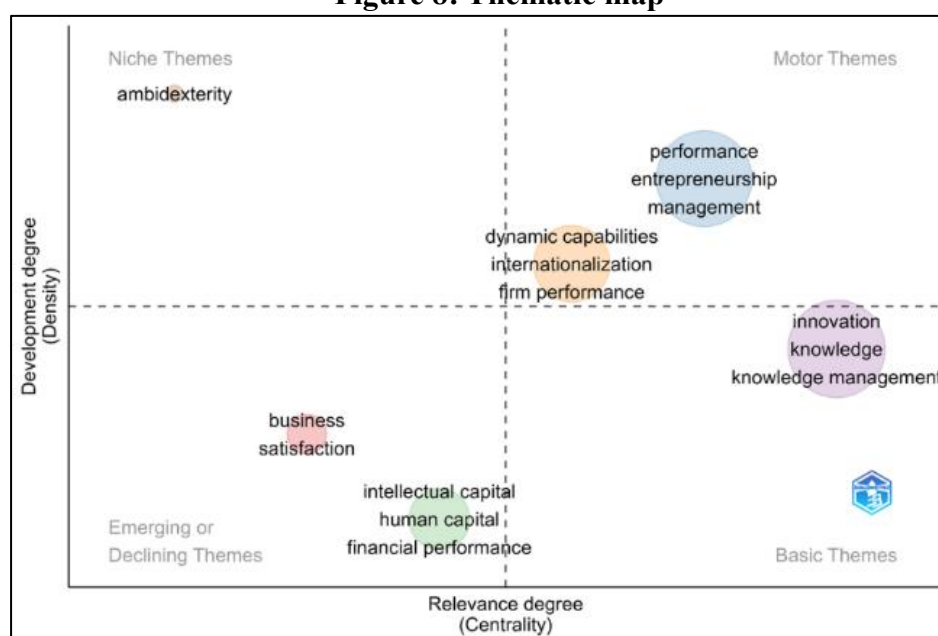
Figure 7: Top 10 Authors according to the Hirsch-index in comparison to their total citations



Source: Own proceeding

This thematic map illustrates the research framework at the crossroads of intercultural relations and intellectual capital, examined through development (density) and relevance (centrality). In the top-right quadrant, known as Motor Themes, topics such as performance, entrepreneurship, and management are prominently developed and central, highlighting their vital role in this interdisciplinary field. The Basic Themes area (bottom-right) includes innovation, knowledge, and knowledge management, serving as foundational yet evolving concepts that link intercultural dynamics with the growth of intellectual capital. Conversely, the Niche Themes zone (top-left) contains ambidexterity, representing a specialised area focused on organisational adaptability within multicultural contexts. The bottom-left quadrant, labelled Emerging or Declining Themes, encompasses business, satisfaction, intellectual capital, human capital, and financial performance — topics that are either emerging or in need of further theoretical development in intercultural research. Positioned near the centre, themes such as dynamic capabilities, internationalisation, and firm performance act as connectors, illustrating how organisations utilise intellectual capital and intercultural skills to bolster global competitiveness and organisational performance.

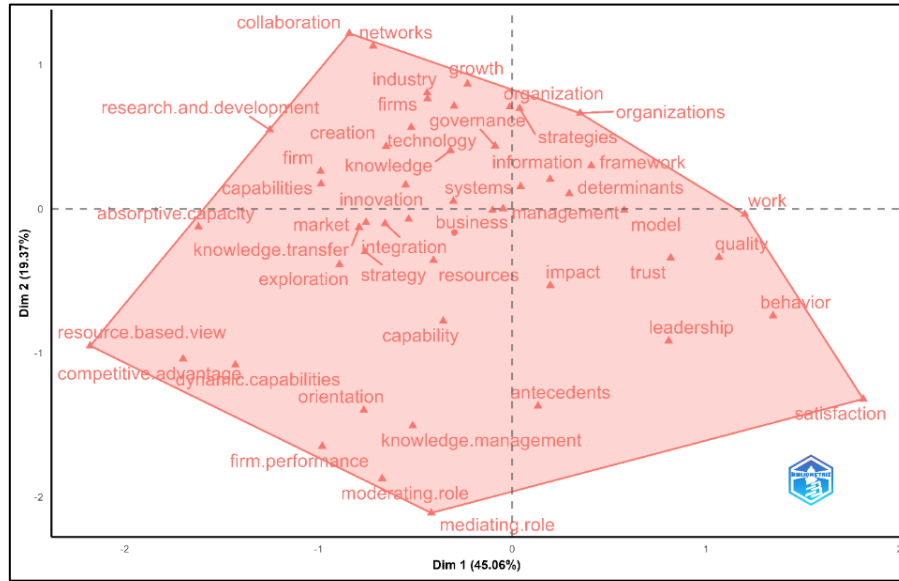
Figure 8: Thematic map



Source: Own proceeding

The concept map (MCA) and the dendrogram offer an overview of how knowledge is structured and thematically grouped within research on intercultural relations and intellectual capital. The MCA map (Figure 9) highlights two main dimensions accounting for most of the variation (Dim 1: 45.06%, Dim 2: 19.37%), illustrating the spatial arrangement of themes. Key topics such as innovation, knowledge management, strategy, and capabilities are centrally located, emphasising their importance in linking intercultural elements with the development and utilisation of intellectual capital. Clusters like collaboration, networks, and R&D reflect a growing focus on organisational learning and knowledge exchange across diverse cultural contexts. Meanwhile, themes on the periphery—such as satisfaction, trust, and leadership—underline the increasing importance of human and relational factors vital for intercultural understanding and the advancement of intellectual capital.

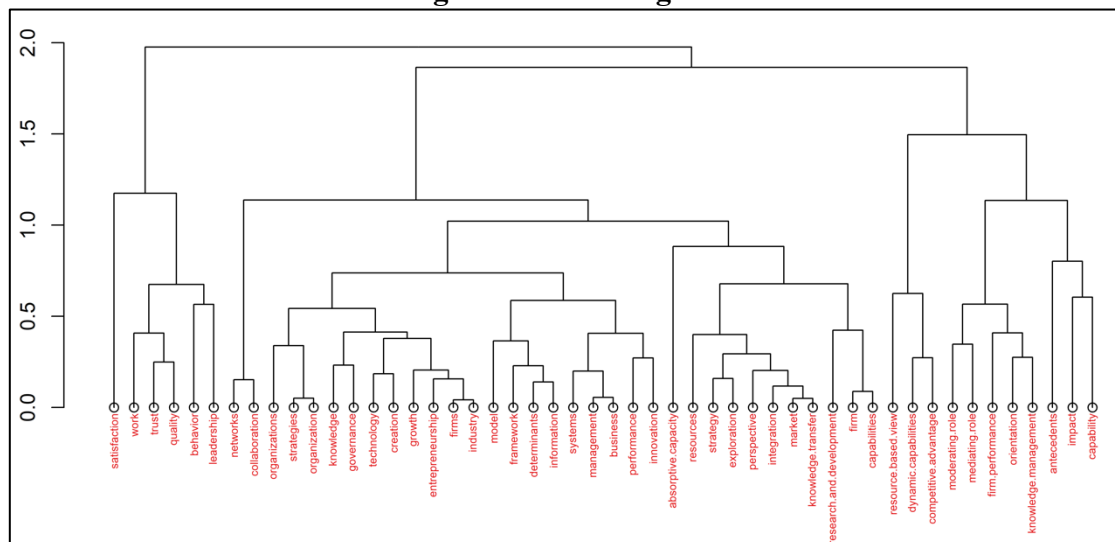
Figure 9: Conceptual structure map – MCA method



Source: Own proceeding

The dendrogram (Figure 10) refines the structure by identifying several cohesive thematic clusters. One important group links innovation, knowledge transfer, and absorptive capacity with strategy and resources, demonstrating how intercultural knowledge is transformed into intellectual capital. Another cluster, including trust, leadership, and work satisfaction, highlights the social and behavioural foundations needed for effective cross-cultural knowledge sharing. Additionally, themes such as entrepreneurship, firm performance, and competitive advantage create a performance-focused cluster that connects intercultural skills to tangible business outcomes. Overall, these insights reveal that research at the intersection of intercultural relations and intellectual capital revolves around three interconnected dimensions: strategic knowledge integration, human and relational dynamics, and organisational performance — showing how organisations utilise cultural diversity to enhance intellectual capital and competitiveness.

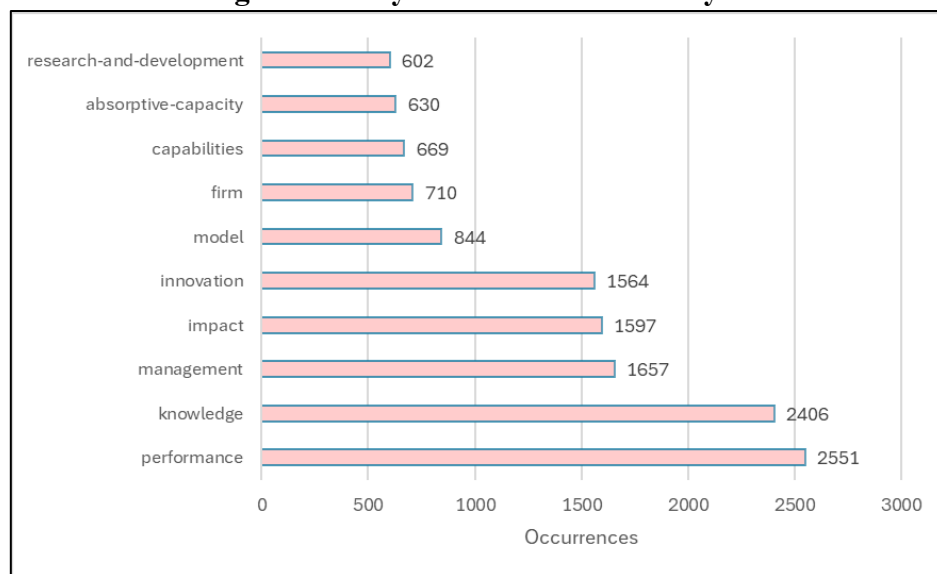
Figure 10: Dendrogram



Source: Own proceeding

The keyword analysis in Figure 11 highlights the most frequently studied concepts in the intersection of intercultural relations and intellectual capital. “Performance” (2,551 occurrences) and “knowledge” (2,406 occurrences) are key terms, emphasising their role in linking organisational outcomes with knowledge assets. Other prominent words include “management” (1,657), “impact” (1,597), and “innovation” (1,564), reflecting a sustained academic interest in how management strategies and innovative processes leverage intellectual capital within intercultural contexts. The findings indicate that the field primarily focuses on managing knowledge-driven performance and innovation, emphasising organisational and managerial mechanisms that transform cultural and intellectual resources into competitive advantages.

Figure 11: Keyword occurrence analysis



Source: Own proceeding

Conclusion

The analysis of intercultural relations and intellectual capital research shows a rapidly growing, diverse field. Over three decades, publication activity increased, especially after 2010, emphasising the global recognition of knowledge and culture's role in success. Citation rates are stable but rising total citations indicate ongoing scholarly interest. Most studies are from wealthy regions like the U. S., China, and the U. K., revealing disparities. International collaborations, notably U. S. and U. K., enhance cross-border research. While productivity doesn't always mean impact, journals like Research Policy and authors like Wright M. remain influential, focusing on quality and relevance.

Key themes like performance, innovation, knowledge management, and entrepreneurship connect cultural understanding to value creation and competitiveness. Emerging themes like ambidexterity, human capital, and satisfaction focus on adaptability, well-being, and inclusivity in intercultural settings. Analyses confirm that “performance” and “knowledge” are central, highlighting how organizations leverage intellectual and cultural resources for innovation. The increased focus on trust, leadership, and collaboration shows a maturing field seeking a broad understanding of intercultural knowledge ecosystems.

Overall, this research field shows a vibrant and interconnected knowledge development. The integration of intercultural relations and intellectual capital examines how cultural diversity and knowledge assets together support modern organizational success. Moving forward, efforts

should focus on addressing geographical gaps, encouraging interdisciplinary collaboration, and enhancing theoretical integration—enhancing our understanding of how intercultural interaction converts knowledge into lasting value in a connected world.

References:

- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Drucker, P. F. (1954). *The Practice of Management* (1st ed., p. 416). Harper & Roe.
- Drucker, P. F. (1993). *INNOVATION AND ENTRE- PRENEURSHIP* (1st ed., p. 293). Collins.
- Edvinsson, L., & Malone, M. S. (1997). *Intellectual Capital: Realizing Your Company's True Value by Finding Its Hidden Brainpower* (p. 240). Harper Business.
- Guardamino, C. A. D. C. (2024). Moderating effect of Knowledge Management on the relationship between Intellectual Capital and Export Performance. *Estudios Gerenciales*, 40(173), 490–501. <https://doi.org/10.18046/j.estger.2024.173.6787>
- Kasper, H., Lehrer, M., Muehlbacher, J., & Mueller, B. (2013). On the different “worlds” of intra-organizational knowledge management: Understanding idiosyncratic variation in MNC cross-site knowledge-sharing practices. *International Business Review*, 22(1), 326–338. <https://doi.org/10.1016/j.ibusrev.2012.05.001>
- Kianto, A., Sáenz, J., & Aramburu, N. (2017). Knowledge-based human resource management practices, intellectual capital and innovation. *Journal of Business Research*, 81, 11–20. <https://doi.org/10.1016/j.jbusres.2017.07.018>
- Leung, X. Y., Sun, J., & Bai, B. (2017). Bibliometrics of social media research: A co-citation and co-word analysis. *International Journal of Hospitality Management*, 66, 35–45. <https://doi.org/10.1016/j.ijhm.2017.06.012>
- Lugar, C., & Novićević, R. (2021). Knowledge based human resource management and employee creativity: The dual mediation of knowledge sharing and knowledge hiding. *Economics Ecology Socium*, 5(4), 1–10. <https://doi.org/10.31520/2616-7107/2021.5.4-1>
- Manzari, M., Kazemi, M., Nazemi, S., & Pooya, A. (2012). Intellectual capital: Concepts, components and indicators: A literature review. *Management Science Letters*, 2(7), 2255–2270. <https://doi.org/10.5267/j.msl.2012.07.018>
- Obeidat, B. Y., Abdallah, A. B., Aqqad, N. O., Akhoershiedah, A. H. O. M., & Maqableh, M. (2016). The Effect of Intellectual Capital on Organizational Performance: The Mediating Role of Knowledge Sharing. *Communications and Network*, 9(1), Article 1. <https://doi.org/10.4236/cn.2017.91001>
- Olander, H., Hurmelinna-Laukkanen, P., & Heilmann, P. (2015). Human resources—Strength and weakness in protection of intellectual capital. *Journal of Intellectual Capital*, 16(4), 742–762. <https://doi.org/10.1108/JIC-03-2015-0027>
- Pedro, E., Leitão, J., & Alves, H. (2018). Back to the future of intellectual capital research: A systematic literature review. *Management Decision*, 56(11), 2502–2583. <https://doi.org/10.1108/MD-08-2017-0807>
- Pritchard, A. (1969). Statistical Bibliography or Bibliometrics? *Journal of Documentation*, 25, 348–349.
- Schumpeter, J. A. (1983). *The theory of economic development: An inquiry into profits, capital, credit, interest, and the business cycle*. Transaction Books.
- Suparwadi, Al Musadieq, M., Riza, M. F., & Hutahayan, B. (2024). Leveraging intellectual capital and knowledge management to drive innovation and organizational

performance. International Journal of Engineering Business Management, 16,
18479790241304563. <https://doi.org/10.1177/18479790241304563>

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MIGRATION AS A THREAT? MIGRATION DISCOURSES IN CENTRAL EUROPEAN COUNTRIES UNDER THE INFLUENCE OF POPULISM¹

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Abstract: This article examines how international migration is currently being discussed in Central Europe (Slovakia, the Czech Republic, Poland, and Hungary). In 2015 and 2016, politicians in this region presented migration as a threat, even though these countries were not the main destinations for migrants. This study provides a comparative analysis of migration discourse in Central Europe and examines the arguments politicians use when articulating this topic. The research presents common narratives legitimizing anti-migration measures. It reveals common motifs, such as political, economic, and political security, and identifies differences in discourse between countries, thereby contributing to an understanding of how political language shapes public perceptions of migration.

Keywords: migration, Central Europe, discourse, securitization, populism

JEL: Z00

Introduction

Since 2015, international migration has become a regular feature of political discourse in Central European countries², even though this region is not primarily a destination for migrants seeking refuge from persecution (in the case of refugees) or economic opportunities (in the case of economic migrants). Although the number of migrants is significantly lower than in Western European countries, the number of migrants with residence permits is growing in these countries as well. For this reason, it seems interesting to examine how politicians in these countries justify their attitudes towards migration. My reasoning is based on the initial observation that the attitudes of Czech, Polish, Slovak, and Hungarian politicians are based on a populist perspective, according to which society is divided into two groups: the category of "us" and the category of "them," with migrants being primarily associated with security concerns, regardless of where they come from.

This article aims to answer the question of how populists from Central European countries articulate their attitudes towards migration and migrants, particularly in the context of the emigration of refugees, initially from Africa and the Middle East (2015-2016) and subsequently Ukrainian refugees after the start of full-scale war in Ukraine in February 2022. I assume that, given the linguistic (except for Hungary), cultural, and geographical proximity, and thus a higher degree of willingness and ability to integrate into society, attitudes toward Ukrainians may differ from those toward migrants in 2015 and 2016. However, since

¹ This text is one of the outputs of the scientific project *VEGA 1/0075/24 Political Discourse in Slovakia in the Context of the War in Ukraine* and *APVV-23-0040 Migration Discourse in the V4 Countries from the Perspective of Political Linguistics*.

² In this text, I will not use the term V4, but rather Central Europe. The term V4 is used when the governments of these countries cooperate because they share similar values and their cooperation appears to be beneficial for all countries. However, the problem with V4 is the decline in the intensity of mutual cooperation, precisely because some countries have moved away from the values on which this form of cooperation was based.

populism is based on a dichotomous perception of reality—us vs. them, the others—patterns typical of populist communication may also appear in their communication.

Discourse analysis will be used to answer the formulated questions. Discourse analysis is a research method that examines language in its social context, focusing on how language reflects and shapes social structures, power relations, and identity (Yazdannik, Yousefy & Mohammadi, 2017). The aim of research using discourse analysis is to understand how language functions in real situations, analyzing not only the meaning of words but also how language is used to express meaning across different social contexts, including the political context. DA examines the meaning of words and phrases in a specific context. This method helps researchers from various scientific disciplines (not only linguistics, but also sociology and political science) to understand the fundamental values, assumptions, and intentions expressed by language.

Since discourse analysis is used to determine how language influences people's decision-making (Berger, 2016), it is well-suited as an analytical tool for researching the language of politics (Dulebová, 2012; Spišiaková & Keresty, 2024). In this article, my research corpus consists of published statements by selected political leaders from the Central European countries under study. All these statements are publicly available on the internet. They were obtained from the websites of various institutions, political parties, social networks, or various media web portals. The list of references includes only the sources of those statements that are mentioned in the text. For understandable reasons, I could not include all the analyzed statements as examples.

1. Populism and migration

Populism based on anti-immigration communication schemes is not a phenomenon limited to Central European countries. On the contrary, in countries with a long tradition of immigration processes and discussions on migrant integration, there have been political parties with a strongly negative attitude towards migrants for several decades (van Spanje, 2011; Mocková & Spišiaková, 2025). Since 2015, however, we have observed a radicalization of anti-immigration communication strategies even among non-populist parties (Štefančík & Kiner, 2021).

The relationship between populism and anti-immigration rhetoric is extremely close, as anti-immigration appeals are a characteristic feature of the communication strategies of contemporary European populists. This approach aligns with the understanding of populism as a (narrow) ideology and with the view of populism as a style of political communication. If the core of populism as an ideology is a dichotomous perception of society, where two antagonistic groups stand opposite each other—on the one hand, the people, and on the other, the others or the foreigners—then it is migrants who constitute the category of "the others." That is, people or groups of people who, according to populists, threaten the first group, i.e., the people.

The anti-immigration rhetoric of some political parties also fits with the view of populism as a style of communication. Populists perceive migrants as the others from whom "the people" need to be protected, and they choose means of expression that are intended to evoke a sense of danger. Populists rarely distinguish between categories of migrants, unless they are in government and perceive certain groups of migrants as a solution to certain economic or demographic problems.

From a discursive point of view, topics related to criticism of migration and migrants provide populists with an emotionally appropriate tool for mobilizing voters. Fear, anger, or the deliberate evocation of a sense of threat are used to reinforce the "us vs. them" dichotomy. In line with the approach to other topics, migration is simplified in this case as well. Complex

social or economic problems are explained by the presence of migrants or by the failure of elites to protect borders or people from external threats.

The instrumentalization of student migration in populist political messages is based on a pragmatic approach. This topic brings political gains in the form of mobilized voters. Research shows (Tannenbaum et al., 2015) that presenting specific topics by evoking fear is more effective than presenting them without emotion. Anti-immigration rhetoric serves to evoke fear and anxiety, as well as to divert attention from other issues such as corruption, inflation, and shortcomings in state administration. It is also an effective tool for maintaining societal tension and polarization, allowing populist movements to consolidate their support, especially when they are part of the executive branch of government (Dulebová, Štefančík & Cingerová, 2024).

Several authors (Mudde, 2012; Wodak, 2016; Štefančík, 2020) show that anti-immigration rhetoric is a common means of communication across Europe, particularly in countries with competitive party systems. Originally, this was typical of Western Europe, i.e., countries with higher numbers of migrants (in some places, the number of residents with a migrant background is as high as a quarter of the population). However, this topic is now also regularly articulated by populists in countries of the former socialist bloc, including Central European countries. In many cases, even mainstream political parties are adopting anti-immigration rhetoric. This strategy (seen, for example, in Austria) aims to attract voters from populist parties.

2 Anti-immigration rhetoric in Central Europe

It would be incorrect to claim that anti-immigration rhetoric emerged only in Central European countries in 2015, in response to increased migration from Africa and the Middle East to Western Europe. In Slovakia, Poland, and Hungary, there were diffuse attitudes toward migrants, but the domestic political discourse was oriented in a different direction. The Czech Republic is an exception, as after joining the European Union, it became a country with a rapid increase in the number of foreigners with tolerated residence. Although initially – after 1993 – immigration from the Slovak Republic dominated, very quickly the largest group became residents of Ukraine. A large group was also gradually formed by Vietnamese, against whom some xenophobic statements were directed.

Although anti-immigration statements can be identified in Czech political discourse as early as 2015, it is from that year onward that migration becomes the focus of political discourse across all four Central European countries. All four countries have come to emphasize the need to protect national sovereignty, cultural identity, and security. This approach has intensified, especially after the European Commission attempted to adopt so-called "mandatory quotas," or in other words, a system for redistributing migrants to all European Union countries. This system was intended to relieve the burden on countries located on the external border of the Schengen area and thus alleviate the manifestations of the European Union's migration policy crisis. This system was intended to relieve the burden on countries located on the external border of the Schengen area and thus alleviate the manifestations of the crisis in the European Union's migration policy. The common position of the Central European states was to reject this system and, by extension, the principle of solidarity, one of the dominant principles of this European economic and political community.

Migration is often presented in Central European countries as a threat to national values and traditional ways of life (Stojarová, 2018). This discourse is based on the populist principle of "us vs. them" (or us vs. the others, the foreigners), where "us" means one's own nation and "them" refers to migrants or members of foreign cultures and religions. Such discourse also serves to shift attention away from complex issues and away from topics that could be uncomfortable for the governments of individual states.

A striking common feature of political discourse in these countries has been the labeling of refugees as "economic migrants" (Štefančík & Kiner, 2021). Politicians thus implicitly deny the humanitarian dimension of migration and question these people's right to international protection. Such language and the shifting of the original meaning of the term "economic migrant" has a strong evaluative effect, as it creates the impression that migrants are not coming because of war, persecution, or threats to their lives, but solely for selfish reasons. As a result, the negative image of migrants is reinforced in the public eye. Populists present migrants as those who "abuse the system" (of social assistance), which in turn legitimizes restrictive measures by the state and justifies the rejection of solidarity with refugees at home and within the common policy of the European Union.

There has been a partial shift in the migration discourse since the start of the Russian military invasion of Ukraine, after which thousands of war refugees have been arriving in Central European countries. These refugees are different from those in 2015 and 2016. They come from a geographically close country; for Poland, Slovakia, and the Czech Republic, they are members of the same Slavic nation, with a similar mother tongue (Ukrainian or Russian) and similar cultural patterns of behavior, including religious ones. I believe that the immediate sense of threat from the war taking place in a neighboring country, the consequences of which are also being felt in various ways by the countries of Central Europe, may have played an important role in the approach to Ukrainian refugees.

A comparative analysis of migration discourses across countries indicates that each national context exhibits periods of heightened anti-immigration rhetoric, as well as intervals in which the issue becomes less salient in public and political discourse. Migration is primarily presented during election campaigns. Even in Slovakia, in 2015 and 2016 (unlike Hungary), it was not located on migration routes from Africa or the Middle East, but before the 2023 elections they were also appearing in southern Slovakia bordering Hungary. In this context, I consider it important to point out that a few months earlier, illegal migrant smugglers were released from Hungarian prisons. It is also worth noting that, following the change of government in the fall of 2023, the migration of irregular migrants crossing into Slovakia from Hungary via the "green border" is declining in intensity, and this topic is slowly moving to the margins of political discourse.

If we look at the Slovak migration discourse in 2015/2016 and 2022, we can identify significant qualitative changes. The security aspect does not dominate the discourse on Ukrainian refugee migration. However, even in this case, there are attempts—especially from right-wing extremists and radical populists—to question the provision of aid to Ukrainians. Even in the case of the populist party Smer-SD, we identify positive statements towards Ukrainians, including humanitarian aid, the integration of Ukrainians into the domestic labor market, and assistance in creating Ukrainian preschool and school facilities for the children of Ukrainian war refugees.

A slight shift can be observed among populists in the Slovak migration discourse. In particular, Prime Minister Robert Fico began to distinguish between "legal" and "illegal" migrants, describing legal migrants (especially those from Ukraine) as an opportunity for the Slovak economy. He also spoke positively about the possibility of addressing some problems in the Slovak labor market during his June 2025 trip to Uzbekistan. Robert Fico even described Uzbekistan as a "gateway to Afghanistan" (cited according to Denník N, 2025).

In Hungary, anti-immigration rhetoric is primarily associated with the ruling Fidesz party and its leader Viktor Orbán, who has built an entire political narrative around this issue, focusing mainly on the protection of national borders and criticism of European Union policy (Korkut & Fazekas, 2023). Members of the ruling party present migration as an existential threat linked to the "Islamization of Europe" and the collapse of traditional values. As a sign of its determination to protect the people from migrants, the Hungarian government built a fence

on the southern border. It tightened asylum rules, which was presented as a symbol of a "tough" approach to migrants.

„Everything that is happening before our eyes right now will have explosive consequences for the whole of Europe... Europe is in the grip of madness over immigration and refugees“ (Orbán, 2015, cited according to Guardian, 2015).

During the war in Ukraine, a specific political discourse on Ukrainian refugees developed in Hungary. While Prime Minister Viktor Orbán's government initially provided temporary protection to Ukrainian refugees, this support was later restricted. The Hungarian Prime Minister takes a selective approach to the issue of Ukrainian refugees. He supports those who come from areas directly affected by the war and restricts support for those who come from relatively safe areas of Ukraine.

In Poland, the main actor in the anti-migration discourse is the Law and Justice Party (PiS). This party has long refused to accept migrants from third countries, but at the same time shows solidarity with refugees from Ukraine. This selectivity shows that Polish rhetoric distinguishes between "close" refugees from a culturally related environment and "foreign" migrants from non-European regions.

In the context of the migration situation, opinions emerged in 2015 and 2016 that migrants are carriers of foreign diseases and therefore pose a threat to the domestic population. One of these politicians was PiS party leader Jarosław Kaczyński:

„ There are already signs of the emergence of very dangerous diseases which haven't been seen in Europe for a long time: Cholera on Greek islands; dysentery in Vienna; various types of parasites, protozoa, which aren't dangerous in the organisms of these people, but which could be dangerous here“ (Kaczyński, 2015).

When comparing the migration situation in 2015 and 2016, we can identify some parallels. At that time, Polish representatives from the ruling PiS party categorically rejected the so-called mandatory EU quotas for the redistribution of refugees from the Middle East. In 2016, then-Prime Minister Beata Szydło declared that *"Poland cannot accept any migrants in this situation"* (cited according to DW 2016). PiS leader Jarosław Kaczyński warned of *"a change in cultural identity and a decline in security"* in the country (cited according to Zerofsky, 2018). The language used towards migrants at the time appealed to fear, the protection of national sovereignty, and traditional values.

A similar pattern of argumentation can be seen today, although in relation to Ukrainians it has a less radical and more economic tone, linked mainly to the social security of Ukrainian refugees or their support (e.g., housing). In both periods, the common feature is an emphasis on "protecting Poland" and the need to control migration. While in 2015 the main themes were cultural and security threats, today politicians focus on the financial burden, labor market competition, and tensions in local communities.

Overall, although the language used by Polish politicians about Ukrainian refugees is not as radical as it was in 2015, similar mechanisms are gradually emerging: a reduction in empathy, growing criticism, and appeals to *"protect national interests."* This shift from initial solidarity to a skeptical and defensive discourse suggests that the issue of migration, regardless of the origin of the refugees, remains highly politicized in Poland and is being used by populist politicians to mobilize voters.

In the context of migration processes in Poland, I consider it important to highlight Belarus's coercive migration diplomacy. The term "migration diplomacy" is used in the literature to refer to the deliberate regulation of migration flows from one state to another,

or from one state to the territory of several states (e.g., the European Union). In the case of tense mutual relations, the regulation of migration processes can be considered an undesirable interference in the internal affairs of another state (Lid'ák & Štefančík, 2022). Tsourapas (2017: 2367–2368) defines this concept as "the use of diplomatic tools, processes, and procedures to manage cross-border population mobility, including both the strategic use of migration flows as a means to obtain other aims, and the use of diplomatic methods to achieve goals related to migration."

One example of migration diplomacy was the tension on the Belarusian-Polish border, where since 2021 the border between Poland and Belarus³ has become a place through which migrants from the Middle East, Africa, and Asia have sought to enter the European Union. These refugees often arrive in Belarus by plane on tourist visas, but their real goal is to cross the external borders of the European Union. The Polish government's view was that this was a form of hybrid conflict organized by the Belarusian regime with Russian support to destabilize the EU and create internal tensions between its member states.

„There is no doubt that hybrid actions of the Belarusian side caused the crisis at the border. We know that it is an artificially created and controlled migration route“ (Juzwiak, 2024, cited according to Pyka, 2024).

Poland responded to this situation by tightening border controls. It built a five-meter fence with barbed wire, strengthened its military presence, and introduced so-called security zones. These measures reduced the number of successful attempts to cross the border, but at the same time made it impossible to assist people stranded in the border areas. In 2024 alone, Polish authorities recorded more than 30,000 attempts to cross the border illegally (Allik, 2024).

Politically, this is a highly sensitive issue. The Polish public is largely opposed to accepting migrants from Belarus – according to surveys, up to 73 percent of Poles reject the idea that these people should have the right to asylum (Tilles, 2024). Many Polish politicians use the issue of migration to mobilize voters and emphasize the need to defend the borders. On the other hand, human rights organizations and some European institutions criticize Poland for violating international obligations and for making refugees victims of geopolitical games. The situation at the border embodies the conflict between the state's security interests and the European Union's humanitarian obligations. Migrants find themselves in the role of hostages with no possibility of influencing their future lives. Because of the conflict, they remain trapped in a "gray zone" between two countries—without access to legal protection and without sufficient assistance. The situation at the border between EU member states and Belarus has therefore become a symbol of the problem facing the entire Union. The main question is how to reconcile the protection of national borders with respect for human dignity and the rights of war refugees.

Conclusion

An analysis of current migration discourses in Central European countries reveals shifting attitudes towards migrants. We can identify a relationship between support for refugees and attitudes towards the war in Ukraine. The more negative the attitude towards Ukraine's defense (in terms of the narrative of peace, even if it means Ukrainian surrender or at least the occupation of part of Ukrainian territory by Russian forces), the more critical the attitude of politicians in the countries studied. Public skepticism and debate about how long and in what

³ Some migrants choose to enter the European Union from Belarus via the Belarusian-Lithuanian and Belarusian-Latvian borders. Between 2021 and 2024, the highest number of attempts was recorded in Poland. Statistics from the three countries that share a border with Belarus show that border guards stopped approximately 150,000 attempts by migrants to cross the border illegally (Allik, 2024).

form aid to Ukrainian refugees should continue is growing. On the other hand, some countries (Slovakia, Poland, the Czech Republic) recognize the benefits of integrating Ukrainians into their national labor markets. On this issue, we observe ambivalent views on Ukrainian refugees. On the one hand, there is discussion about their economic contribution (employment, GDP growth), while on the other hand, a significant part of the public demands an end to social assistance for Ukrainians. Hungary maintains the region's harshest rhetorical stance. The Hungarian government has long emphasized border control and concerns about uncontrolled migration. In the case of Ukraine, the response was more pragmatic than in the migration situation of 2015 and 2016, but Hungarian politicians remain cautious and prefer strict conditions and control. Central Europe is therefore not a homogeneous bloc in all respects; there are differences in integration policy and rhetoric.

Greater common ground can be identified on the issue of migration from countries outside Europe. A common feature of the discourse on this category of migrants is the emphasis on the need for border "control" and the protection of national interests. However, all four states face practical challenges, including access to the labor market, housing, education, and healthcare. The migration discourse in Central Europe has thus shifted from the original spontaneous solidarity to a rational discussion of long-term policy that considers factors such as economic integration, demographic developments, and constraints on social spending. The tension between population fatigue, economic benefits, and a pragmatic approach influenced by the prospect of electoral gains remains the primary driver of public debate on international migration.

References:

- Allik, H. (2024, June 16). Poland, Baltics step up border controls amid migrant crisis. *Notes from Poland*. <https://www.dw.com/en/poland-baltics-step-up-border-controls-amid-migrant-crisis/a-69350351?utm>
- Berger, A. A. (2016). A Discourse on Discourse Studies. *Society*, 53(6): 597–602. <https://doi.org/10.1007/s12115-016-0071-z>
- Cingerová, N., & Motyková, K. (2017). *Úvod do diskurznej analýzy*. Bratislava: Univerzita Komenského v Bratislave.
- Denník N. (2025, June 9). Uzbekistan môže byť pre nás brána do Afganistanu. *Denník N*. <https://dennikn.sk/minuta/4683931/>
- Dulebová, I. (2012). Politický diskurz ako objekt lingvistického výskumu. *Jazyk a kultúra*, 9.
- Dulebová, I., Štefančík, R., & Cingerová, N. (2024). *Language and Security: The Language of Securitization in Contemporary Slovak Public Discourse*. Berlin et al.: Peter Lang.
- DW (2016, March 23). Poland says no to refugees after terrorist attacks. *DW*. <https://www.dw.com/en/poland-abandons-promise-to-take-in-refugees-after-brussels-attacks/a-19137258>
- Guardian (2015, September 3). Migration crisis: Hungary PM says Europe in grip of madness. *Guardian*. <https://www.theguardian.com/world/2015/sep/03/migration-crisishungary-pm-victor-orban-europe-response-madness>
- Korkut, U, Fazekas, R. (2023). The Ruptures and Continuities in Hungary's Reception Policy: The Ukrainian Refugee Crisis. *Central and Eastern European Migration Review*. 12(1): 13–29. <https://doi.org/10.54667/ceemr.2023.10>
- Lid'ák, J., & Štefančík, R. (2022). *Úvod do migračných štúdií: politologické kontexty*. Praha: Vysoká škola mezinárodních a veřejných vztahů Praha.
- Mocková, N., & Spišiaková, M. (2025). La guerra en Ucrania en el lenguaje político en los medios de comunicación españoles: análisis de discurso de prensa escrita. *Íkala, Revista de Lenguaje y Cultura*, 30(1), e358151. <https://doi.org/10.17533/udea.ikala.358151>

- Mudde, C. (2012). *The Relationship Between Immigration and Nativism in Europe and North America*. Washington, DC: Migration Policy Institute.
- Pyka, A. (2024, Januar 10). Attempted crossings from Belarus fell by half in 2024 after tough Polish border measures. *Notes from Poland*. <https://notesfrompoland.com/2025/01/10/attempted-crossings-from-belarus-fell-by-half-in-2024-after-toughpolish-border-measures>
- Spišiaková, M., & Keresty, J. (2024). K problematike populistického diskurzu. In R. Štefančík (Ed.), *Jazyk a politika. Na pomedzí lingvistiky a politológie IX* (pp. 371–395). Bratislava: Ekonóm.
- Štefančík, R. (2020). *Kommunikationsstrategien der slowakischen Rechtsextremisten*. Hamburg: Dr. Kovač Verlag.
- Štefančík, R., & Kiner, A. (2021). 'Sorry, I Don't Want Them Here.' Migration in Slovak Political Discourse. *Professional Discourse & Communication*, 3(2): 10–20. <https://doi.org/10.24833/2687-0126-2021-3-2-10-20>
- Stojarová, V. (2018). Populist, Radical and Extremist Political Parties in Visegrad countries vis à vis the migration crisis. In the name of the people and the nation in Central Europe. *Open Political Science*, 1: 32–45. <https://doi.org/10.1515/openps-2018-0001>
- Tannenbaum, M., Hepler, J., Zimmerman, R. S., Saul, L., Jacobs, S., Wilson, K., & Albarracin, D. (2015). Appealing to Fear: A Meta-Analysis of Fear Appeal Effectiveness and Theories. *Psychological Bulletin*, 141(6): 1178–1204. <https://doi.org/10.1037/a0039729>
- Tilles, (2024, August 5). Belarus border crisis: most Poles oppose asylum rights for migrants and support expanded use of firearms. *Notes from Poland*. <https://notesfrompoland.com/2024/08/05/belarus-border-crisis-most-poles-oppose-asylum-rights-for-migrants-and-support-expanded-use-of-firearms/?utm>
- Tsourapas, G. (2017). Migration diplomacy in the Global South: cooperation, coercion and issue linkage in Gaddafi's Libya. *Third World Quarterly*, 38(10): 2367–2385. <https://doi.org/10.1080/01436597.2017.1350102>
- van Spanje (2011). The Wrong and the Right: A Comparative Analysis of 'Anti-Immigration' and 'Far Right' Parties. *Government and Opposition*, 46(3): 293–320. <https://doi.org/10.1111/j.1477-7053.2011.01340.x>
- Wodak, R. (2016). *Politik mit der Angst. Zur Wirkung rechtspopulistischer Diskurse*. Wien, Hamburg: Edition Konturen.
- Yazdannik, A., Yousefy, A., & Mohammadi, S. (2017). Discourse analysis: A useful methodology for health-care system researches. *Journal of Education and Health Promotion*, 6, 1–7. https://doi.org/10.4103/jehp.jehp_124_15
- Zerofsky, E. (2018, July 23). s Poland Retreating from Democracy? *The New Yorker*. <https://www.newyorker.com/magazine/2018/07/30/is-poland-retreating-from-democracy>

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KEY CHALLENGES FOR THE EUROPEAN UNION IN ENSURING COLLECTIVE SECURITY IN THE CONTEXT OF GLOBAL CHANGE¹

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Abstract: This article examines the key challenges confronting the European Union's collective security policy. Against the backdrop of a rapidly changing international system, an increasing number of regional conflicts, and deteriorating relations with major global actors, the EU faces growing pressure to develop a more effective and coherent security strategy. The aim of the study is to identify the principal challenges the EU encounters in shaping and implementing its collective security policy within the context of global systemic transformation. The article also evaluates the effectiveness of the EU's existing instruments and mechanisms for responding to contemporary threats, as well as the prospects for achieving European strategic autonomy. The analysis concludes that, despite having an extensive set of policy tools, the EU's effectiveness in the realm of collective security remains constrained by both external pressures and internal contradictions. At the same time, ongoing crises are prompting the search for new models of cooperation, offering opportunities to enhance the EU's role within the global security architecture.

Keywords: culture, capitalism, economic development, values, attitudes

JEL: F50, F59, H79

Introduction

In the context of growing geopolitical instability, escalating armed conflicts along the European Union's borders, and a profound transformation of the global balance of power, collective security is becoming a crucial element in sustaining the EU's strategic stability and internal cohesion. The relevance of analysing the key challenges confronting the European Union's collective security policy is underscored by the increasing complexity of the contemporary international system and the evolving nature of global threats.

According to expert assessments, the most significant threat in 2025 is likely to be interstate armed conflict (23%), reflecting heightened geopolitical tensions worldwide. The second most critical global risk is extreme weather events (14%), underscoring the far-reaching impact of climate change on global stability. Additional threats include geo-economic confrontation and the spread of disinformation, both of which erode international trust and undermine economic security. Taken together, these risks highlight the interconnected nature of geopolitical, environmental, and informational factors as key drivers of global instability soon (Elsner et al., 2025). Contemporary challenges require the European Union to rethink traditional approaches and develop new effective response mechanisms.

Internal contradictions among member states, as well as differences in defence readiness and political priorities, create additional complexities that hinder the development of a unified and effective security policy. In this context, examining the key challenges to the European Union's collective security is not only of theoretical relevance but also of practical importance for determining the necessary directions for adapting the EU's foreign and defence strategies to contemporary global realities.

¹ The contribution is the result of solving the research task VEGA 1/0083/25 Cooperative Security and the Position of the Slovak Republic – Current Threats

The aim of this study is to identify the principal challenges the European Union faces in shaping and implementing its collective security policy amid the transformation of the international system, and to assess the effectiveness of the EU's existing instruments and mechanisms for responding to modern threats, as well as the prospects for developing European strategic autonomy. The methodological framework of the research is grounded in a systemic approach, which enables the consideration of the EU's collective security policy as a multidimensional phenomenon encompassing political, economic, military, and institutional dimensions. The study employs comparative and structural-functional analysis to examine the specific features of the EU's interaction with international and regional partners in the field of security. In addition, elements of documentary analysis – particularly of EU strategic concepts – are used to ensure the empirical validity of the conclusions.

To ensure security, competitiveness, and cohesion within the European Union, the Member States and senior representatives of EU institutional structures have gradually developed common policies across all areas, including defence and security. The Common Security and Defence Policy (CSDP) represents a key component of the European Union's role as a significant actor in global security. It provides the EU with instruments for joint crisis response, peacekeeping operations, and participation in missions aimed at maintaining international stability. Evolving within the broader framework of the Common Foreign and Security Policy (CFSP), the CSDP has undergone substantial transformations since its establishment, reflecting the EU's growing ambition to engage actively and effectively in addressing contemporary geopolitical challenges (European Union, 2025). Tools and institutions involved:

1. European External Action Service (EEAS)
2. EU Military Staff (EUMS)
3. Political and Security Committee (PSC)
4. European Defence Agency (EDA)
5. European Peace Facility (EPF)

The war in Ukraine marked a turning point that compelled the European Union and its member states to revise their approaches to foreign policy, security, and defence. The EU not only provided Ukraine with extensive support but also undertook significant measures to strengthen its own military capabilities. In response to the crisis, the Union updated its strategic frameworks, launched new missions, expanded the capacities of its defence industry, and concluded important international agreements (Genini, 2025). One of the key developments has been a reassessment of the existing legal framework and the formulation of new strategic approaches. Within the framework of the Common Security and Defence Policy, the EU has identified one of its central objectives for 2024–2029 – highly relevant to this study – as the establishment of a European Defence Union capable of protecting the European Union and its citizens (European Commission, *Security and Defence*, 2025). The EU aims to support Member States in modernising and strengthening their armed forces by developing defence programmes and investing in critical high-technology sectors, including cybersecurity and modern combat systems. This also involves promoting the pooling of resources and enhancing collective responses to threats through major pan-European defence initiatives, as well as advancing the creation of a unified defence market that encourages research, increases production capacity, and facilitates joint procurement of defence equipment.

In the first half of 2025, the Commission proposed several key initiatives to boost European defence readiness and investment:

- the white paper for European defence - Readiness 2030
- the ReArm Europe plan
- the defence readiness omnibus simplification (European Commission, 2025).

The *White Paper for European Defence – Readiness 2030* analyses a wide range of threats that challenge Europe's security and endanger the European way of life. Although many of these challenges were evident even before Russia's invasion of Ukraine in 2022, the war served as a decisive turning point, sharply revealing the vulnerabilities of the European security system and its dependence on external actors.

The ReArm Europe / Readiness 2030 plan aims to strengthen the EU's defence capabilities by expanding the financial resources available to Member States. This plan includes several key measures. First, it envisages the activation of the national escape clause of the Stability and Growth Pact, enabling Member States to increase defence spending. An increase in defence budgets by 1.5% of GDP could generate nearly €650 billion in fiscal space over four years.

Another major component is the launch of a €150 billion credit facility, SAFE (Security Action for Europe), designed to stimulate investment in critical defence sectors such as missile defence, unmanned systems, and cybersecurity. The funds will be raised on capital markets and allocated to participating states based on their national defence plans. SAFE, approved by the EU Council in May 2025, is expected to promote joint European defence spending.

To reduce the defence industry's dependence on public funding, the mandate of the European Investment Bank will be expanded to increase support for defence and security projects, while the creation of a savings and investment union will be accelerated to attract private capital. These measures will enable the EU to expand production capacities and generate new jobs, thereby strengthening the European defence industry and contributing positively to the EU's economy and competitiveness.

In a first step to simplify regulations, the Commission proposed in June 2025 a defence readiness omnibus. These instruments are designed to simplify regulatory procedures and accelerate the development of defence capabilities and infrastructure in EU Member States in order to achieve the required levels of readiness by 2030. However, an increase in spending alone is insufficient – resources must be used more efficiently, cooperation must be strengthened, and priority must be given to European companies. The EU intends to play a central role in this process by helping Member States coordinate their investments and expand defence production within the Union.

Another important EU mechanism is the European Defence Fund (EDF), which can be regarded as a key instrument of the Union's influence on global security. The EDF supports companies across EU Member States in developing joint and innovative defence projects aimed at creating competitive and interoperable technologies and weapons systems. The Fund provides support at all stages of the process, from initial research to the development of equipment.

The EDF budget for 2021–2027 amounts to nearly €7.3 billion, of which €2.7 billion is allocated to joint research and €5.3 billion to the development of defence capabilities. Funding is primarily provided through grants that may cover up to 100% of eligible costs, with additional incentives offered to small and medium-sized enterprises and to projects linked to PESCO. The Fund's activities are structured through annual work programmes comprising 34 thematic and horizontal areas that encompass all military domains and key emerging technologies (European Commission, 2025).

Based on the above, it can be concluded that, in response to escalating threats to European security, the European Commission introduced a comprehensive package of measures in 2025 aimed at strengthening the EU's defence readiness and investment autonomy. These key initiatives reflect the determination of European institutions not only to increase defence spending but also to ensure strategic planning, coordination, and technological modernisation. The proposed mechanisms – ranging from enhanced financial flexibility for Member States to the mobilisation of private capital – illustrate a shift from

a reactive to a proactive security policy. However, the success of these measures depends not only on the scale of investment but also on the ability of EU Member States to cooperate effectively, develop the Union's defence industrial base, and reinforce strategic autonomy.

2 Key challenges for the EU in the field of security

The security threats confronting the European Union affect not only the military sphere but also the economic, political, and social dimensions of integration. A structural and functional analysis of EU strategic documents, combined with an assessment of the current international context, makes it possible to identify and classify the key challenges facing the Union amid global transformation. Drawing on classical analytical approaches, these challenges can be broadly divided into external and internal, as well as traditional (classical) threats and emerging military, political, economic, social, and environmental challenges. This study applies selected elements of these approaches to achieve its research objectives.

One of the systemic challenges facing the European Union is the growing influence of global actors such as China, Russia, India, and the United States. The return of war to the European continent has created an unprecedented threat to European security. Russia's invasion of Ukraine has brought the question of the EU's strategic autonomy to the forefront of legal and political debates (Genini, 2025), while simultaneously exposing numerous weaknesses in the Union's military preparedness and its dependence on the United States. Since the outbreak of the full-scale war, the European Union has regarded Russia as a strategic threat. Russia's military budget continues to expand, accompanied by significant mobilisation in areas such as industrial production and the development of new technologies. „Despite diminished budget transparency, Russia's total planned military expenditure in 2025 can be estimated at 15.5 trillion roubles, a real-terms increase of 3.4 per cent over 2024 and equivalent to 7.2 per cent of gross domestic product. This level of spending should be manageable, but budgetary pressures could mount“ (Cooper, 2025, p.1). Russia's influence on post-Soviet countries (Georgia, Moldova, Armenia) and the deployment of nuclear weapons in Belarus are particularly exacerbating the situation in Europe.

Another global actor that poses a strategic challenge to the EU is China, with its economic and technological expansion and military build-up. „Russia and China's developing strategic partnership is further complicating Europe's security challenges; the stronger it becomes, the more potentially detrimental the partnership could be to Europe's economic growth, freedom, and unity“ (Morina, 2025). Although China remains an important trading partner for the EU, its rapid expansion in armaments, nuclear capabilities, and space and cyber technologies raises significant concerns. Some experts argue that, given its support for Russia, its cyberattacks, and its espionage activities, the European Union should formally recognise China not only as an economic and systemic rival but also as a direct security challenge (Töhk, 2025). Such an approach would help ensure a more coordinated EU-level policy, enable systematic risk assessment rather than reactive crisis management, shield Member States from Chinese pressure, and strengthen societal resilience to hybrid threats. According to this perspective, the threat stems not only from China's individual actions but also from the nature of its political system, in which the party exercises control over the state, business, and society. This situation requires the EU to adopt a realistic and strategically coherent policy toward China—one that balances cooperation with heightened vigilance and robust protection of Europe's long-term interests (Töhk, 2025).

The technological capabilities of global actors introduce another category of emerging threats, particularly in areas such as artificial intelligence, biotechnology, robotics, and new classes of hypersonic weapons that confer strategic superiority. If the EU does not accelerate its innovation processes, it risks becoming a weak link in global competition. Cyberattacks, sabotage, and information warfare also represent new forms of security challenges. Moreover,

the EU faces an increasingly complex and interconnected spectrum of threats. Terrorism, hybrid attacks, and cybercrime are not only intensifying individually but often act synergistically. These phenomena are frequently supported by state or non-state actors who employ them as tools of destabilisation or coercion. In addition, rapid technological advancements are creating new operational possibilities, enabling actions to be conducted more quickly, precisely, and on a scale previously unimaginable. These dynamic transforms traditional threats into hybrid challenges, blurring the boundaries between physical and digital domains and generating consequences that can be devastating for individual Member States, the European Union as a whole, and for regional and global security. The EU should therefore focus its efforts on three strategic policy goals: driving innovation at home to guarantee control and access to cutting-edge technology; using EU regulatory power to ensure the use and adoption of safe, responsible, and accountable technologies both in the EU and globally; and protecting industries reliant on technology against supply chain disruptions and the weaponisation of dependencies (Torreblanca, Verdi, 2024).

As noted above, Russia's invasion of Ukraine has posed an unprecedented challenge to European security, exposing not only weaknesses in the EU's military preparedness but also the Union's reliance on the United States. Although the EU's dependence on the United States in the security domain has deep historical, institutional, and strategic roots, the rise of Donald Trump further complicated the situation. US policy during Trump's presidency significantly altered Europe's strategic environment and called into question the traditional foundations of European security. The emphasis on national self-interest and doubts regarding NATO's commitment generated a level of uncertainty that was previously unprecedented (Scazzieri, 2025).

The EU's reliance on the United States is grounded in several key factors that have shaped the structure of transatlantic relations and long defined the EU's role as a consumer rather than a producer of global security. Due to its superior military, technological, and economic resources, the United States has assumed a leading role within NATO, thereby reinforcing an asymmetrical structure. Despite the EU's progress in developing its own defence instruments, European countries continue to depend on US military capabilities, particularly in the areas of intelligence, air defence, aviation, and strategic transport (Ewers-Peters, 2025). This underscores the structural asymmetry within the Euro-Atlantic security system, in which European countries have traditionally relied on American security guarantees as a central pillar. As a result, many EU Member States tend to view security primarily as a function of NATO rather than as an independent dimension of European integration. European strategic culture is characterised by a strong emphasis on diplomatic instruments, whereas the United States employs more assertive military measures and power projection. This divergence contributes to a lack of political will within the EU to develop an autonomous defence policy and raises questions about the Union's ability to operate independently in this domain outside the NATO framework.

It is well established that the United States maintains a clear advantage in advanced military technology, intelligence capabilities, and information systems. The EU remains heavily reliant on American satellite data, intelligence, and missile defence systems, as it does not yet possess comparable resources to replace or replicate these capabilities. Consequently, the Union depends on the United States not only for defence but also in strategic decision-making. Considering statements advocating a reduction of US involvement in European affairs, European states are concerned about the potential decline of the American military presence and the resulting instability in arms supplies. According to Donald Trump, the Atlantic alliance, in its current form, imposes an excessive burden on the United States, consuming an unjustified share of the country's military and financial resources. As traditional US security support can

no longer be taken for granted, the EU is increasingly compelled to reassess its position and seek ways to reduce its dependence on its transatlantic ally.

When identifying the key challenges facing the European Union in the process of formulating and implementing a collective security policy, internal contradictions and issues of unification cannot be overlooked. One of the most significant internal challenges is the lack of coordination among the positions of EU Member States, which are often closely tied to their national interests. These national interests should not be underestimated, as they can serve as sources of friction that undermine the effectiveness of cooperation both within the EU and in its external engagements. Member states often have conflicting objectives and priorities, which hinders foreign and security policy decisions. There are numerous examples of such disagreements among Member States, including Ukraine's potential accession to the EU, the imposition of US tariffs, and the seizure of Russian financial assets.

Attention should be paid to internal problems of a non-political nature, such as the constant shortage of resources. There are issues with consistent and adequate funding for defense, including cuts to specific projects. Economic governance frameworks can also be inadequate, and austerity measures can limit investment in security, even though some members might benefit from spending in areas like defense. The EU faces deep-rooted and structural issues in its defense industry, stemming from national sovereignty concerns and a lack of harmony among member states. This impedes collective action and prevents the scale and direction of industrial response needed for effective security (Hunter, 2025).

In addition to the internal challenges mentioned above, many EU Member States are experiencing growing distrust of supranational institutions, with populist parties criticising Eurocrats and arguing that decisions are made without adequately considering the views of ordinary citizens. Populism, Euroscepticism, and political fragmentation within EU countries undermine unity, threaten the legitimacy of the Union, and complicate collective decision-making. Societal polarization is intensifying, bringing to power parties that oppose EU decisions or further integration. The increasing support for these parties hinders the development of a cohesive European policy and heightens the risk of division.

Economic disparities between the older and newer Member States of the Union also contribute to long-term institutional and political tensions, threatening social cohesion and sustainable economic growth. Internal contradictions within the EU significantly undermine its capacity to respond to global challenges in a coordinated manner. Only through comprehensive strategic development, enhanced institutional solidarity, and reforms to decision-making processes can the Union effectively address these challenges and strengthen its long-term resilience.

3 European strategic autonomy (ECA) in the context of collective security

As noted above, the European Union faces pressure from multiple sources: external challenges, internal problems, and increasingly complex dynamics of interaction. The uncertainty of transatlantic relations and the decline in U.S. engagement, the ongoing military conflict in Ukraine, and the intensification of strategic competition all place growing pressure on the EU. In recent years, these developments have fuelled discussions on European strategic autonomy, pushing the concept rapidly from the theoretical sphere into practical policy debates. European strategic autonomy refers to the EU's ability to define its own strategic interests and act upon them without undue dependence on external actors. Ewers-Peters, summarising various approaches and definitions of the concept, writes: *"A common narrative is the focus on Europe's ability to set its own goals, take decisions independently, and possess the means and capabilities to pursue and realise these goals, including military force if and where necessary."* (Ewers-Peters, 2025). European strategic autonomy is thus understood

as a multi-level concept comprising several interrelated components. First and foremost, European strategic autonomy is associated with political agency, which encompasses:

- the ability of a unified EU to make decisions free from external pressure;
- the capacity to coordinate strategic objectives within the Union;
- the development of a distinctly European perspective on threats and the international order.

Another key component concerns the financial and material dimension, which includes the development of a defence industry capable of supplying the EU with the necessary weapons and equipment. It also involves achieving energy independence, strengthening the technological base, ensuring resilient supply chains, and maintaining the capacity to conduct operations without external support. The *White Paper for European Defence – Readiness 2030* underscores that the EU risks becoming the weak link in global competition if it fails to develop a strategically coordinated defence and technology policy. Only a comprehensive approach – integrating military, economic, technological, and information-security dimensions – will enable the EU to preserve its autonomy and sustain its influence in the international arena (European Commission, 2025).

However, when developing a coherent concept of European strategic autonomy, an important debate emerges regarding whether autonomy necessarily entails reducing or severing dependence on NATO and the United States in matters of collective security. Opinions on this issue vary. Some scholars argue that European strategic autonomy should not be understood as a project of distancing from the United States, but rather as an effort by the EU to become a more resilient and responsible actor—capable of responding to crises and defending its own interests. According to this view, the EU must be prepared to act independently while preserving its alliance with the United States. Strategic autonomy, therefore, does not contradict cooperation with NATO; instead, it redefines and transforms the nature of this cooperation.

Research indicates that the EU's efforts to expand its own defence capabilities are not intended to undermine NATO. On the contrary, strengthening the European Union as a more capable and responsible security actor enhances the stability of the Euro-Atlantic space and reduces one-sided dependence on the United States (Ewers-Peters, 2025). Accordingly, the EU should pursue strategic autonomy not in competition with NATO, but through the reinforcement of transnational cooperation. European defence initiatives should complement rather than replace NATO, as a stronger EU ultimately contributes to a stronger Alliance by assuming greater responsibility within the region. In this context, the EU can play a significant role by coordinating increases in defence spending among its member states, reinforcing the European defence industrial base, and developing its own integrated capabilities, which can also be made available to the Alliance when required (Ivančík, 2023).

At the same time, most scholars agree that despite ongoing efforts to reform European defence, the EU's attempts to evolve into a fully fledged security actor remain limited. The defence industry is fragmented, political will is inconsistent, and existing financial and institutional mechanisms do not provide the level of autonomy required (Howorth, 2025). Many initiatives remain underfunded or lack effectiveness, while the absence of its own armed forces and continued dependence on the United States further undermine the EU's defence capacity. Consequently, the EU has not yet achieved strategic autonomy and continues to function as a secondary actor in the security domain (Genini, 2025). Despite the Union's considerable economic power, its military capabilities remain fragmented, insufficiently integrated, and unable to keep pace with modern threats. As a result, the EU possesses neither the necessary military infrastructure nor rapid reaction forces required to ensure strategic autonomy.

The development of full strategic autonomy is hindered by both institutional and political constraints, including

- the absence of a unified decision-making centre in the defence sphere,
- the requirement for consensus among member states,
- a persistent gap between political ambitions and material capabilities.

Furthermore, EU member states interpret strategic autonomy in divergent ways: some view it as the pursuit of defence independence, while others regard it as a complement to NATO. As a result, according to Ewers-Peters, the EU remains an “incomplete” strategic actor, which limits its ability to act autonomously (Ewers-Peters, 2025). Despite extensive rhetoric surrounding strategic autonomy, Europe’s dependence on American military equipment remains substantial, and progress toward greater self-sufficiency is slow. At the same time, the future of transatlantic relations will depend on the predictability of U.S. decisions concerning European security and its policy toward Russia (Scazzieri, 2025).

However, the military conflict in Ukraine, combined with the potential weakening of the U.S. role, may serve as a catalyst for a transition toward a more supranational security model with expanded EU competences (Genini, 2025). Moreover, according to some authors, the issue of European defence autonomy has become existential. Europe now faces a choice: either develop its own collective defence system or confront the prospect of a serious security vacuum. Thus, the EU is confronted with an unprecedented challenge – transforming its long-standing model of reliance on the United States and moving toward the construction of its own defence architecture, a process that requires political unity, adequate resources, and a re-evaluation of NATO’s role (Howorth, 2025). The success and coherence of this transition will determine whether the EU can compensate for a potential reduction in U.S. engagement or instead experience dangerous fragmentation and increased vulnerability to the various challenges outlined above.

However, many questions remain. For example, can the EU effectively address global challenges – including deterring and defending against Russia and countering an increasingly assertive China – without U.S. involvement, or even in opposition to U.S. preferences? Another important factor is the U.S. position on the development of European strategic autonomy. It should also be noted that weapons intended for defence may be perceived by other states as a threat, prompting them to further increase their own armaments. As a result, such military build-up does not necessarily lead to greater security.

Conclusion

The analysis conducted allows us to conclude that the European Union has entered a period of qualitatively new challenges in the field of collective security, in which traditional response mechanisms no longer guarantee the protection of the Union’s interests and its citizens. The contemporary international environment is marked by intensified competition among major powers, accelerated technological transformation, the militarisation of global politics, and the expansion of hybrid threats. These dynamics require the EU to adopt a more strategically oriented, integrated and coordinated approach to security.

Firstly, institutional contradictions and fragmented decision-making mechanisms remain key constraints on the effectiveness of EU policy. The current model based on intergovernmental consensus, does not enable the Union to respond rapidly to crises or implement large-scale defence initiatives. Strengthening the Common Security and Defence Policy (CSDP) will therefore require institutional reforms aimed at enhancing coordination, predictability and the strategic coherence of member states’ actions.

Secondly, there is a significant gap between the EU’s geopolitical ambitions and its actual military capabilities. Despite the Union’s considerable economic strength, European armed forces remain fragmented, technologically heterogeneous and reliant on external suppliers

for critical resources. The war in Ukraine has clearly demonstrated the limitations of Europe's defence industrial base, which is unable to rapidly transition to large-scale military production. Modernising armaments and developing a robust defence industry are thus essential conditions for enhancing the EU's strategic autonomy.

Thirdly, the analysis shows that EU–NATO relations remain a central pillar of European security. Dependence on the United States is systemic and rooted in the historical distribution of responsibilities within the transatlantic space. At the same time, growing uncertainty in U.S. policy is prompting the EU to explore ways to strengthen its strategic autonomy. However, achieving meaningful self-sufficiency will require political consolidation and a substantial increase in defence investment.

Fourthly, the EU has demonstrated its ability to act as an independent security actor, as evidenced by its sanctions policy, financial and military assistance to Ukraine, participation in stabilisation missions and diplomatic engagement. Yet this potential remains constrained: the absence of significant military capabilities of its own, the fragility of internal consensus, and reliance on external partners continue to impede the EU's evolution into a fully fledged centre of power.

Fifth, the prospects for developing an effective collective security policy depend on the EU's ability to overcome internal divisions, cultivate a shared strategic culture, and integrate its defence efforts. Strategic autonomy should be viewed as a long-term process that requires harmonising threat perceptions, achieving technological independence, establishing common standards for armaments, and strengthening resilience against hybrid threats.

Overall, the study concludes that the European Union possesses considerable potential to enhance its role within the global security architecture. However, amid intensifying international competition and escalating threats, the effectiveness of EU security policy will depend on its capacity to transition from fragmented initiatives to a comprehensive, coordinated and strategically grounded approach. Only through political unity, a modern defence industrial base and a shared understanding of common threats will the EU be able to safeguard its ability to shape its own future, ensure regional stability and act as a significant actor in world politics.

References:

- Cooper, J. (2025). *Preparing for a Fourth Year of War: Military Spending in Russia's Budget for 2025*. SIPRI Publications. <https://doi.org/10.55163/CBXJ2246>
- Elsner, M., Atkinson, G. & Zahidi, S. (2025, January 15). *Global Risks Report 2025*. World Economic Forum. <https://www.weforum.org/publications/global-risks-report-2025/>
- European Commission. Security and defence. (2025). *A new era for European defence and security*. European Commission. Security and defence. https://commission.europa.eu/priorities-2024-2029/security-and-defence_en
- European Commission. (2025). *EDF. Developing tomorrow's defence capabilities*. European Commission. https://defence-industry-space.ec.europa.eu/eu-defence-industry/european-defence-fund-edf-official-webpage-europeancommission_en?prefLang=sk
- European Commission. (2025). *White paper for European defence - Readiness 2030*. European Commission. https://commission.europa.eu/document/download/e6d5db69-e0ab-4bec-9dc0-3867b4373019_en?filename=White%20paper%20for%20European%20defence%20%E2%80%93%20Readiness%202030.pdf&prefLang=sk
- European Union. (2025, September 24). *Common security and defence policy (CSDP). History and timeline of the CSDP*. European Union. https://www.eeas.europa.eu/eeas/history-and-timeline-csdp_en
- Ewers-Peters, N. M. (2025). EU-NATO cooperation reloaded: the impact of European strategic autonomy. In. *Defence Studies* (pp. 1–20). <https://doi.org/10.1080/14702436.2025.2562975>

- Genini, D. (2025). How the war in Ukraine has transformed the EU's Common Foreign and Security Policy. *Yearbook of European Law*, 2025. yeaf003. <https://doi.org/10.1093/yel/yeaf003>
- Howorth, J. (2025). European Defence and NATO: From Competition to Co-operation to Replacement? In. *JCMS: Journal of Common Market Studies* Volume 63, 156-168. <https://doi.org/10.1111/jcms.70010>
- Hunter, A. (2025, November 18). *Dual-use innovation: Confronting the challenges and delivering EU security and competitiveness*. European policy centre. <https://www.epc.eu/publication/dual-use-innovation-confronting-the-challenges-and-delivering-eu-security-and-competitiveness/>
- Ivančík, R. (2023). Reassessing the strategic sovereignty of the European Union after the outbreak of the conflict in Ukraine. *Proceedings of the International Conference on National and International Security*. <https://doi.org/10.52651/nmb.c.2023.9788080406516.120-130>
- Morina, E. (2025, April, 14). *Stumbling blocs: Why the EU's future security depends on successful enlargement*. European council on foreign relations. <https://ecfr.eu/article/stumbling-blocs-why-the-eus-future-security-depends-on-successful-enlargement/>
- Scazzieri, L. (2025). Hedging against uncertainty. How European defence is adapting to Trump 2.0. In. G. Spatafora, S. Everts and A. Ekman (Eds.), *Navigating transatlantic relations under Trump 2.0* (pp. 115–129). https://www.iss.europa.eu/sites/default/files/2025-10/CP_187_0.pdf
- Tõhk, T. (2025, March 24). *More Than a Systemic Rival: China as a Security Challenge for the EU*. International Centre for Defence and Security. Estonia. <https://icds.ee/en/more-than-a-systemic-rival-china-as-a-security-challenge-for-the-eu/>
- Torreblanca, J.I. & Verdi, G. (2024, June 25) *Innovate, protect, and influence: The EU's technology trilemma and how to solve it*. European council on foreign relations. <https://ecfr.eu/article/innovate-protect-and-influence-the-eus-technology-trilemma-and-how-to-solve-it/>

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AI-DRIVEN TRANSFORMATION OF PUBLIC DIPLOMACY: CHALLENGES AND IMPLICATIONS FOR SMALL STATES

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Abstract: This paper examines how artificial intelligence (AI) is transforming public diplomacy, with a specific focus on the position of small states. Using a qualitative, review-based analytical approach drawing on recent literature, policy documents, and case studies, the study identifies the main changes from traditional and digital public diplomacy to new AI-supported practices. The results highlight four key areas where AI influences diplomatic communication: natural language processing, chatbots, generative content creation, and predictive sentiment analysis. The findings show that AI can increase monitoring capacity, improve personalization, and support faster communication, while also raising concerns about ethics, transparency, bias, and the potential loss of authenticity. The paper concludes that small states can use AI as a strategic advantage only when they strengthen digital sovereignty and follow clear value-based principles. The study contributes by offering a practical framework for understanding AI-driven public diplomacy and outlining implications for diplomatic training and policy development.

Keywords: public diplomacy, digital diplomacy, artificial intelligence, small states

JEL: O33, F55, H83

Introduction

The concept of public diplomacy became established in academic and political practice during the second half of the twentieth century because of the changing nature of international relations, in which the public of foreign countries increasingly became a legitimate and strategically significant target of state communication. As a conceptual framework, public diplomacy developed in response to the need of states to influence not only elites and decision-making centers (Cull, 2009), but also broader segments of society. In doing so, it intersected with propaganda, strategic communication, and later with the concept of soft power, popularized by Joseph Nye (Nye, 2004), who defined soft power as a state's ability to achieve its objectives through the attractiveness of its culture, values, and policies rather than through coercion or economic exchange.

During the Cold War, public diplomacy became institutionalized primarily in the United States through the United States Information Agency (USIA), which combined information campaigns, cultural exchanges, and broadcasting services (such as the Voice of America) to influence foreign public opinion strategically. Over time, however, the concept of public diplomacy expanded to other countries and is today an integral part of the diplomatic practice of most states, particularly in cultural diplomacy, nation branding, and strategic communication.

Since the 1970s, the paradigm of public diplomacy has gradually shifted: from a strictly propagandistic tool to a platform of dialogue, exchange, and soft power. When the USIA was dissolved in 1999 and its functions transferred to the U.S. Department of State, this symbolized a broader shift from one-way influence toward strategic relationship-building (Melissen, 2005). Similar approaches were later adopted by the United Kingdom (via the British Council), France (Institut français), Germany (Goethe-Institut), and, increasingly, by small states, which began to view public diplomacy as a tool for visibility, legitimacy, and economic development.

1 Digitalization of Public Diplomacy: From an Informational Model to Networked Interactivity

The dynamics of digitalization have increasingly influenced and modified the existing paradigm of public diplomacy. While the traditional model of public diplomacy was largely one-directional and informational, focused on projecting the “correct image” of the state to passive recipients, the digital environment enables interaction, feedback, and networked connectivity. In this context, the concept of networked public diplomacy has gradually formed, with the state shifting from being the exclusive producer of content to a more prominent role as a facilitator of discourse.

The rise of social media and the Web 2.0 environment opened the space for digital diplomacy or e-diplomacy, bringing new platforms, forms, and metrics of diplomatic communication. Ministries of foreign affairs and embassies now routinely use Twitter (X), Facebook, YouTube, and Instagram as part of their strategies to shape foreign public opinion. This practice, however, requires not only technical competency but also adaptation to new communicational norms emphasizing authenticity, speed, personalization, and visuality.

In this context, the term *twiplomacy* has become established (Gurskas, 2016) referring to diplomatic communication conducted via social media, particularly X. Empirical studies show that state institutions and diplomats use these channels not only to disseminate positions but also to strategically frame events, manage reputational risks, and monitor public reactions (Kuzniar & Filimoniuk, 2017). Digital diplomacy thus becomes a hybrid space in which official communication interacts with the media logics of immediacy, interactivity, and personalization.

Contemporary practice requires diplomats to internalize new norms emphasizing authenticity, speed, visual communication, and performativity, all of which significantly shape how states represent themselves internationally. At the same time, digital diplomacy has become an arena of normative contestation, where states compete to promote their values, narratives, and interests under conditions of information overproduction, audience fragmentation, and algorithmic distribution of content. In this sense, digital diplomacy is no longer only a tool of representation but also a field of competition for attention, interpretation, and legitimacy in the global public sphere.

This article examines how the rapid development of digital technologies, particularly artificial intelligence (AI), is transforming the practice, effectiveness, and strategic orientation of public diplomacy, with special attention to the position of small states. The research identifies the main functional areas in which AI already influences diplomatic communication and evaluates their implications for legitimacy, autonomy, and the normative foundations of public diplomacy. Methodologically, the study draws on qualitative analysis of contemporary academic literature, comparative examples of state practices, and conceptual frameworks from international relations, communication studies, and digital governance. This approach enables mapping emerging trends, identifying risks, and outlining strategic opportunities for small states in the evolving AI-driven diplomatic environment.

2 Artificial Intelligence and Public Diplomacy: A Qualitative Shift in the Communication Framework

Artificial intelligence comprises technologies that enable machines to perform tasks traditionally associated with human intelligence, including learning, reasoning, decision making, natural language processing, and image or speech recognition.

In recent years, AI has been disrupting entire sectors of the economy, including energy, transport, industry, healthcare, smart cities, and public administration. This disruptive power of AI stems from its potential to improve the automation, efficiency, and speed of business processes in these sectors (Papadakis et al., 2024).

While digitalization enabled electronic communication, automation, and information accessibility, AI introduces a qualitatively new framework: the ability of machines to generate, interpret, and personalize content, often without human intervention. AI thus becomes not merely a “tool,” but an active agent in public discourse, with the potential to influence opinions, values, and foreign-policy preferences.

In diplomacy, this has profound implications. AI transforms how diplomats monitor public opinion, design communication campaigns, and assess feedback. It enables modeling communication scenarios, predicting reputational crises, and detecting disinformation narratives in real time.

At the same time, AI raises questions of ethical responsibility, transparency, and authenticity, crucial elements for the credibility of public diplomacy. As Benoit (Benoit, 2024) notes: “Issues of bias, transparency, privacy, and accountability loom large. How can we ensure that AI serves the public good, rather than entrenching inequalities or perpetuating errors at scale?”.

According to Taeihagh (Taeihagh, 2025), generative AI brings numerous risks - from hallucinations and biased or unverified training data to data leaks, opacity, uncontrollable outputs, and power imbalances between actors. These risks may jeopardize trust and responsible governance.

Di Martino and Ford note that integrating AI into public diplomacy brings not only new capabilities but also heightened uncertainty. As they argue, AI-generated content blurs the line between authentic and automated communication, making it harder for foreign publics to assess credibility and intent. This ambiguity can weaken trust, particularly for small states that rely on transparency and consistency as key sources of soft power (Di Martino & Ford, 2025).

The rise of AI is irreversible and requires a redefinition of competencies, institutional frameworks, and methodological tools used in public diplomacy. A key challenge becomes integrating AI in a way that strengthens rather than undermines the normative foundations of communication.

3 Functional Areas of AI Use in Public Diplomacy

AI is implemented in public diplomacy not through a single centralized process but through a set of partial innovations affecting different phases of diplomatic work - from data collection to content creation and evaluation of impact. The key areas include:

3.1 Natural Language Processing (NLP)

Natural language processing enables machines to work with human language. It includes tasks such as splitting text into parts, identifying essential elements, translating content, creating summaries, and determining the text's sentiment. For diplomacy, this opens a new dimension of real-time monitoring of discourse across languages and platforms, allowing diplomats to identify moods, themes, and reputational risks.

For example, the study “The Meaning of Sentiment Analysis of UN Speeches on the Russia-Ukraine War” shows that NLP can reveal emotional tones and subtle shifts in diplomatic rhetoric. Another study, “NLP-based Analysis of UNESCO’s Summary Records”, developed tools for tension detection and thematic classification of diplomatic transcripts, achieving 72% accuracy (Wojciechowska et al., 2023).

NLP thus shifts state communication capacities from passive information reception to active, data-driven monitoring and targeted content creation. However, algorithms may inherit biases from their training data and must be applied with caution.

Sophisticated NLP models can identify narrative lines in which a specific state or topic appears, enabling rapid responses to reputational risks. These models can also help create

content linguistically and culturally tailored to specific target audiences, including in languages the state does not traditionally command.

3.2 Chatbots and Interactive Interfaces

As governments increasingly adopt digital tools, public service chatbots have emerged as a growing communication channel (Zhou et al., 2025). Chatbots used in the public sector typically fall into two broad categories. The first type focuses on delivering information, offering users access to policy details, urgent notifications, ongoing updates, and practical guidance. The second type is built to support service completion, helping users perform administrative actions such as booking appointments, submitting forms, or processing various applications.

Dialogue systems can be divided into retrieval-based, generative, and hybrid models. While the first rely on pre-prepared responses and are suitable for simple task-oriented interactions, generative systems use large language models to produce their own responses, and their hybrid combination represents the direction of further development of intelligent conversational platforms (Mařík et al., 2024).

Diplomatic institutions (such as embassies) increasingly use chatbots as the first point of contact with the public, whether to provide basic information on visa policy and cultural events or to respond during crises. The advantages of chatbots include continuous availability, instant replies, and the ability to scale communication without increasing personnel costs.

However, ethical sensitivity is crucial. Issues of trust, empathy, and cultural sensitivity are central in public diplomacy (Følstad & Mærøe, 2022). Users must also clearly understand they are interacting with a machine (GPAI, 2024).

3.3 Generative Models and Automated Content Creation

With the rise of generative language models (such as GPT, Claude, and Gemini), the capacity to automate the production of text, images, video, and audio has expanded significantly. This enables public diplomacy to promptly generate cultural campaigns, informational infographics, localized social media posts, or translations of multimedia content, often with a high degree of personalization and at relatively low cost. Generative models can also adapt the style or tone of communication to the target audience, thereby increasing the efficiency of global public diplomacy work (Bano et al., 2023).

The risk of this approach, however, lies in the possible synthesis of public communication, in which the clear distinction between what is generated by a machine and what is produced by an authentic human is lost. In the diplomatic sphere, where authenticity carries significant weight, this can undermine trust and reputation. Moreover, generative AI can be misused in hybrid operations or information warfare, for example, to produce disinformation, targeted manipulative campaigns, or fabricated media content (Fredheim & Pamment, 2025). Recent research also highlights the growing risk of AI-enabled impersonation and deepfake diplomacy, in which synthetic audiovisual content can imitate political leaders or diplomatic messages with high realism, posing significant challenges to credibility and crisis management.

If generative systems are to contribute to the development of public diplomacy, they must be perceived not as autonomous creators of diplomatic discourse but rather as instrumental tools for expanding communicative capacity and cultural sensitivity. Their role is not to replace the human author but to strengthen the ability to articulate the values that form the basis of credible and inclusive diplomatic communication. Ultimately, the effectiveness of public diplomacy in the era of generative AI will depend not on the volume of content produced but on the extent to which these technologies enable the preservation of authenticity, ethical consistency, and the normative orientation of diplomatic practice.

3.4 Predictive and Sentiment Analysis

Modern technologies can effectively process and analyze human speech and visual inputs, interpret their surroundings, and interact with natural language. They can also produce spoken or written text, generating tens of thousands of lines per second. AI expands possibilities for analyzing public opinion through predictive models and sentiment analysis. These tools identify behavioral patterns, estimate reputational risks, and predict impacts of communication strategies in real time (Hossain et al., 2025). This shifts diplomacy from ex post evaluation to adaptive management.

However, this shift raises concerns about the “behavioralization” of diplomacy, reducing strategic communication to behavioral management rather than value-based dialogue.

4 Small States in the Age of AI: Between Technological Asymmetry and Diplomatic Autonomy

In an era of rapidly advancing automation and data concentration, small states face a specific paradox: their diplomatic capacities are limited, yet this very constraint may predispose them to innovative approaches in digital and public diplomacy. Their institutional structures are generally less rigid, allowing for more agile experimentation and interdisciplinary cooperation, whereas major powers often struggle with bureaucratic inertia.

Car and Zorko (Car & Zorko, 2025) note that digitalization is reshaping how small states operate in the international environment, bringing both new risks and opportunities. Although limited resources and dependence on external technologies increase their exposure to digital vulnerabilities, the authors also show that these constraints often encourage innovative approaches. According to Car and Zorko, small states can draw on specific digital capacities, more flexible governance, and cross-border data cooperation to enhance their visibility and resilience, helping them mitigate traditional power asymmetries.

Embassies and ambassadors often serve as digital mavericks, innovating and demonstrating new usages of digital technologies. At times, these mavericks succeed; at other times, they fail, but their success stories are emulated by other actors seeking similar results. Digital adoption, on the other hand, involves more complex learning processes. Once an MFA decides to adopt a new digital technology, special departments are created, new employees are recruited and trained, and new skills are mastered, until the MFA finally knows the skills needed to achieve offline diplomatic goals using digital technologies (Bjola & Manor, 2022).

However, small states confront technological dependence. Most advanced AI platforms originate in the U.S. or China, creating geopolitical dependency and infrastructural vulnerability. Competition between the most powerful States in the political, economic, and military spheres has emerged prominently, with the intention of shaping or reshaping an international and regional order in their own image and for their own benefit, thereby increasing their global influence. Artificial intelligence is playing a substantive role in the process (Aranibar, 2024). Dependence on external models limits control over data flows, ethical norms, and cultural representation.

This creates new dimensions of “digital sovereignty,” in which small states must decide to what extent they will remain recipients of an external technological framework and to what extent they will become its co-creators. Nevertheless, AI can serve as a tool of strategic power compensation. Generative and analytical models allow small states to produce media content with transnational reach, systematically analyze public sentiment, and deliberately shape reputational strategies. Examples such as Estonia, which introduced the concept of a “data embassy” (Data Embassy, 2024) and the e-Residency programme (*E-Residency of Estonia*, 2025), demonstrate that technological innovation can strengthen a state’s diplomatic relevance even beyond its geographical borders. Similar initiatives can be found in Singapore (Chandler, 2024) and Finland, where AI is connected with public communication and data diplomacy.

From the perspective of public diplomacy, small states can use AI as a multiplier of communicative capacity, though not without reflecting on its ethical and cultural dimensions. If the approach to AI is reduced solely to optimization and efficiency, there is a risk that small states will relinquish their normative autonomy in exchange for access to technological infrastructure. In this context, the need for strategic adaptation becomes evident: the conscious, value-anchored use of AI aligned with national priorities, cultural specificities, and democratic principles.

Small states can act as “laboratories of digital diplomacy,” serving as spaces where new forms of responsible AI use, open-source models, regional cooperation, and partnerships between academia and the state are tested. These models can serve as an alternative to the centralized systems of technological great powers and contribute to greater diversity and plurality within the global information space.

The challenge for the future lies in the ability of small states to transform their vulnerability into a competence-based advantage in cultivating a diplomatic identity grounded in transparency, innovation, and trust, while simultaneously promoting a European model of digital ethics and regulation that emphasizes human rights and technological responsibility. Autonomy understood in this way does not mean isolation, but the ability to participate in the global AI ecosystem without losing normative integrity.

5 Conclusion: Strategic Sovereignty of Small States in the AI Ecosystem

The emergence of the artificial intelligence era reopens the question of balancing innovation and sovereignty in international relations. For small states, which have long operated at the intersection of geopolitical blocs and technological ecosystems, AI represents both a means of empowerment and a source of new dependency. Its development is not only a matter of capacity and infrastructure but also of the normative framework, understood as the ability to define what constitutes “responsible” and “democratic” artificial intelligence in a global environment increasingly shaped by the logic of private platforms and power alliances.

The future of the diplomatic autonomy of small states will therefore not be determined by their size, but by their ability to integrate AI into their strategic culture. That is, in the way they understand responsibility, trust, transparency, and communication with the public. Those who can employ AI as an extension of their value-based capital, rather than as a substitute for human expertise, may acquire disproportionate influence in international relations.

In practical terms, this means that small states should develop regional consortia and open data ecosystems that reduce dependence on external technological powers, invest in ethical and diplomatic literacy in the field of AI to strengthen trust and reputational capital, and advance the European model of digital sovereignty, which is grounded in the normative force of law and the protection of fundamental rights. Ultimately, autonomy in the age of AI is less a question of technical self-sufficiency and more a matter of strategic self-determination that enables states to set their own rules of engagement within the global digital space without relinquishing the value foundations of modern diplomacy.

6 Limitations and Directions for Future Research

This study is based primarily on a qualitative synthesis of contemporary literature, policy documents, and selected case studies, which limits the extent to which the findings can be generalized. The analysis does not include empirical testing of AI-driven tools in real diplomatic settings, nor does it provide comparative quantitative assessments of their effectiveness across different types of states. Future research could examine how various categories of small states, including EU member states or microstates, integrate AI into their public diplomacy practices, and how institutional, cultural, or regional factors influence these trajectories. Further empirical work is also needed to evaluate the long-term effects

of generative AI on trust, legitimacy and narrative authority in public diplomacy, particularly in situations shaped by geopolitical competition.

References:

- Aranibar, J. B. (2024). Artificial intelligence and international relations: A world for diplomats. *Artificial Intelligence and Diplomacy: International relations in the era of disruptive technologies* (pp. 9–17). Latin American and Caribbean Economic System (SELA). www.sela.org
- Bano, M., Chaudhri, Z., & Zowghi, D. (2023). *The Role of Generative AI in Global Diplomatic Practices: A Strategic Framework* (No. arXiv:2401.05415). arXiv. <https://doi.org/10.48550/arXiv.2401.05415>
- Benoit, K. (2024). AI and Data Science for Public Policy. *LSE Public Policy Review*, 3(3), 1. <https://doi.org/10.31389/lseppr.115>
- Bjola, C., & Manor, I. (2022). The rise of hybrid diplomacy: From digital adaptation to digital adoption. *International Affairs*, 98, 471–491. <https://doi.org/10.1093/ia/iiaac005>
- Car, V., & Zorko, M. (2025). *The Digital Environment and Small States in Europe: Challenges, Threats, and Opportunities* (1st ed.). Routledge. <https://doi.org/10.4324/9781003594796>
- Chandler, C. (2024, July 29). *Singapore's AI ambitions: How the city-state is keeping up in an arms race dominated by the US and China* [Singapore Government Agency Website]. EDB Singapore. <https://www.edb.gov.sg/en/business-insights/insights/singapores-ai-ambitions-how-the-city-state-is-keeping-up-in-an-arms-race-dominated-by-the-us-and-china.html>
- Cull, N. J. (2009). *Public diplomacy: Lessons from the past*. USC Center on Public Diplomacy. *Data Embassy*. (2024, June 7). e-Estonia. <https://e-estonia.com/solutions/e-governance/data-embassy/>
- Di Martino, L., & Ford, H. (2025). Navigating uncertainty: Public diplomacy vs. AI. *Place Branding and Public Diplomacy*, 21(3), 350–354. <https://doi.org/10.1057/s41254-024-00330-z>
- E-Residency of Estonia. (2025). [Government of Estonia]. E-Residency. <https://www.e-resident.gov.ee>
- Følstad, A., & Mærøe, A. (2022, April 21). The Ethics of Chatbots in Public Sector Service Provision. *CUI@CHI2022: Ethics of Conversational User Interfaces*. https://cui.acm.org/workshops/CHI2022/pdfs/folstad_ethics_chatbots_public_sector.pdf
- Fredheim, R., & Pamment, J. (2025). Assessing the risks and opportunities posed by AI-enhanced influence operations on social media. *Place Branding and Public Diplomacy*, 21(3), 319–326. <https://doi.org/10.1057/s41254-023-00322-5>
- GPAI. (2024). *Algorithmic Transparency in the Public Sector: A state-of-the-art report of algorithmic transparency instruments*. Global Partnership on Artificial Intelligence. <https://wp.oecd.ai/app/uploads/2024/12/14-Algorithmic-Transparency-in-the-Public-Sector-A-state-of-the-art-report-of-algorithmic-transparency-instruments.pdf>
- Gurskas, M. (2016). Tviplomatija–Nauja šiuolaikinės viešosios diplomatijos forma? *Politikos mokslų almanachas*, 19, 161–180. <https://doi.org/10.7220/2335-7185.19.8>
- Hossain, M. Z., Akter, N., Hasan, L., Bepari, M., & Sultana, S. (2025). Artificial Intelligence and Machine Learning in Crisis Communication: A Management Information System Perspective. *European Journal of Innovative Studies and Sustainability*, 1(3), 149–163. [https://doi.org/10.59324/ejiss.2025.1\(3\).12](https://doi.org/10.59324/ejiss.2025.1(3).12)
- Kuźniar, E., & Filimoniuk, N. (2017). E-Diplomacy on Twitter. International Comparison of Strategies and Effectivity. *Social Communication*, 16(2), 34–41. <https://doi.org/10.1515/sc-2017-0010>

- Mařík, V., Trčka, M., & Černý, D. (2024). *Proč se nebát umělé inteligence? AI pohledem nejen českých odborníků*. JOTA.
- Melissen, J. (2005). *The new public diplomacy: Soft power in international relations*. Palgrave Macmillan. https://culturaldiplomacy.org/academy/pdf/research/books/soft_power/The_New_Public_Diplomacy.pdf
- Nye, J. S., Jr. (2004). *Soft Power: The Means to Success in World Politics* (1st ed.). Public Affairs.
- Papadakis, T., Christou, I. T., Ipektsidis, C., Soldatos, J., & Amicone, A. (2024). Explainable and transparent artificial intelligence for public policymaking. *Data & Policy*, 6, e10. <https://doi.org/10.1017/dap.2024.3>
- Taeihagh, A. (2025). Governance of Generative AI. *Policy and Society*, 44(1), 1–22. <https://doi.org/10.1093/polsoc/puaf001>
- Wojciechowska, J., Odrowaz-Sypniewski, M., Smigielska, M. W., Kaminski, I., Wiśnios, E., Pielniński, B., & Schreiber, H. (2023). Deep Dive into the Language of International Relations: NLP-based Analysis of UNESCO's Summary Records. In C. Kamm, G. Lapesa, V. Gold, T. Gessler, & S. P. Ponzetto (Eds.), *Proceedings of the 3rd Workshop on Computational Linguistics for the Political and Social Sciences* (pp. 75–87). Association for Computational Linguistics. <https://aclanthology.org/2023.cpss-1.8/>
- Zhou, J., Shen, R., You, Y., DiSalvo, C., Dombrowski, L., & MacLellan, C. (2025). Improving Public Service Chatbot Design and Civic Impact: Investigation of Citizens' Perceptions of a Metro City 311 Chatbot. *Designing Interactive Systems Conference 2025*, 2143–2155. <https://doi.org/10.1145/3715336.3735831>

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Section 4

CURRENT ISSUES OF WORLD ECONOMY

INTRA-INDUSTRY TRADE IN MEXICO: THE CASE OF THE AUTOMOTIVE SECTOR

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Abstract: This paper examines the current state of Mexico's intra-industry trade within the automotive sector. It is hypothesized that the majority of Mexico's automotive trade takes place as intra-industry exchange, both in aggregate and in relation to its key trading partners under the USMCA framework – the United States and Canada. Applying the Grubel-Lloyd Index, our findings indicate that intra-industry trade in the automotive sector is most pronounced between Mexico and the United States, reaching as high as 99% within the so-called automotive cluster. Strong intra-industry linkages are also observed in the trade of automotive components outside Chapter 87, both with the United States and Canada, as well as with global partners. Hence, while the hypothesis that intra-industry trade predominates between Mexico and its USMCA partners in the automotive industry is supported, the evidence confirms it only partially.

Keywords: intra-industry trade, automotive industry, Mexico, Grubel Lloyd index

JEL: F10, F14

Introduction

This paper focuses on the intra-industry trade of the United Mexican States (hereinafter referred to as Mexico). The aim of the study is to examine the current nature of Mexico's trade in general, and in particular its bilateral trade flows with the United States and Canada, with a special emphasis on the automotive industry. Mexico is currently the world's ninth-largest exporter and the twelfth-largest economy (OECD, 2025). It represents a key link in the global supply chain, a position that is being further strengthened by current global trends. Mexico continues to be classified as an emerging market, which, according to trade theory, would suggest that most of its trade should take the form of inter-industry exchange. Nevertheless, based on existing research and the strong role of the automotive industry in the Mexican economy, we assume that a significant share of Mexico's trade in the automotive sector takes place as intra-industry trade. Moreover, Mexico occupies a specific and strategic position within the global automotive value chain, largely due to the United States–Mexico–Canada Agreement (USMCA).

1 Current state of the researched issue

International trade connects national economies into a global market, enabling more efficient use of resources and greater specialization. In simple terms, international trade refers to the exchange of goods, services, and capital between entities from different countries. According to the World Trade Organization (WTO), international trade is defined as a set of rules and procedures governing the movement of goods and services across borders with

the aim of promoting fair competition and facilitating the development of the global economy. The United Nations Conference on Trade and Development (UNCTAD) describes international trade as a dynamic process of exchanging goods, services, and technologies among countries, contributing to global economic growth, development, and market integration (UNCTAD, 2025). Renowned economists have complemented these institutional definitions with their own interpretations. Samuelson and Nordhaus define international trade as the sum of all economic transactions between residents of one country and those of others, encompassing exports and imports of goods, services, capital, and production factors (Samuelson & Nordhaus, 2000). Joseph Stiglitz emphasizes that international trade serves as a driving force of globalization, capable of promoting growth and development when supported by fair rules and strong institutions (Stiglitz, 2002). In the 1990s, Michael Porter formulated the theory that international trade is driven by the competitive advantages of nations, which are based on productivity, innovation, and firms' ability to create value (Porter, 1990). Earlier, Paul Krugman argued that international trade is not only the result of differences between countries but also a consequence of economies of scale and consumer desire for product variety (Krugman, 1980).

Historically, the first comprehensive theory of international trade is attributed to Adam Smith, who proposed that international trade allows countries to specialize in the production of goods for which they have an absolute advantage, thereby increasing the overall wealth of nations (Smith, 2007). David Ricardo expanded on this concept, asserting that international trade arises from comparative advantages – countries trade because each can produce certain goods relatively more efficiently than others (Ricardo, 2004). A few decades later, John Stuart Mill posited that international trade is not merely about exchanging goods, but about exchanging productive capacities among nations, which increases overall productivity (Mill, 2009). The Heckscher-Ohlin model later emphasized that international trade arises from differences in factor endowments – countries export goods that intensively use their relatively abundant factors (Ohlin, 1933). These early theories primarily explained inter-industry trade. It was not until 1961 that Swedish economist Staffan Burenstam Linder introduced a theory that accounted for the existence of intra-industry trade. In the Linder model, intra-industry trade is defined as the mutual exchange of similar or even identical goods between countries. Linder argued that trade in manufactured products occurs predominantly between countries with similar income levels and consumer preferences – hence, demand similarity determines trade patterns. His theory, often referred to as the demand similarity hypothesis, excludes raw materials and agricultural products, applying instead to industrial goods traded mainly among industrialized nations with comparable market structures and consumer demands.

In recent years, intra-industry trade has also been examined in relation to agricultural products (Łukasiewicz et al., 2025; Wang, 2009; Fertő et al., 2016; Brkić et al., 2021; Varma, 2012).

Inter-industry trade refers to trade in different types of goods and generally occurs in a North–South configuration, in contrast to intra-industry trade, which predominantly takes place among developed economies (Janubová, 2021). Mexico is currently classified as one of the so-called emerging markets, positioned in a transitional phase between developing and developed economies. For this reason, the study of Mexico's intra-industry trade is particularly interesting and relevant. There are several approaches to the analysis of intra-industry trade — it can be examined at the level of individual countries, specific commodity groups, or through comparative studies based on similarities between economies (Janubová, 2021). Most research focuses on case studies of individual countries or groups of countries (Hoang, 2019, Jošić-Bašić, (s. a.), Quansah & Ahn, 2017); or investigates the relationship between intra-industry trade and macroeconomic variables (Latzer & Mayneris, 2021, Eppinger & Felbermayr, 2014).

Specifically, Mexico's intra-industry trade has been analyzed from multiple perspectives, with particular attention given to bilateral trade flows — especially between

Mexico and the United States (Valderrama Santibáñez & Neme Castillo, 2011; Albarrán Macías & Mejía Reyes, 2020). Gonzalez and Velez compared Mexico's trade patterns with those of other Latin American countries (Gonzalez & Velez, 2007), while García Ramos (García Ramos, Manuel, 2021) also contributed to this line of research. Intra-industry trade has frequently been studied in the context of NAFTA (Lechuga Montenegro & De La Cruz Sánchez, 2017), and Dominguez examined the intra-industry trade relations between Mexico and China (Primo Dominguez, 2018).

The field of international trade is highly dynamic, and with the rise of globalization – as well as waves of anti-globalization – established patterns have continued to evolve. For this reason, it has become increasingly relevant to study intra-industry trade not only in developed economies but also among developing countries and emerging markets. At present, two major trends are shaping international trade: friendshoring and nearshoring. Nearshoring refers to the relocation of production closer to consumer markets, thereby reducing logistics costs, shortening supply chains, saving time, and improving production control and flexibility. Friendshoring (also known as ally-shoring) involves shifting production to geopolitically friendly countries that share similar values, political systems, and – most importantly – stable relations, making them reliable partners in global value chains.

Mexico has emerged as one of the main beneficiaries of these new trends. Owing to its geographic proximity to the United States (and Canada) and its strategic partnership with the U.S., Mexico has the potential to further strengthen its role in international trade and global supply chains. The United States has been relocating production from China to Mexico (a form of nearshoring), and by 2024, Mexico became the United States' largest trading partner — surpassing China for the first time. Concrete examples include the relocation or expansion of companies such as Tesla, Foxconn, Bosch, BMW, and Lenovo from China to Mexico. This trend has had the greatest impact on the automotive, electronics, semiconductor, textile, and medical device sectors. Moreover, Mexico is increasingly perceived as a safe alternative to manufacturing in China (friendshoring), helping to maintain production networks within North America and thereby supporting regional stability.

In the context of friendshoring, this process particularly involves the relocation of semiconductor, battery, and electric vehicle production from China to Mexico, supported by recent policy initiatives and legislative frameworks (CHIPS and Science Act (2022)¹ and Inflation Reduction Act (2023)². For instance, companies such as Intel and Skyworks have expanded parts of their manufacturing or assembly capacities in northern Mexico, producing chip components and packaging. Both trends — friendshoring and nearshoring — are reinforced by Mexico's participation in the USMCA, the free trade agreement linking the United States, Canada, and Mexico. As a result, Mexico has recorded record levels of investment inflows in sectors such as electromobility, electronics, and the automotive industry, contributing to job creation and the development of northern industrial regions such as Nuevo León, Chihuahua, and Baja California.

¹ The CHIPS and Science Act of 2022 is a federal law of the United States signed by President Joseph R. Biden on August 9, 2022. Its primary objective is to restore domestic semiconductor manufacturing in the United States and reduce dependence on Asian production. However, the Act also exerts an indirect impact on Mexico through the ongoing process of friendshoring, as production and supply chains increasingly shift toward geopolitically aligned countries in North America.

² The Inflation Reduction Act of 2022 (IRA) is another federal law enacted under President Biden, signed on August 16, 2022. Its main goals are to curb inflation, promote green technologies, and enhance the United States' energy security through investments in renewable energy, electromobility, and emission reduction. The impact on Mexico is similar to that of the CHIPS and Science Act, as both legislative measures stimulate the relocation of investment and production within the North American region, thereby strengthening Mexico's role in emerging industries such as semiconductors, electric vehicles, and clean energy technologies.

Mexico's position as a major producer of vehicles and automotive parts was consolidated under the North American Free Trade Agreement (NAFTA), which established an integrated industrial chain: the United States specializes in R&D and high-tech components; Mexico provides assembly, parts manufacturing, and logistics; and Canada contributes advanced technologies. Vehicles produced by U.S. companies often cross borders multiple times throughout the production process – a deeply integrated pattern that continues under the new USMCA framework.

Today, the automotive industry accounts for approximately one-fourth of Mexico's total exports. (OEC, 2025). Among Mexico's most important export products are cars and motor vehicles. Mexico is the world's largest exporter of delivery trucks and tractors and the fifth-largest producer of motor vehicles globally (Statista, 2025). Most of its automotive production – over 90% – is destined for export markets. The United States is Mexico's key trading partner in imports, while Canada also ranks among the top ten countries in the automotive industry. On the export side, the United States and Canada represent Mexico's most significant trade partners (ITC, 2025), reflecting a long-standing trend of mutual trade integration. This position is a natural outcome of the NAFTA and USMCA agreements, as well as Mexico's geographic proximity to its North American partners. Although the USMCA currently faces certain challenges, it continues to play a crucial role in regulating and facilitating trade within the region.

2 Methodology

In this paper, we examine Mexico's intra-industry trade using the Grubel-Lloyd Index (GLI), which represents the most commonly applied measure for analyzing this phenomenon. In addition to assessing the overall degree of intra-industry trade within a country, the index also allows for the examination of the prevailing form of trade across individual commodity groups and facilitates cross-country comparisons.

The Grubel-Lloyd Index (GLI) is calculated as follows:

$$GLI = 1 - \frac{\sum_{i=1}^n |X_i - M_i|}{\sum_{i=1}^n (X_i + M_i)} \quad (1)$$

where n denotes the total number of industries, i represents a specific industry, X (X_i/X) is the share of industry i in the country's total exports, and M , (M_i/M) is the share of imports of industry i in the country's total imports (Husted & Melvin, 2007, p. 137). In this formulation, the index takes on values ranging from 0 to 1, where higher values indicate a greater degree of intra-industry trade. An alternative expression of the equation is also possible, as follows:

$$GLI = 100 * \left(1 - \frac{\sum_{i=1}^n |X_i - M_i|}{\sum_{i=1}^n (X_i + M_i)} \right) \quad (2)$$

By multiplying the index by one hundred, we obtain the percentage values (0–100%) representing the share of intra-industry trade in a country's total trade. The lower the index value, the lower the degree of intra-industry trade, and conversely, a higher value indicates a higher degree of intra-industry trade. For the purpose of clearer interpretation, we apply the following classification scheme:

Table 1: Evaluation of Intra-Industry Trade Using the Grubel-Lloyd Index

$0 \leq GLI \leq 0,25$	Strong Inter-industry trade
$0,25 < GLI \leq 0,50$	Weak Inter-industry trade
$0,50 < GLI \leq 0,75$	Weak Intra-industry trade
$0,75 < GLI \leq 1$	Strong Intra-industry trade

Source: retrieved from "The Dynamics of Agricultural Intra-Industry Trade: A Comprehensive Case Study in Vietnam", by V. Hoang, 2019, (49).

For our research, it is essential to distinguish between inter-industry and intra-industry trade. The latter is understood as the mutual exchange of similar or nearly identical products between countries. The similarity of traded products is determined based on the Harmonized Commodity Description and Coding System (HS) classification.

In our case, we examine Mexico's trade using data from UN Comtrade. Specifically, our input dataset consists of export and import values disaggregated by commodity groups at the two-digit and four-digit levels of the Harmonized System (HS2 and HS4) (ITC, 2025). Our analysis focuses particularly on intra-industry trade in the automotive sector. To obtain a clearer picture of the structure and nature of Mexico's automotive trade, we analyze trade flows within individual HS4-level categories, namely 8701 and related codes. From the perspective of the automotive industry, the most relevant categories include HS 8701–8708 (motor vehicles, trucks, buses, and parts). However, for the purposes of our research, we also include HS 8711, 8714, and 8716, which cover motorcycles (8711), parts and accessories for motorcycles and special-purpose vehicles (8714), and vehicles used for recreation, such as golf carts, mobility vehicles, and racing cars (8716).

The specific categories are identified in greater detail below:

Category 8701 includes vehicles designed for towing, pushing, or hauling other equipment or loads, which are not themselves intended for the transport of passengers or goods. This group encompasses agricultural tractors, industrial machinery, and road tractors. It is only partially relevant to the automotive industry.

Category 8702 covers motor vehicles designed for the transport of ten or more persons, including the driver. This category includes diesel, gasoline, hybrid, and electric buses—such as minibuses, school buses, city, and intercity buses.

Category 8703 comprises passenger motor cars and other vehicles principally intended for the transport of persons (other than those of heading 8702), including sedans, SUVs, sports cars, hybrids, and electric vehicles.

Category 8704 refers to motor vehicles for the transport of goods, such as trucks, delivery vans, pickups, and tractor units for semi-trailers.

Category 8705 includes special-purpose motor vehicles, other than those principally designed for the transport of persons or goods, such as ambulances, fire trucks, cranes, and refuse collection vehicles. This category is only partially relevant to the automotive industry.

Category 8706 covers chassis fitted with engines, for example for tractors or motor vehicles for the transport of ten or more persons. This group includes specific vehicle bases (chassis) already equipped with an engine but lacking a complete body or superstructure—such as truck chassis with engines, tractor chassis, or fire truck chassis.

Category 8707 refers to bodies (including cabs) for various types of vehicles, i.e., the upper structure mounted on the chassis or frame of a vehicle.

Category 8708 encompasses parts and accessories suitable for the assembly, repair, or maintenance of motor vehicles classified under HS codes 8701–8705, including tractors, buses, passenger cars, trucks, and special-purpose vehicles (e.g., ambulances, fire trucks, tow trucks).

Category 8711 relates to motorcycles and similar two- or three-wheeled motor vehicles, including mopeds and bicycles with auxiliary motors.

Category 8714 includes parts and accessories for vehicles of headings 8711–8713.

Category 8716 covers non-self-propelled vehicles designed to be towed, pushed, or carry loads, but which do not have their own motor. This includes trailers, semi-trailers, caravans, and agricultural carts.

Furthermore, certain automotive-related components and parts are classified under other HS categories outside of Chapter 87. These include: 4011.10 (New rubber tires for passenger cars), 4011.20 (Tires for trucks and buses), 4011.40 (Tires for motorcycles), 4011.80 (Tires for

off-road vehicles, SUVs, and special-purpose vehicles), 7007.11 (Tempered safety glass), 7007.21 (Laminated safety glass), 8407.31 (Spark-ignition internal combustion engines for motor vehicles of headings 8701–8705), 8408.20 (Compression-ignition diesel engines for all types of road vehicles—tractors, passenger and commercial vehicles, buses, etc.), 8414.10 (Vacuum pumps), 8414.30 (Air-conditioning compressors), 8414.59 (Fans and blowers), 8414.80 (Turbochargers and superchargers), 8414.90 (Parts and components), 8501.10 (Electric motors with an output not exceeding 37.5 W), 8501.31 (DC motors, output > 750 W but ≤ 75 kW), 8501.32 (DC motors, output > 75 kW but ≤ 375 kW), 8501.52 (AC motors, multi-phase, output > 750 W but ≤ 75 kW), 8501.53 (AC motors, multi-phase, output > 75 kW), 8501.61–8501.63 (DC motors; multi-phase and single-phase AC motors), 8507.10 (Lead-acid starter batteries for internal combustion engines), 8507.50 (Nickel–metal hydride batteries used in hybrid vehicles), 8507.60 (Lithium-ion batteries for electric and plug-in hybrid vehicles), 8507.90 (Parts and modules for traction batteries), 8512.10 (Lighting or visual signalling equipment), 8512.20 (Electrical windscreen wipers, defrosters, and demisters), 8512.90 (Parts), 8513.10 (Portable lamps), 8513.90 (Parts for lamps), 8519.81 (Sound reproducing apparatus using semiconductor media), 8519.89 (Other sound reproducing apparatus), 8519.90 (Parts and accessories), 8527.13 (Car radios with CD, USB, or Bluetooth player), 8527.19 (Digital radios without a player), 8527.21 (Radio receivers integrated into motor vehicles), 8527.29 (Selected OEM combined audio systems), 9401.20 (Seats of a kind used for motor vehicles), 9401.50 (Parts of seats for motor vehicles), 9404.10 (Mattress supports), 9404.20 (Articles of bedding and similar furnishings).

3 Results

Most of the Mexico’s trade occurs within the framework of intra-industry trade (IIT). A more detailed examination of Mexico’s trade in the automotive sector (HS Chapter 87) reveals that in 2024, most of this trade was classified as intra-industry. The Grubel–Lloyd Index (GLI) for the automotive sector in 2024 reached a value of 0.58, indicating that approximately 58% of total automotive trade was intra-industry in nature. According to standard classification, this corresponds to a weak level of intra-industry trade.

An analysis of bilateral trade between Mexico and the United States shows that in 2024, nearly 68% of Mexico–U.S. automotive trade (HS 87) was classified as inter-industry trade (GLI = 0.33). A similar pattern was observed in trade between Mexico and Canada, where 63% of mutual automotive trade also took place as inter-industry trade.

Although Mexico’s overall trade with the rest of the world exhibits a somewhat stronger intra-industry character, the difference between intra- and inter-industry trade shares remains relatively modest. Intra-industry trade was identified particularly in HS categories 8706, 8707, 8708, 8711, and 8716. The highest level of intra-industry trade between Mexico and the United States was recorded in HS 8711 (motorcycles), reaching over 97%, whereas weaker intra-industry trade was observed in HS 8708 (parts and accessories) and HS 8716 (trailers and semi-trailers).

In Mexico–Canada automotive trade, strong intra-industry trade was recorded only in HS 8716 (69%), with moderate intra-industry trade in HS 8708 and HS 8711. For comparison, Mexico’s trade with the global market in automotive products demonstrates intra-industry characteristics in the following HS categories: HS 8708 (91%), classified as strong intra-industry trade, and HS 8707 (65%) and HS 8716 (64%), both representing weak intra-industry trade.

To facilitate a comprehensive evaluation, the HS categories were grouped into four analytical subcategories: Passenger and commercial vehicles (HS 8702–8704) – including passenger cars, trucks, and buses; Parts and components (HS 8706–8708) – such as bodies, chassis, engines, parts, and modules; Complementary automotive segment (HS 8711, 8714,

8716) – including motorcycles, parts, trailers, and semi-trailers; Supportive / peripheral categories (HS 8701, 8705) – such as tractors and special-purpose vehicles. The so-called automotive cluster (HS 8702–8708) represents the group of HS codes most relevant to the automotive industry. The results within this cluster confirm the hypothesis that nearly all automotive trade between Mexico and the United States is intra-industry in nature (99%), whereas trade with Canada remains primarily inter-industry, and trade with the rest of the world demonstrates weak intra-industry characteristics (Table 2).

Table 2: Assessing Intra-Industry Trade in Mexico: The Automotive Sector

HS category	GL index, the USA	GL index, Canada	GL index, world
8701 - Tractors (other than tractors of heading 8709)	0.11	0.005	0.20
8702 - Motor vehicles for the transport of >= 10 persons, incl. driver	0.22	0	0.04
8703 - Motor cars and other motor vehicles principally designed for the transport of <10 persons, . . .	0.17	0.15	0.45
8704 - Motor vehicles for the transport of goods, incl. chassis with engine and cab	0.11	0.01	0.22
8705 - Special purpose motor vehicles (other than those principally designed for the transport of . . .	0.006	0	0.003
8706 - Chassis fitted with engines, for tractors, motor vehicles for the transport of ten or more . . .	0	0	0.005
8707 - Bodies, incl. cabs, for tractors, motor vehicles for the transport of ten or more persons, . . .	0.12	0	0.65
8708 - Parts and accessories for tractors, motor vehicles for the transport of ten or more persons, . . .	0.65	0.75	0.91
8711 - Motorcycles, incl. mopeds, and cycles fitted with an auxiliary motor, with or without side-cars; . . .	0.97	0.71	0.008
8714 - Parts and accessories for motorcycles and bicycles and for carriages for disabled persons, . . .	0.37	0.21	0.17
8716 - Trailers and semi-trailers; other vehicles, not mechanically propelled (excl. railway and tramway . . .	0.53	0.69	0.64
Passenger and commercial vehicles 8702-04	0.14	0.12	0.37
Parts and components 8706-08	0.65	0.75	0.84
Complementary automotive segment 8711, 8714, 8716	0.53	0.65	0.98
Supporting / peripheral segment 8701, 8705	0.15	0.09	0.27
HS 87 automotive cluster 8702–8708	0.99	0.38	0.57
Sum 87 *	0.33	0.37	0.57

Note: * Categories relevant to the automotive industry.

Own processing based on data from ITC, 2025.

Outside HS Chapter 87, Mexico exhibits a higher degree of intra-industry trade (IIT) in the automotive sector with the global market overall (80%), and particularly in certain specific categories. Notably, very strong intra-industry trade was observed in the following HS6 categories: 8512.90 (97%), 8414.80 (93%), 4011.10 (89%), 8501.10 (85%), and 7007.11 (86%), while strong intra-industry trade was recorded in 9401.20 (83%), 8414.10 (80%), 8414.30 (79%), 8501.52 (77%), 8512.90 (77%), and 8414.59 (76%). Conversely, weak intra-industry trade was observed in categories such as 9404.10 (56%), 8513.90 (64%), 8512.20 (61%), 8501.53 (51%), 8501.32 (62%), 8414.90 (56%), and 7007.21 (51%).

In the case of Mexico–U.S. trade in automotive components outside HS 87, over 90% of trade occurs as intra-industry trade. Strong intra-industry trade was observed in six HS6 categories: 8513.90 (98%), 8512.10 (89%), 8507.90 (87%), 8414.90 (90%), 8414.10 (91%), and 8414.30 (77%), whereas weak intra-industry trade was recorded in five categories: 7007.11 (60%), 8414.59 (55%), 8414.80 (64%), 8507.60 (60%), and 8519.81 (67%). For Mexico–Canada bilateral trade in automotive components (outside HS 87), the degree of intra-industry trade is slightly lower but still represents a high level. More than 84% of trade occurs as intra-industry, with strong intra-industry trade observed in only three HS6 categories: 8512.20 (91%), 4011.10 (92%), and 8414.80 (77%). It should be noted that Mexico–Canada trade takes place across a smaller number of HS6 categories compared to Mexico–U.S. trade.

Our results confirm Mexico’s position within global supply chains, highlighting its role primarily as a producer of automotive components. Tire production (HS 4011) is particularly significant, with major manufacturing centers in León (Michelin), Cuernavaca (Bridgestone), and San Luis Potosí (Continental). Additionally, Mexico hosts important safety glass manufacturing plants, including Vitro Automotive Glass in Monterrey, Saint-Gobain in Querétaro, and Fuyao Glass in San Luis Potosí. Key suppliers and subcontractors in the automotive industry include Bosch, Continental, ZF, Magna, Lear, Faurecia, Valeo, Aptiv, Yazaki, Nemak, Metalsa, and Gestamp (SPC, 2015), which produce engines, wiring harnesses, transmissions, bodies, seats, lighting systems, batteries, and electronic components. Several foreign automotive manufacturers operate in Mexico. These include American companies such as General Motors (Chevrolet, GMC, Cadillac), Ford Motor Company, and Stellantis (RAM, Jeep, Dodge, Chrysler, Fiat); Japanese firms including Nissan, Honda, Mazda, and Toyota; German companies such as Volkswagen, Audi, BMW, and Mercedes-Benz; Korean manufacturers Kia and Hyundai; as well as Chinese producers Chirey (Chery Group) and JAC Motors. Tesla has announced plans to begin production in Mexican facilities in 2026 (Reuters, 2023).

In summary, intra-industry trade (IIT) in the automotive sector is strongest between Mexico and the United States within the so-called automotive cluster (99%), followed by trade in automotive components outside HS Chapter 87 with the United States, Canada, and the global market. Overall, it is primarily automotive components that account for the high level of intra-industry trade across all three cases. Therefore, the hypothesis that intra-industry trade predominates between Mexico and its USMCA partners in the automotive sector is only partially confirmed. The following table presents the total values for the main categories.

Table 3: Evaluation of Mexico’s Intra-Industry Trade across Selected Product Categories using the Grubel-Lloyd Index

	Categories within 87*	Categories outside 87	Total automotive
World	58%	80%	61%
the USA	33%	90%	45%
Canada	37%	84%	40%

Notes *only relevant for automotive industry,
Own processing based on data from ITC, 2025.

Conclusion

In this paper, we examined the degree of intra-industry trade (IIT) between Mexico and the global market, as well as with its key partners in the automotive sector. Intra-industry trade in the automotive industry is strongest between Mexico and the United States within the so-called automotive cluster (99%), followed by trade in automotive components outside HS Chapter 87 with the United States, Canada, and the global market. Overall, it is primarily automotive components that account for the high level of intra-industry trade in all three cases.

Consequently, the hypothesis that intra-industry trade predominates between Mexico and its USMCA partners in the automotive sector is only partially confirmed.

Mexico is currently highly integrated within global supply chains, particularly in the automotive industry. Given its geographic proximity to the U.S. market and the USMCA agreement, Mexico's position remains strong. The USMCA, by providing a duty-free zone for automobiles (subject to compliance with specified conditions), fosters increased investment and reinvestment and gradually diversifies production in Mexico toward electric mobility and more technologically advanced manufacturing. Mexico's position is further reinforced by current trends in international trade, specifically nearshoring and friendshoring.

On the other hand, as a country heavily focused on the automotive industry and largely dependent on one or two major trading partners, Mexico faces several challenges. These include the need for greater diversification, potential threats to its comparative advantages due to possible adjustments to USMCA and other U.S. legislation, as well as persistent bureaucratic and administrative complexities. The greatest challenge—and simultaneously an opportunity—for Mexico in the automotive sector lies in electric mobility and its integration into the corresponding global supply chain.

References:

- Albarrán Macías, D., & Reyes, P. M. (2020). Volume, Intensity, and Proportion of Intra-industry Bilateral Mexico-U.S. Trade (1981-2017). *Norteamérica, Revista Académica Del CISAN-UNAM*, 15(1). <https://doi.org/10.22201/cisan.24487228e.2020.1.416>
- Brkić, S., Kastratović, R., & Salkica, M. A. (2021). Analysis of Intra-Industry Trade in Agri-Food Products Between Bosnia and Herzegovina and the European Union. *South East European Journal of Economics and Business*. 16(2), 53-67.
- Dominguez, N. P. (2018). Analysis of Horizontal and Vertical Intra-Industry Trade: The Case of Mexico and China. *Economics, Business and Management*. 10.12783/dtem/icssd 2018/20204
- Eppinger, P. S., & Felbermayr, G. J. (2014): Bilateral trade and similarity of income distributions: The role of second moments. *Economic Letters*, 126, 159-162.
- Fertő, I., Podruzsik, S., & Balogh, J. (2016). Intra-industry trade in the wine sector in the enlarged European Union. *Review of Agricultural Food and Environmental Studies*, 97(3). 10.1007/s41130-016-0024-3
- García Ramos, M. (2021). The multiplicative impacts of Argentina, Brazil, Colombia, Costa Rica, Chile, Mexico, and Peru on the intra-industry trade in manufactures, 1995-2011, *Sinapsis*, Vol.13 (1), 78-94.
- Gonzalez, J. G., & Velez, A. (1995). Intra-industry trade between the United States and the major Latin american countries: Measurement and implications for free trade in the Americas. *The International Trade Journal*, 9(4), 519-536. <https://doi.org/10.1080/08853909508523841>
- Hoang, V. (2019). The Dynamics of Agricultural Intra-Industry Trade: A Comprehensive Case Study in Vietnam. *Structural Change and Economic Dynamics*, 49, 74-82.
- ITC. (2025). List of importing markets for a product exported by Mexico. International Trade Centre. Trade Map - List of importing markets for a product exported by Mexico)
- Janubová, B. (2021). Intra-industry trade in Brazil. Proceedings scientific works from International Relations 2021: Current issues of world economy and politics, Slovakia, 22, 360-365.
- Jošić, H., & Bašić, M. (s. a.): When Linder Meets Gravity Model: The Case of USA, Germany and Japan.
- Krugman, P. (1980). Scale Economies, Product Differentiation, and the Pattern of Trade. *The American Economic Review*, 70(5), 950-959. <https://www.aeaweb.org/aer/top20/70.5.950-959.pdf>

- Latzer, H., & Mayneris, F. (2021): Average income, income inequality and export unit values. *Journal of Economic Behavior and Organization*, 185, 625-646.
- Łukasiewicz, J., Bajan, B., & Pawlak, K. (2025). Towards greater integration: Prospects for the development of agri-food trade between the EU and RCEP countries. *Plos One*, 20(7). <https://doi.org/10.1371/journal.pone.0328866>
- Mill, S. (2009). *Principles of Political Economy*. Gutenberg.
- Montenegro, J. L. & De La Cruz Sánchez, C. (2017). Comercio intraindustrial en las empresas manufactureras en México, a veinte años del inicio del TLCAN (Intra-industry trade in manufacturing firms in Mexico, twenty years after the start of the NAFTA). *Análisis Económico*, 32 (80).
- OECD. (2025). Mexico, The Observatory of Economic Complexity. Mexico (MEX) Exports, Imports, and Trade Partners | The Observatory of Economic Complexity)
- Ohlin, B. (1933). *Interregional and international trade*. Cambridge, MA: Harvard University Press.
- Porter, M. (1990). *The Competitive Advantage of Nations*. New York: Free Press.
- Reuters. (2023). Tesla suppliers say carmaker expects 2026 or 2027 Mexico production start, Reforma reports. Tesla suppliers say carmaker expects 2026 or 2027 Mexico production start, Reforma reports | Reuters
- Quansah, K. A., & Ahn, W. CH. (2017): The Effect of the Korea-Australia Free Trade Agreement (KAFTA) on the Korea-Australia Trade Structure, *The Asian Journal of Shipping and Logistics*, 33 (4), s. 229-235.
- Ricardo, D. (2004). *On the Principles of Political Economy and Taxation*. In P. Sraffa (Eds.), *The Works and Correspondence Of David Ricardo* (pp.1-447) Liberty Fund.
- Samuelson, P. A., & Nordhaus, W. D. (2000). *Ekonomía*. Elita.
- Smith, A. (2007). *An Inquiry Into The Nature And Causes Of The Wealth Of Nations*. MetaLibri.
- SPC. (2015). Nuevas oportunidades para proveedores automotrices en México. SPC. Nuevas oportunidades para proveedores automotrices en México - SPC Consulting Group
- Statista. (2025). Leading car manufacturing countries worldwide, Statista. Leading car manufacturing countries worldwide| Statista
- Stiglitz, J. (2002). Globalization and Its Discontents. *Economic Notes*, 32(1), 123-142. <https://doi.org/10.1046/j.0391-5026.2003.00107.x>
- UNCTAD. (2025). International Trade. Data Insights | UNCTAD Data Hub
- Valderrama Santibáñez, A. L., & Castillo, O. N. (2011). Determinants of horizontal and vertical intra-industrial trade in the manufacturing industries of Mexico. *Estudios Económicos De El Colegio De México*, 26(1), 35–68. <https://doi.org/10.24201/ee.v26i1.105>
- Varma, P. (2012). An analysis of India's bilateral intra-industry trade in agricultural products. *International Journal of Economics and Business Research*, 4(1/2), 83-95. 10.1504/IJEBR.2012.044246
- Wang, J. (2009) The analysis of intra-industry trade on agricultural products of China. *Frontiers of Economics in China*, 4(1), 62-75. <https://doi.org/10.1007/s11459-009-0004-5>

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INVESTMENT SCREENING IN SMALL ECONOMIES: CASE OF SLOVAKIA¹

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Abstract: This article deals with investment screening mechanisms in small economies. Investment screening instruments have become an important element of the investment architecture in many countries in the recent years. While there is a growing literature on investment screening in major economies, the scholarly attention has not been devoted to theoretical analysis of these instruments in small economies, which face somewhat different challenges and pressures. The article uses the case of investment screening in Slovakia to formulate hypothesis about the motivations of small countries to introduce these mechanisms and the form they take in practice. The analysis identifies protection from bad-faith actors, pressure from outside and discursive influences as the main potential factors that can explain the proliferation of these instruments in small economies.

Keywords: investment screening, Slovakia, small economies, dependent economies

JEL: F21

Introduction

In 2012, UNCTAD introduced the IIA reform as an initiative to change the architecture of foreign investment protection. Among other things, the initiative sought to rebalance the relationship between the host state and the foreign investor to enable the host state to regulate foreign investment more effectively. In the past decade, a new generation of investment treaties more or less follows this new rulebook with focusing more on regulatory autonomy of the host state. However, not satisfied with the conditions under which they can regulate foreign investment, many states have taken further step to ensure that foreign investors have a harder time taking advantage of their resources in the form of investment screening mechanisms. This development falls in line with other recent protectionist trends in the international economic relations, the most prominent (but not at all exclusive) among these being the protectionist trade policies of the United States under Donald Trump.

Investment screening is generally defined as a process by which states assess, investigate, authorize, condition, or prohibit foreign direct investments to protect national security, public order, and critical infrastructure. As such, these mechanisms can be viewed as an extension of the security exception of investment treaties. Investment screening serves to formalize this principle and provide clarity for stakeholders to improve the predictability of the system. While the formal justification for these measures is the concept of national security, in reality, the main concern of countries introducing investment screening mechanisms is competitiveness. It is no coincidence that investment screening mechanisms (ISM) featured in the Draghi Report on competitiveness of the European Union as means to “close the innovation gap with the US and China, especially in advanced technologies” (Draghi, 2024: 6). ISMs thus represent a national security measure to the degree to which competitiveness is viewed as an issue of national security. The traditional concept of “hard” security can

¹ This article was elaborated within the VEGA project no. 1/0115/23 Applications of cooperative game theory models in economics and in international relations.

sometimes also be present in the ISMs via screening in the domain of hybrid threats (e.g. media), but it is most often secondary to the competitiveness issue.

The motivation of the main economic powers is therefore clear - to protect sensitive industries from foreign control. However, it is not just the most powerful economies that have introduced these mechanisms in the past fifteen years. A group of small mainly European Union countries, including Slovakia, have also introduced such mechanisms. The motivation behind this move is not as obvious as for the large economies and provides a ground for theoretical and empirical work on dependent economies. This article uses Slovakia as a case study for proposing several hypotheses on why countries like Slovakia introduce investment screening mechanisms and why countries like Slovakia introduce ISMs of the kind that they have introduced in the recent past. In the first part the article presents details on Slovak investment screening mechanism. In the second part, the article develops hypotheses on why small countries might introduce these mechanisms using Slovakia as an example.

1 Investment Screening in Scholarly Literature

While the scholarly literature on investment screening has been growing as the mechanisms started to proliferate, there is still only a very limited amount of work dedicated to theoretical explanation of the phenomenon. Even less attention has been dedicated to investment screening in small countries. The most common theoretical framework for explaining the proliferation of investment screening mechanisms is the general global shift towards nationalist and protectionist economic policies.

Bauerle Danzman and Meunier use this argument in the case of the European Union (Bauerle Danzman & Meunier, 2023). Similarly, Alami (2024) argues that the increased geoeconomic competition is one of the factors driving the proliferation of investment screening mechanisms. Interestingly, he also points towards specific features of the current global economic system as causes of this phenomenon. These features include the centralization of capital and the importance of intellectual property. If we go beyond the general trend of economic protectionism and geoeconomic competition, we find that scholars often analyse the level of Chinese foreign direct investment and the country's experience with it as a specific factor that could determine a country's investment screening regime, or a country's position on EU level screening of foreign investment (Chan & Meunier, 2020).

When it comes to investment screening in smaller economies, the scholarly work becomes even scarcer. There are several articles that describe and compare investment screening mechanisms in smaller countries, but their theoretical contribution is generally relatively low. Examples of these works include the analysis focused on Visegrad countries by Peragovics (2019), who emphasizes the Chinese factor as the main motivation for these countries to introduce screening mechanism. Hallberg (2020) analyses investment screening in the Nordic countries and Vargiu (2020) does the same for southern European Union countries.

2 Slovakia's Investment Screening Mechanism

Although there was a partial screening in the Slovak Republic since 2021, a complex investment screening mechanism has been set up in 2022 (came into force in 2023) by the Law on Screening of Foreign Investments (Zákon 2022). The law specifies that the authority responsible for the screening is the Ministry of Economy of the Slovak Republic. The definition of foreign investment for the purposes of investment screening is based on the distinction between a foreign investment and critical foreign investment, where critical foreign investment refers to investment in a list of 13 sectors/types specified in government regulation n. 61/2023 Coll. (Government of the Slovak Republic 2023). These sectors include standard sectors, such as critical infrastructure and defence, but the list also includes illegal weapons, dual use items, research and development in biotechnologies and medicine, provision of basic services, digital

service in the domain of cloud computing, research and development in cryptosecurity, different types of media, content sharing platforms and press agencies.

Foreign investment is a) acquisition of an enterprise (or part of it) pursuant to the Civil Code; b) acquisition of effective share in Slovak target, where effective share means equal or more than 25 percent of shares or voting rights (10 percent for a critical foreign investment); increase of effective participation that crosses 50 percent shares or voting rights (20 percent, 33 percent and 50 percent for a critical foreign investment); or acquisition of controlling interest. Application for investment screening is mandatory only for critical foreign investments meeting these thresholds, but all foreign investors can apply for assessment of risk.

The main concept for assessment of foreign investment is the concept of security and public order. Factors that are considered when screening an investment include the effects of the investment on judicial systems, information access related to personal data, and infrastructure, technology, systems or supplies related to security and public order of the Slovak Republic. Based on information provided by the Ministry of Economy in March 2025, since the previously mentioned law came into force, twenty-two assessments were initiated. All assessments were initiated at the request of the foreign investor. Slovakia's investment screening mechanism is therefore very similar to recommendations issued by the European Union and follows the template set up by the larger countries.

3 Investment Screening in Small Countries

Slovakia is a small, open, export-oriented economy. As such, it generally had a favourable view of foreign direct investment even though most of its governments since 1993 have been led by center-left parties (HZDS, SMER). The concerns with particular foreign investments generally did not have the aspect of geopolitical competition, which can be seen in larger economies. Similarly, the issue of technology transfer and intellectual property have never been at the forefront of the discussions on foreign investment as is the case for large economies with domestic ownership of the economy. Although there are some corporations where this issue could be relevant, such as ESET, the issue has never become politically salient. Moreover, for a country such as Slovakia, it could be claimed that a formal investment screening mechanism is a comparative disadvantage in relation to other countries when trying to attract foreign investment. For example, if an investor from China is looking to produce a product in an EU country, or an European country that has market access to the European Union, the necessity to submit a long questionnaire and submit themselves to the process of official investment screening might increase the cost of investing a country that has these requirements as opposed to countries that do not. It could be, of course, be claimed that a formal screening mechanism provides foreign investors with clarity regarding the establishment phase of the investment, it is also a rather significant administrative burden. In a country without a formal screening mechanism, a foreign investor can still seek dialogue with the government at a lower cost informally.

Why then, did Slovakia and many other small economies in Europe adopt screening mechanisms that largely follow the template of larger economies? First explanation centres around geopolitical competition between the West and China. This explanation can be derived from the world system approaches to global political economy, which view Slovakia as a dependent economy on the semi-periphery of the global economic system. Slovakia's investment screening is therefore a tool that is useful mainly to the centres of economic power in the West by preventing any technology or critical resources transfer from the West to China. Slovakia and other small countries can be viewed as a way for powers external to the West to enter the highly integrated European economy and extract advantages such as technology or critical resources. In this context Slovakia simply performs its semi-peripheral role of protecting the interests of the central powers.

Staying with China as a factor, if we move away from the systemic explanation, there is a discourse present in Slovak media that is wary towards Chinese foreign investment based on the perception of China as bad-faith actor. Reports on Chinese foreign investment in Slovakia that appear in mainstream media are usually accompanied by a warning on potential risks associated with Chinese investments even if the overall tone of the article is positive in accordance with the general positive attitude towards foreign direct investment (Aktuality, 2024; Nejedlý, 2025). Importantly, foreign investment from Western countries do not usually contain similar warnings, indicating that these are viewed more positively. In this sense, the motivation for the screening stems from the worries about Chinese investment even if Western investment is screened as well.

Finally, and somewhat counterintuitively, the rationalization for introduction of investment screening mechanism in small countries can also be related to the desire to attract foreign investment by creating a more stable and predictable investment environment. By providing a formalized screening mechanism, the due diligence of the foreign investor might in fact be facilitated if the screening mechanism is set up in an efficient manner. Without a formal screening mechanism, the risk profile of a particular investment goes up even if informal channels are used to perform some form of due diligence. The risk of the government stepping in at the last minute to stop an investment in the pre-establishment phase goes down significantly once a formal screening has been performed.

There are also other potential explanations for the proliferation of investment screening mechanisms in small economies, however, I find these less relevant than the three main ones presented in the previous chapter. We could, for example, argue that the general discourse on foreign direct investment is influencing countries to introduce these mechanisms regardless of rational calculation of the impact of these mechanisms. In this sense, introducing screening mechanisms is just “what states do” right now as part of good practice of investment policy. Also, it could be argued that investment screening mechanisms are part of the integration efforts within the EU. For example, it was the pro-European government that introduced investment screening in Slovakia with the investment screening mechanism following closely the recommendations of the European Commission. This explanation reflects the belief in the influence of bureaucracies in the European Union, especially in case where the issue at hand is not politically controversial. This was definitely the case in Slovakia, where introduction of investment screening mechanism was not covered in the media and did not gain political visibility. Consequently, the new government did not repeal the Act on foreign investment screening and continues to apply it.

4 Conclusion

In this article, we have analysed investment screening from a theoretical point of view using Slovakia as an example of a small country introducing a dedicated screening mechanism. I have shown that the Slovak mechanism is following a standard template based on the concept of public order and security. I have proposed several hypotheses to explain why a small country such as Slovakia might want to introduce such a mechanism. First, I hypothesize that the reason that small countries such as Slovakia introduce these mechanisms is rooted in the structure of international economy. Slovakia, as an economy that is highly dependent on Western capital would then introduce a screening mechanism to protect the centres of economic power from outside influence (technological transfer, resources). Second, I proposed that the explanation might be rooted in the negative view of China in particular and the perceived necessity to control the flow of Chinese investment into the country. Finally, these instruments can be viewed as a means of increasing the transparency and clarity of the screening process with a view of creating a more predictable investment environment.

These hypotheses should be tested empirically by comparative methods. Since there are not enough cases for a large-N statistical analysis, a set-theory based qualitative comparative analysis could be used to determine whether the factors hypothesized in the paper can be

considered necessary or sufficient conditions for introduction of investment screening mechanisms. A more complex analysis could even uncover which factors are sufficient or necessary condition for what type of investment screening mechanism.

References:

1. Aktuality.sk. (2024). Čínske investície môžu ohroziť slovenskú ekonomiku a bezpečnosť. Časť politikov chce vysvetlenie Ficovej cesty. <https://www.aktuality.sk/clanok/B3QTWbU/cinske-investicie-mozu-ohrozit-slovensku-ekonomiku-a-bezpecnost-cast-politikov-chce-vysvetlenie-ficovej-cesty/>
2. Alami, I. (2024). Foreign investment screening mechanisms and emergent geographies of (post)globalization. *Dialogues in Human Geography*. <https://doi.org/10.1177/20438206241278733>.
3. Chan, Z., & Meunier, S. (2020). Behind the screen: Understanding national support for a foreign investment screening mechanism in the European Union. *The Review of International Organizations*, 17, 513-541. <https://doi.org/10.1007/s11558-021-09436-y>.
4. Bauerle Danzman, S., & Meunier, S. (2023). Naïve no more: Foreign direct investment screening in the European Union. *Global Policy*. <https://doi.org/10.1111/1758-5899.13215>.
5. Draghi M. (2024). The future of European competitiveness – a competitiveness strategy for Europe. https://commission.europa.eu/topics/eu-competitiveness/draghi-report_en#paragraph_47059
6. European Commission. (2024). Fourth Annual Report on the screening of foreign direct investments into the Union (2023). <https://circabc.europa.eu/ui/group/be8b568f-73f3-409c-b4a4-30acfec5283/library/>
7. Nejedlý, T. (2025). Miliardy z krajiny draka. Aké sú bezpečnostné riziká čínskych investícií v Európe? Available at: <https://www.forbes.sk/miliardy-z-krajiny-draka-ake-su-bezpecnostne-rizika-cinskyh-investicii-v-europe/>
8. Hallberg, J. (2020). Foreign Investment Screening in Finland, Norway, Sweden and Denmark. *YSEC Yearbook of Socio-Economic Constitutions 2020*. https://doi.org/10.1007/16495_2020_17.
9. Peragovics, T. (2019). "Protection without Protectionism? Foreign Investment Screening in Europe and the V4 Countries Today : A Comparative Analysis," IWE Working Papers 252, Institute for World Economics - Centre for Economic and Regional Studies.
10. Government Of The Slovak Republic. (2023). Regulation 61/2023 Z. z. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2023/61/>
11. UNCTAD. (2023). The Evolution of FDI Screening Mechanisms: Key Trends and Features. Investment Policy Monitor. Issue 25. 2023. https://unctad.org/system/files/official-document/diaepcbinf2023d2_en.pdf
12. Vargiu, P. (2020). Foreign Investment Screening in Italy, Spain, Portugal and Greece. 1-21. https://doi.org/10.1007/16495_2020_16.
13. Zákon o preverovaní zahraničných investícií. (2022). 497/2022 Z. z. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2022/497/20230301>

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CURRENT KEY CHALLENGES FOR THE EU LABOUR MARKET¹

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Abstract: The European labour market is facing parallel structural challenges that are fundamentally shaping its further development: persistent labour shortages, demographic ageing, accelerated digitalisation, the green transition and the lack of integration of migrants. The analysis shows that these trend pressures are interlinked and increase the need for effective public policies on skills, reskilling, innovation and social inclusion. The green and digital transitions create new opportunities, but at the same time they exacerbate regional inequalities and increase the demand for a skilled workforce. Migration can mitigate both demographic decline and skill mismatch if skills recognition and integration processes are more effective. A comprehensive, coordinated approach linking the labour market, education and social policy is therefore essential to ensure the long-term competitiveness and social stability of the European Union.

Keywords: Key challenges, labour market, EU

JEL: J11, J21, J24, J61, O33

Introduction

The labour market in the European Union is undergoing a period of accelerated structural change, caused by an ageing population, technological transformation, pressure for a green transition and changing migration dynamics. Job vacancies remain high in all member states, suggesting that the current labour shortages are due to long-term disagreements rather than short-term fluctuations. At the same time, a significant proportion of the working-age population remains unused due to limited mobility, lack of education and persistent barriers to entry into the labour market. A certain imbalance arises in the sense that the labour market is overstretched but uneven, with many job vacancies but an under-prepared workforce (Eurostat, 2025).

Demographic projections show a sharp decline in the working-age population, with the dependency ratio of older people expected to increase substantially. Without increased participation and strategic migration policies, Europe would face persistent labour shortages, especially in key sectors. At the same time, digitalisation is rapidly changing skills requirements, when on average only around half of Europeans having basic digital competences, far less than what is needed for a competitive economy. Automation is expected to transform many professions, increasing the value of advanced technical skills (European Commission, 2023).

The green transition adds an additional layer of complexity, creating new job opportunities, while exposing carbon-intensive regions to structural adjustment pressure. In addition, of course, retraining capacities will be significantly expanded so that the EU can meet its climate goals. Migration, while essential for the renewal of the workforce, continues to face institutional and social barriers that limit the full economic contribution of migrants. All these factors together demonstrate that the EU labour market faces interlinked

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challenges that require coordinated, long-term policy action combining skills development, inclusion and economic transformation (European Commission, 2022).

1 Labour shortages across sectors

Labour shortages in the EU have taken on the character of persistent structural imbalances in recent years, as job vacancies remain high despite the slowdown in economic growth. The job vacancy rate has stabilised at levels that exceed the pre-pandemic period, suggesting that the problems are related to the lack of skills matching and demographic change, rather than short-term cycles (Eurostat, 2025). This state of high demand for labour and at the same time many unused workers. The most significant gaps are in healthcare, IT, technical professions, logistics and construction, with the demand for skilled workers in these areas growing faster than the ability of education systems to generate the necessary skills (European Labour Authority, 2023).

A key factor in persistent shortages is the structural mismatch between workers' skills and job requirements. There is a chronic deficit of digital and technical skills, which threatens the EU's capacity to innovate. At the same time, European economies are in a situation where a large part of the workforce is not prepared for the technological changes associated with digitalisation and automation. Adult participation in lifelong learning remains low, limiting workers' ability to move to high-demand sectors. In addition, the shortage of labour supply is exacerbated by demographic developments, where an ageing population and a high proportion of departing workers in healthcare, industry or services create further shortages that are not compensated by the entry of younger generations (European Commission, 2022).

Working conditions are a decisive factor influencing the willingness to work in professions in short supply. The low attractiveness of working in construction, logistics or care professions is the main reason why these sectors suffer from chronic shortages. Poor working conditions, high workloads, low wages or limited career opportunities lead to low interest of domestic workers in these professions. Migrants could theoretically represent an important part of the solution, but in practice they encounter barriers related to the recognition of qualifications, discrimination or administrative requirements (Eurofound, 2023).

Finally, the shortcomings are also exacerbated by the low regional mobility of European workers. Only a fraction of Europeans work in another member state, which means that regional imbalances cannot be naturally offset through labour mobility (Eurostat, 2023). As a result, some regions are struggling with acute shortages, while others have an unused labour reserve. In the long term, the absence of structural reforms in education, migration and working conditions may threaten both productivity and the competitiveness of the European economy, as persistent gaps hamper innovation, slow down infrastructure construction and reduce the quality of public services. Without systemic change, the EU will face a worsening of both qualitative and quantitative gaps in its key sectors (OECD, 2023).

2 Demographic ageing and shrinking workforce

Demographic ageing has become one of the most decisive and irreversible forces shaping the future of the European labour market, as the population structure in Europe continues to shift towards higher average age, lower birth rates and longer life expectancy. By 2050, the working-age population in the EU is projected to decline by almost 30 million people, a trend that far exceeds the demographic challenges faced by most other developed regions. The dependency ratio of older people, which measures the number of older people in relation to the working-age population, is expected to continue to grow, putting unprecedented pressure on labour supply, pension systems and public finances (Eurostat, 2023).

This demographic change exacerbates existing labour shortages, as fewer young workers enter the labour market every year, while large groups of experienced workers retire.

Sectors such as health, long-term care, education and manufacturing will face severe labour shortages over the next decade unless labour market participation or migration flows increase. Ageing also has qualitative implications, as not only is the labour supply reduced, but the loss of older workers often means the disappearance of specialised knowledge and technical expertise that cannot be easily replaced. Industries dependent on highly skilled technicians, engineers or master craftsmen are particularly vulnerable, as these professions depend heavily on tacit knowledge accumulated over a long career (European Labour Authority, 2025).

In addition to reducing labour supply, demographic ageing is changing labour demand by increasing the need for health, personal care and social support services. It is estimated that the global care sector will need millions of additional workers soon, but Europe is already struggling with a shortage of workers in care-related occupations, as their challenging conditions and relatively low wages make them unattractive to domestic workers. Population ageing increases pressure on health and pension systems and increases the shortage of skilled workers in these sectors. The convergence of rising demand and decreasing supply threatens to create systemic gaps in basic public service. Addressing the consequence of demographic ageing requires coordinated and multilateral policy action, and overall higher labour market participation, especially among women and older workers, is essential to stabilise the workforce. The EU puts emphasis on measures such as expanding childcare services, promoting flexible working arrangements and redesigning pension systems to motivate people to work longer (European Commission, 2021).

Ultimately, demographic ageing represents a structural transformation with far-reaching implications for European competitiveness, innovation capacity and social stability. Without significant investment in human capital, participation policies and migration channels, Europe is at risk of a long-term labour shortage that could limit economic output and jeopardise the sustainability of its social model. The demographic challenge is therefore not only a statistical trend, but also a crucial economic reality that will shape the EU labour market in the coming decades (Pinkus & Ruer, 2025).

3 Digitalisation and automation: skill mismatch

Digitalisation and automation are changing the structure of labour demand in the European Union at a pace that exceeds the ability of education and vocational systems to adapt. According to statistics, more than half of Europeans have basic digital skills, which is a significant difference from the EU's target of 80% by 2030, indicating that a substantial part of the workforce is not sufficiently prepared for the digitalised working environment. This shortcoming, in which most routine and administrative professions face the risk of automation and that digital competencies remain critically low. Combined with rapid technological innovations in artificial intelligence, robotics, cloud computing and data analytics, the digital transformation increases the demand for advanced digital specialists while reducing opportunities in routine, low-skilled positions (European Commission, 2022).

The impact of automation on labour markets is very uneven. Jobs in advanced economies are increasingly exposed to a high risk of automation. Jobs dependent on predictable, repetitive activities such as administrative work, basic accounting, assembly in production and administrative support are particularly sensitive. At the same time, however, digitalisation creates a strong need for highly skilled professionals in software engineering, cybersecurity, artificial intelligence development and digital infrastructure management. Experts generally point out that the net effect of technological change is not job losses, but their transformation, with productivity gains benefiting workers who have specialised or adaptable skills. These dynamics contribute to labour market polarisation, where opportunities are concentrated in high-skilled segments, while low-skilled workers face increasing vulnerability (OECD, 2023).

The main challenge for the EU is to bridge the skills gap between the current skills of the workforce and the new demands of the labour market. Skills mismatches are among the most persistent structural weaknesses in Europe, especially in digital-intensive sectors. Low participation in upskilling and reskilling programmes exacerbates this gap. Only a small proportion of adults regularly engage in further education, which limits their ability to move into high-demand occupations. This shortage is particularly problematic given the speed at which digital technologies are evolving, as workers without continuous skills development risk becoming old. The need to link digitalisation to lifelong learning therefore reflects a widely recognised policy necessity (Eurostat, 2023).

The digital transformation also brings regional inequalities, as northern and western European countries show significantly higher digital readiness than southern and eastern member states. Differences in digital infrastructure, access to education and innovation ecosystems contribute to different economic trajectories across the Union. Companies in regions with a lack of digital skills face barriers to adopting advanced technologies, which in turn reduces productivity and hampers participation in global value chains. Ensuring that digitalisation contributes positively to the European labour market therefore requires coordinated and forward-looking policies. This includes expanding access to digital education, investing in inclusive adult learning systems, strengthening partnerships between industry and education providers, and supporting workers during technological transitions through active labour market policies (European Commission, 2022).

4 Green transition: energy and industrial transformation

The green transition represents one of the most extensive structural transformations in the European Union, transforming labour markets through changes in energy systems, industrial restructuring and new environmental regulations. The EU's commitment to climate neutrality by 2050 requires huge investments in renewables, energy-efficient infrastructures, electrified mobility and circular economy models, all of which bring about profound changes in labour demand. It is estimated that the green transition could create more than one million new jobs in the EU by 2030, mainly in the renewables, green construction, waste management and environmental services sectors. The employment potential coupled with well-designed policies could reach up to one million new jobs (European Commission, 2022).

However, the scale and speed of this transition also come with risks, as some carbon-intensive sectors face job losses unless workers receive adequate support. The green transition does not mean the same job creation in all regions or sectors. The most significant disruptions will be felt by regions that are heavily dependent on fossil fuel extraction, coal-fired power generation or traditional car production. Such territories may face job losses if they do not undergo timely industrial diversification. The reskilling needs in the context of the green transition are enormous, with millions of workers needing new technical, digital and environmental competences to adapt to changing job profiles. Without proactive investment in human capital, the transition risks exacerbating regional disparities and triggering socio-economic resistance (Cedefop, 2023).

The demand for labour in green industries is changing rapidly due to innovations in energy technologies and the reconfiguration of industrial processes. New professions increasingly require hybrid skills that combine technical knowledge, digital literacy and environmental knowledge. The green transition is also putting considerable pressure on vocational education and training systems, which need to quickly adapt curricula to reflect new industrial practices and sustainability requirements. Investments in lifelong learning and labour mobility are key to enabling the transition of workers from declining sectors to emerging sectors. Migration policy also plays a role here, as global competition for workers with green skills intensifies. Economies that can attract international talent and integrate

migrants into technical fields will be better positioned to become leaders in emerging green industries (Cedefop, 2023).

5 Integration of migrants into the labour market

Migrants are increasingly an important part of the European workforce, especially in the context of demographic decline and persistent labour shortages in key sectors. Foreign workers make up a significant share of new entrants to the EU labour market and are often essential for ensuring continuity of services in professions such as healthcare, construction, logistics and agriculture. However, their integration faces obstacles that limit their potential to contribute to economic growth. These include, for example, language barriers, non-recognition of qualifications, discrimination or administrative barriers. For example, highly skilled migrants in Europe are often employed below their level of education, which represents a loss of human capital and a missed economic opportunity (OECD & European Commission, 2023).

The differences between the employment rates of the native population and migrants are significant, especially for migrant women, who face cumulative barriers related to childcare, social standards and limited access to services. Inclusive policies aimed at improving access to education, language and employment opportunities can significantly reduce these gaps, but their implementation remains uneven. In many member states, the naturalisation process is complicated, the recognition of qualifications is lengthy, and integration programmes are underfunded. These barriers limit migrants' ability to enter high-demand occupations, exacerbating existing labour shortages (European Parliamentary Research Service, 2023).

However, the importance of migration for the European economy goes beyond a simple solution to labour shortages. Migrants also contribute to innovation, entrepreneurship and long-term productivity. The integration of migrants is essential for the European economy, as in countries with effective integration policies, the differences in economic performance between domestic and foreign workers are minimal. Stronger coordination between member states, faster recognition of qualifications and quality language learning significantly increase the economic contribution of migrants, while also playing a role in mitigating negative demographic trends, as without migration, the EU workforce would decline even faster (Pan, 2025).

At the same time, there is a need to focus on job quality, as migrants are still overrepresented in low-income occupations with a high physical strain and weaker protection of labour rights, which requires strengthening labour inspection, combating discrimination and improving working conditions. The best results are achieved by comprehensive integration systems combining active labour market policies, language learning, recognition of qualifications and targeted employment programmes. Effectively designed integration policies can thus significantly support European competitiveness, the stability of the social system and demographic sustainability, while removing barriers to migrants' access to education and work can significantly increase the EU's innovation capacity and productivity (European Parliamentary Research Service, 2024).

Conclusion

The EU labour market is currently facing many challenges, both at the European level and at the level of the member states. Every single challenge has an impact on the development and reality of the EU labour market. An analysis of the key challenges of the EU labour market, such as labour shortages, an ageing population, digital transformation, green restructuring and the integration of migrants, reveals that the European labour market is undergoing profound structural changes that cannot be addressed by isolated policy measures. Labour shortages

reflect the persistent mismatch between available skills and the changing requirements of different sectors, which is exacerbated by demographic decline and inadequate adult learning systems. Population ageing is not just a demographic trend, but a major economic constraint that will continue to reduce the size of the labour force while increasing the demand for health and social services, exacerbating labour shortages unless participation and migration policies are strengthened.

These dynamics are directly related to the challenges of digitalisation, where rapid technological advances outpace skill acquisition, creating double pressure, where automation reduces the viability of routine occupations while creating an unmet demand for advanced digital competences. The green transition, which adds another dimension to the structural transformation, offers significant potential for job creation, but at the same time threatens regions dependent on carbon-intensive industries. Without coordinated reskilling efforts and just transition mechanisms, disparities can widen and weaken societal support for environmental objectives. Migrants, on the other hand, could significantly alleviate labour shortages and demographic pressure, but systemic barriers such as recognition of qualifications, discrimination and limited support for integration hinder the full use of migrants' human capital.

The EU labour market is shaped by mutually reinforcing forces, with demographic decline reducing labour supply, technological change increasing skills requirements, the green transition changing industrial structures, and insufficient integration policies limiting the contribution of migrants. Effective and prompt responses must therefore be systematic, long-term and efficiently coordinated across all policy areas. Strengthening education and lifelong learning, improving job quality, modernising migration frameworks, supporting regions in transition and widening labour force participation are essential steps to ensure competitiveness and social cohesion. The EU's ability to cope with these simultaneous transformations will determine not only the resilience of its labour markets, but also its economic prosperity and strategic autonomy in the coming years and decades.

References:

- Cedefop. (2023). 2023 Skills Forecast – Technical Report (Green & Digital Transition Skills). 10–29. https://www.cedefop.europa.eu/files/2023_skills_forecast_technical_report.pdf
- Cedefop. (2023). Skills for the Green Transition: Insights from the 2023 Cedefop Skills Forecast. 24–38. https://www.cedefop.europa.eu/files/skills_for_green_transition_2023.pdf
- Eurofound. (2023). Living and working in Europe 2022, Publications Office of the European Union, Luxembourg. 29–38. <https://assets.eurofound.europa.eu/f/279033/d01a510153/ef23016en.pdf>
- European Commission. (2021). European Pillar of Social Rights Action Plan. 9–16. https://www.cedefop.europa.eu/files/european_pillar_of_social_rights_action_plan.pdf
- European Commission. (2022). Digital Economy and Society Index (DESI). <https://digital-strategy.ec.europa.eu/en/policies/desi>
- European Commission. (2022). *Digital Economy and Society Index (DESI) 2022 – Full European Analysis*. 14–26. https://www.coit.es/sites/default/files/ce_desi_full_european_analysis_2022.pdf
- European Commission. (2022). *Digital Economy and Society Index (DESI) 2022 – Full European Analysis*. 28–44. https://www.coit.es/sites/default/files/ce_desi_full_european_analysis_2022.pdf
- European Commission. (2022). The Possible Implications of the Green Transition for the EU Labour Market. 4–16. https://economy-finance.ec.europa.eu/system/files/2022-12/dp176_en_green%20transition%20labour.pdf

- European Labour Authority. (2022). Report on Labour Shortages and Surpluses 2022. 9–19. <https://www.ela.europa.eu/sites/default/files/2023-03/eures-labour-shortages-report-2022.pdf>
- European Labour Authority. (2025). EURES Report on Labour Shortages and Surpluses 2024. 31–47. https://www.ela.europa.eu/sites/default/files/202506/EURES_Report_on_labour_shortages_and_surpluses_2024.pdf
- European Parliamentary Research Service. (2023). Migrant women and the EU labour market – Overcoming double discrimination. 1–8. https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/747905/EPRS_BRI%282023%29747905_EN.pdf
- European Parliamentary Research Service. (2024). New approaches to labour market integration of migrants and refugees in the European Union. 15–30. https://www.europarl.europa.eu/RegData/etudes/STUD/2024/754232/IPOL_STU%282024%29754232_EN.pdf
- Eurostat. (2023). Population structure and ageing. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Population_structure_and_ageing
- Eurostat. (2023). Population structure and ageing. <https://ec.europa.eu/eurostat/statistics-explained/SEPDF/cache/124994.pdf>
- Eurostat. (2025). Job vacancy rate statistics. https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Job_vacancy_statistics
- OECD & European Commission. (2023). Indicators of Immigrant Integration 2023: Settling In. 67–79. https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/06/indicators-of-immigrant-integration2023_70d202c4/1d5020a6-en.pdf
- OECD. (2023). OECD Employment Outlook 2023: Artificial Intelligence and the Labour Market. 46–63. https://www.oecd.org/content/dam/oecd/en/publications/reports/2023/07/oecd-employment-outlook-2023_904bcef3/08785bba-en.pdf
- Pan, J. & et al. (2025). Migration, innovation and social welfare: Evidence from OECD countries. *Journal of Economic Analysis*, 8(1), 1–15. <https://www.sciencedirect.com/science/article/pii/S2096248725000293>
- Pinkus D., & Ruer N. (2025). The demographic divide – Inequalities in ageing across the European Union. <https://www.bruegel.org/policy-brief/demographicdivideinequalities-ageing-across-european-union>

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THE EVOLUTION OF THE POSITION OF NEWLY INDUSTRIALIZED SOUTHEAST ASIAN STATES IN THE WORLD ECONOMY

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Abstract: In this paper, we examine the origins of the economic success and the developmental dynamics of the newly industrialized states of Southeast Asia within the world economy. We focus on the original, distinctive features of their economic development that were implemented effectively. Since the early 1960s, when these very poor developing economies began introducing economic reforms, they have transformed into some of the world's most advanced and wealthiest states, possessing a high level of scientific and technological capacity. For the purposes of this study, we applied the historical-logical method, qualitative analysis, and quantitative comparative analysis. To conduct the quantitative comparative analysis, we used statistical data from the CIA, the Statista portal, and the National Statistics Office of Taiwan.

Keywords: Asian Tigers, economic development, developmental state

JEL: JEL: E10, F13

Introduction

In scientific literature, the group of newly industrialized states includes several Asian as well as Latin American countries. Newly industrialized states are defined as countries that, within a relatively short period of several decades (from the 1960s to the end of the 20th century), managed to break out of the vicious cycle of poverty and transform from backward agrarian economies into industrially developed states with a highly advanced scientific and technological capacity.

This characteristic, however, applies fully only to the states of Southeast Asia. Latin American countries such as Argentina and Mexico, which are sometimes mentioned as newly industrialized, did not experience a development comparable to the Asian Tigers. Even today, they do not reach the same economic indicators—such as GDP per capita or a highly sophisticated economic structure—as the four Asian Tigers.

In this paper, we focus on the most significant factors that led to their remarkable economic growth and development, and we examine their current position in the world economy. Geographically, the four Tigers can be divided into two classic medium-sized states—South Korea and Taiwan—and two city-states—Singapore and Hong Kong.

1 Literature Review

Many authors have examined the unique phenomenon of the East Asian economic miracle in the history of the world economy, with most relevant studies published in international scholarly literature. From the broad range of works available on the topic, we selected three articles that focus primarily on the distinctive features of economic development in Southeast Asian states within their historical context. We emphasize the term distinctive features, because these economies' exceptional development paths were built precisely on such specific characteristics. In our view, several of these features are not transferable to the cultural and civilizational environments of other world regions.

Edward K. Y. Chen, in his work *East and Southeast Asia in the World Economy: Issues, Problems and Prospects*, argues that the economies of East and Southeast Asia recorded

exceptionally rapid economic growth during the last three decades of the twentieth century—growth that even surpassed Japan’s phenomenal post-war expansion (Chen, 1997). He notes that researchers often attempt to generalize the experience of the Asian Tigers into a model applicable to other developing countries. However, in many respects, the experience of East Asian economies was unconventional and did not correspond to the dominant economic thinking of the period. One paradox highlighted in Chen’s article is the once-widespread assumption that developing countries would remain permanently dependent on industrialized states. Another notable aspect of his study is the comparison of economic and social realities in Asian countries, which stand in contrast to Max Weber’s hypothesis about the rise of modern capitalism and the role of Christian ethics in this process. Chen also draws attention to Confucianism, which historically was thought to hinder development but later proved to be a cultural foundation supporting unique economic progress. In our view, these insights are among the most noteworthy contributions of the publication, and we share the author’s conclusions.

Shahid Yusuf, in his article *The East Asian Miracle Remembered: Tiger Secrets Hidden in Plain Sight*, stresses that each Asian Tiger achieved success in its own way (Yusuf, 2001). Although all four economies were inspired by Japan—the regional and global leader, symbolically described as the “lead goose” in the flying-geese model—each followed a slightly different trajectory. None developed according to a clearly formulated long-term strategy, but they demonstrated an exceptional capacity to respond swiftly to emerging opportunities. The Hong Kong miracle is now almost forgotten, while aspects of the Singapore miracle—although difficult, if not impossible, to replicate—continue to attract scholarly attention. Yusuf notes that the policies which unexpectedly led to three decades of “miraculous” growth in Korea and Taiwan were not part of any long-term master plan designed by their leaders in the 1960s. With historical hindsight, the unparalleled performance of these two Tigers was enabled by factors that are extremely difficult to imitate elsewhere, including the early formation of a technocratic developmental state under leaders such as Park Chung-hee, Lee Kuan Yew, Chiang Kai-shek, and Chiang Ching-kuo. Yusuf highlights that the Tigers’ governments adopted policies encouraging the emergence and expansion of private enterprise, using a range of tools such as quotas, subsidies, cartels (in Korea), and government procurement (in Taiwan). He also emphasizes the extraordinary attention paid by both governments and private firms to acquiring foreign technologies and supporting innovation. The state actively contributed to building research infrastructure, tertiary-education institutions, and science parks. In our view, these represent some of the most compelling aspects of Yusuf’s analysis of the Tigers’ distinctive development.

Danny M. Leipziger and Vinod Thomas, in their work *Roots of East Asia’s Success*, point out that there was no single “recipe” for the East Asian miracle—each economy followed a different path (Leipziger & Thomas, 2014). Nevertheless, the core of sound economic policies provided a necessary foundation across all four economies. The authors stress that in the early 1950s no one expected that the East Asian Tigers—Hong Kong, South Korea, Singapore, and Taiwan—would become the most economically successful countries of the twentieth century. These economies lacked natural resources and struggled to meet even the basic needs of their populations. In addition, each applied a different combination of policies with different degrees of state intervention. The authors, writing in a study published by the IMF, highlight that sound macroeconomic policies, investment in human capital, openness to the world economy, and political stability were essential for their success.

2 Key Factors of Economic Development

In our paper, we focus on the economies of the first wave of industrialized Southeast Asian states—South Korea, Taiwan, Singapore, and Hong Kong—which, within several

decades, escaped the vicious cycle of poverty and joined the ranks of advanced market economies with highly sophisticated economic structures. Several aspects of their economic and social development are remarkable. First, their transformation occurred within a relatively short period, during which they achieved rapid economic growth, increasing both their absolute gross domestic product and GDP per capita. In addition to economic growth, they experienced economic development, as they rapidly altered the structure of their economies and, consequently, their social structure.

Their rapid development was driven by several significant factors that operated synergistically. In these countries, we observe the skillful and effective adoption of elements of Western civilization and their adaptation to national traditions and lifestyle. The factors behind their development can be divided into internal and external ones. Internal factors include the political situation in each state, economic policy, and the characteristics of the labor force. External factors that positively influenced the economic development of the Asian Tigers include the situation in the world economy and the global political environment shaped by the Cold War.

At the beginning of the twentieth century, these states were characterized by low GDP per capita and extremely limited natural resources, which hindered the development of domestic industry. Qualified labor was almost absent.

2.1 Economic Policy of the Asian Tigers

The Asian Tigers represent a group of economies whose development was characterized by strong state interventionism in South Korea, Taiwan, and Singapore on the one hand. The opposite pole of economic policy is represented by Hong Kong, whose economy Milton Friedman famously described as the “paradise of liberalism on earth.”

In the first phase of their development, the economic policy of the Asian Tigers focused on import-substitution industrialization, replacing foreign goods with domestic production. This strategy was financially supported by foreign loans and inflows of foreign direct investment from industrialized countries, where reserves of cheap labor had already been exhausted. A portion of the output was subsequently exported to developed industrial economies.

Because they were originally classified among the poorest developing countries, the four Asian Tigers received substantial assistance from advanced economies and from the International Development Association (IDA). Until January 1, 1989, they were also beneficiaries of the Generalized System of Preferences (GSP), which provided them with preferential access to developed-country markets—an important factor supporting their export expansion.

During the first decade of development in the 1960s, the economic growth of the Tigers was based on exploiting their comparative advantage in cheap labor. In the second decade, the 1970s, production shifted toward capital- and material-intensive goods, and these became the new source of comparative advantage in international trade. In the 1980s, after their high share of world exports led to their removal from the GSP system, their production increasingly reoriented toward goods requiring the use of scientific and technological progress.

Export promotion and support for technological progress were strengthened by the establishment of institutions such as export-processing zones, science-industrial parks, and agricultural development parks.

The Tigers’ economic policy relied heavily on fiscal instruments to stimulate the economy—especially exports—including tax refunds, high (often prohibitive) import tariffs, tax incentives for exporters, and central-bank interventions aimed at maintaining an undervalued exchange rate.

2.2 Domestic Political Situation in the Asian Tigers

It should be noted that South Korea and Taiwan were governed by military dictatorships, which ensured economic stability during the early stages of their development. After the assassination of South Korean president Park Chung-hee (1917–1979) (Encyclopedia Britannica, 2025) and the departure from office of Taiwanese president Chiang Kai-shek (1887–1975) (Encyclopedia Britannica, 2025), both Korean and Taiwanese societies had already reached a sufficient level of economic advancement to support democratic social reforms.

Singapore, even today, is not regarded as a fully democratic state and displays characteristics of an authoritarian regime (Mendoza, 2025).

2.3 Characteristics of the Labour Force in the Asian Tigers

The nature of the labour force in the Asian Tiger economies is rooted in the values and traditions of Confucianism, which has historically been the dominant ideology in the region. Confucianism emphasizes hierarchy, loyalty, harmony, and moral character. (Encyclopedia Britannica, 2025). It promotes strong team cohesion and stands in contrast to Western models of individualism. It leads to collectivism and the formation of ethical, harmonious, and highly committed workforces.

Despite the increasing influence of Western civilizational values in the region, traditional Confucian principles remain one of the foundational elements behind the economic success of the Asian Tigers.

2.4 Situation in the World Economy

At the beginning of the 1960s, industrially developed countries recorded high GDP per capita (see the comparison of GDP per capita in the United States and the Asian Tigers), accompanied by relatively high wages. In other words, Western Europe, the United States, and Japan had exhausted their supplies of cheap labour. Western firms producing labour-intensive goods began seeking locations in developing countries with low wage levels. These types of industries gradually shifted to developing economies, including the states of Southeast Asia. A portion of this consumer-goods production was subsequently exported. The rapid post-war growth of the aforementioned industrialized countries further supported the development of production capacities in Southeast Asian economies.

2.5 International Political Situation

The Asian Tigers began their development under the conditions of a persistently bipolar world order. This period was marked by political, military, and economic rivalry between the two global blocs. South Korea and Taiwan in particular received extensive military and economic support from the United States, their primary ally. Military assistance also contributed to economic growth in these countries, which, in turn, supported the United States in various international conflicts. For example, during the Vietnam War, approximately 300,000 South Korean soldiers participated. (Strooke, 2012).

The international political environment thus encouraged the provision of economic assistance—especially from the United States—to South Korea and Taiwan.

3 The Current Position of the Four Asian Tigers in the World Economy

The four newly industrialized Asian states transformed, beginning in the early 1960s, from poor developing economies into wealthy, highly technologically advanced countries through rapid growth dynamics and structural economic change. Quantitative changes in GDP per capita are documented in the table, which compares developments in the Asian Tigers with those of the United States.

The highest quantitative growth in the 1960s was recorded by South Korea, which at the time was the poorest of the four economies.

Table 1: GDP per capita in USD

	1965 (Statbase 1965)	a	2024 (CIA 2024)	b	2024/1965	c
Hongkong	677	22,0 %	66 200	87 %	97,7 x	3,9 x
South Korea	109	3,6 %	50 400	67 %	462,4 x	18,5 x
Taiwan (NSRT)	163	5,4 %	34 238	45 %	210,0 x	8,4 x
Singapore	517	17,2 %	132 000	175 %	174,8 x	10,0 x
USA	3 002	100 %	75 500		100 %	

a, b = the share of GDP per capita expressed as a percentage of GDP per capita in the United States

c = the multiple by which GDP per capita in the given state increased compared to GDP per capita in the United States in the period 1965–2024

The quantitative significance of the Asian Tigers in terms of world population and global GDP is shown in Table 2.

Table 2: Comparison GDP and Population

		Absolute GDP (Worldometers 2025)		Population (CIA 2025)	
1.	World	110 000 bn. USD.	100 %	8,3 bn.	100 %
2.	South Korea	1 875 bn. USD	1,70 %	51,6 mio.	0,000620
3.	Taiwan	782 bn. USD	0,71 %	23,1 mio.	0,000280
4.	Hongkong	547 bn. USD	0,49 %	5,9 mio.	0,000071
5.	Singapore	406 bn. USD	0,37 %	7,4 mio.	0,000089
6.	4 Asian tigers	3 610 bn. USD	3,28 %	88 mio.	0,000107

The quantitative share of the four Asian Tigers in global GDP is relatively low when compared with their population size. However, South Korea, Taiwan, Singapore, and Hong Kong now play a significant role in the world economy as centers of industrial production and economic growth. Hong Kong and Singapore rank among the most important financial hubs in Asia and the world, hosting major banks and stock exchanges.

Investment in education and the development of science parks enabled these economies to transform themselves into global leaders in science and technology—not only in technical fields but also in medicine. The industrial potential of South Korea and Taiwan continues to expand, and both countries hold prominent positions in the global automotive industry, shipbuilding, electronics manufacturing, and semiconductor production.

Conclusion

At the beginning of the 1960s, the newly industrialized countries of Southeast Asia belonged to the group of poor developing states, characterized by weak national economies and widespread poverty among the population. Over time, these countries demonstrated exceptionally high rates of economic growth and actively developed their manufacturing industries, including export-oriented production integrated into global supply chains. They continue to strengthen their position in the world economy and on international markets.

The most advanced sectors of modern industry have been developing dynamically in the Asian Tigers, supported by both traditional domestic capital and foreign investment.

Thanks to a combination of key factors, these four economies succeeded in leaving the group of underdeveloped states and, by the early twenty-first century, had joined the ranks of the advanced, industrialized, and wealthy world.

References:

- Chiang Kai-shek. Encyclopaedia Britannica. 4.11.2025. Available at: <https://www.britannica.com/biography/Chiang-Kai-sh>
- Chen, K.I. E. (1989). East nad Southeast Asia in the World Economy: Issues, Problems and Prospects. The Copenhagen Journal of Asian Studies. Vol. 4 (1989). ISBN: 2246-2163. Available at: <https://rauli.cbs.dk/index.php/cjas/article/view/1764/1784>
- Confucianism. (2025). Encyclopaedia Britannica. 28.11.2025. Available at: <https://www.britannica.com/topic/Confucianism>
- Countries in the world by population. (2025). Worldometers. 14.11.2025. Available at: <https://www.worldometers.info/world-population/population-by-country/>
- GDP per capita. Statbase. (World Bank data). (1965). Available at: <https://statbase.org/datasets/economics/gdp-per-capita/?syear=1965&filter=&sort=>
- Leipziger, D., Vinod, T. (1994). Roots of East Asia's Success. Finance and Development. March 1995. IMF. Available at: <https://www.elibrary.imf.org/view/journals/022/0031/001/article-A002-en.xml>
- Mendoza, E. (2025). Authoritarianism in Singapore: Challenging Narratives of a Benevolent British Empire. Democratic Erosion Consorciun. James Madison University. 14.5.2025. Available at: <https://democratic-erosion.org/2025/05/14/singapore-challenges-myths-of-british-empire/>
- National Statistica Republic of China (Taiwan). 10.11.2025. Available at: <https://eng.stat.gov.tw/Point.aspx?sid=t.1&n=4200&sms=1171315.11.2025>
- Park chung Hee. Encyclopaedia Britannica. 3.11.2025. Available at: <https://www.britannica.com/biography/Park-Chung-Hee>
- Peck, J. (2021). Milton's Paradise: Situating Hong Kong in Neoliberal Lore. Journal of Law and Political Economy, 1(2). Available at: <http://dx.doi.org/10.5070/LP61251592> Retrieved from <https://escholarship.org/uc/item/7bb46936>
- Real GDP per capita. Country comparaisn. The World Factbook. Available at: <https://www.cia.gov/the-world-factbook/field/real-gdp-per-capita/country-comparison/>
- South Korea GDP. (2025). Countryeconomy.com. 20.11.2025 Available at: <https://countryeconomy.com/gdp/south-korea?year=202b>
- Strook, W. (2012). South Koreans in Vietnam: A forces to Be Reconded With. Warfare History Network. February 2012. Available at: <https://warfarehistorynetwork.com/article/south-koreans-in-vietnam-a-f4-orce-to-be-reckoned-with/>
- Yusuf, S. (2025). The East Asian Miracle Remembered: Tiger Secrets Hidden in Plain Sight. Center for Global Development. 25.1.2025 Available at: <https://www.cgdev.org/publication/east-asian-miracle-remembered-tiger-secrets-hidden-plain-sight>

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DETERMINANTS OF HOUSEHOLD INDEBTEDNESS IN SLOVAKIA: AN ANALYSIS OF SECURED AND UNSECURED DEBT USING HFCS MICRODATA¹

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Abstract: In recent years, a prolonged period of low interest rates combined with a favourable macroeconomic environment has contributed to a substantial rise in the indebtedness of Slovak households. Utilizing data from the Slovak Household Finance and Consumption Survey (HFCS), this paper investigates the influence of selected socio-demographic and economic determinants on the use of secured and unsecured debt among Slovak households. Logistic regression analysis revealed that age has a statistically significant negative effect on the probability of holding mortgage debt, while the number of dependent children and gross household wealth have significant positive effects. Moreover, higher debt levels were observed among older indebted households in the last two HFCS waves.

Keywords: Slovak household indebtedness, socio-demographic and economic factors, life-cycle hypothesis, logistic regression, HFCS

JEL: C25, D10, D14, D15, G51

Introduction

Between 2014 and 2018, Slovak households exhibited the highest annual increase in mortgage and non-mortgage debt among European Union countries. Consequently, the debt-to-GDP ratio has risen from 21% in 2008 to 49.2% in 2022, while the debt-to-gross-income ratio has increased from 43.3% in 2012 to 72.6% in 2022 (Eurostat, 2022). As a result, households in Slovakia have become one of the most indebted households in Central and Eastern Europe (CEE), approaching the median debt levels of developed European Union countries (Cesnak et al., 2023; Richtárik, 2017).

A favourable economic environment and low interest rates initially supported the rapid increase in household debt in Slovakia. However, as household indebtedness rises, the economy becomes more sensitive to cyclical fluctuations, potentially increasing the risk of loan default. Excessive indebtedness can pose risks to financial stability and be a source of macroeconomic and financial imbalances and crises. Therefore, the recent surge in Slovak household indebtedness, coupled with recent inflation and interest rate shocks, has raised concerns among supervisors and other authorities about the sustainability of household credit expansion and its potential implications for financial stability (National Bank of Slovakia, Financial stability report, 11/2021; European systemic risk board, 12/2021).

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This study investigates the indebtedness of Slovak households using microdata from the Household Finance and Consumption Survey (HFCS). The analysis focuses on the liabilities component of household balance sheets, considering the recent and significant rise in total household debt. This upward trend may pose risks to medium- and long-term economic growth and financial stability (Debelle, 2004; IMF, 2017; Mian et al., 2017).

We examine how socio-demographic and economic factors influence household indebtedness, distinguishing between mortgage and non-mortgage debt.

Importantly, rising household debt does not inherently signal financial distress or over-indebtedness. The composition of debt is critical, as certain liabilities—particularly mortgage loans – are often associated with asset accumulation and long-term investment (Abdul Rani et al., 2017). Mortgage debt, typically secured and used to finance primary residence purchases, contrasts with non-mortgage debt, which includes unsecured credit such as credit cards, overdrafts, and consumer loans. Non-mortgage loans are generally short-term, smaller in size, and carry higher interest rates. In contrast, mortgage loans are larger, long-term, and benefit from lower interest rates. The strong preference for homeownership in Slovakia – where approximately 90% of households own their residence compared to the EU average of 70% – is rooted in the post-1990s privatization of housing and cultural attitudes favoring ownership (Eurostat, 2022).

1 Theoretical Framework and Literature Review

The life-cycle hypothesis (LCH) (Modigliani and Brumberg, 1954) and the permanent income hypothesis (PIH) (Friedman, 1957) are the two main conceptual frameworks commonly used to describe the economic behaviour of households in terms of consumption, saving and borrowing decisions. According to the LCH, households generally prefer stable rather than fluctuating consumption, while their income profile typically follows a hump-shaped profile throughout their life cycle. However, according to the PIH, individuals or households make consumption decisions based on their perceived permanent income rather than their current income. Therefore, only temporary changes in income can be smoothed out through consumer credit.

Furthermore, the study by Hall (1978) introduces an element of uncertainty into the model. He acknowledges that agents are subject to stochastic elements in their future income, suggesting that agents may adjust their consumption more significantly in response to income shocks or fluctuations. The results of Hall's study indicate that consumption is highly responsive to changes in income, in contrast to the findings of the LCH and PIH. In addition, Minsky (1992) emphasised the significance of the economic cycle in relation to household debt decisions in his theory, the Financial Instability Hypothesis (FIH). He posited that households tend to increase their debts and engage in riskier financial activities during periods of economic prosperity and low interest rates. A comparable pattern of debt accumulation can be observed among Slovak households.

In general, the fundamental LCP and PIH model states that the accumulation of debt is observed during the period of early adulthood when individuals enter the labour force, and the subsequent reduction of debt is observed as borrowers retire. The dynamics of leveraging and deleveraging over the life cycle of a household indicate the existence of an inverted U-shaped relationship between age and indebtedness. This implies that the demand for debt depends not only on income and wealth of household but also on their demographic changes (Modigliani & Brumberg, 1954; Ando & Modigliani, 1963; Barba & Pivetti, 2009).

1.1 The impact of socio-economic and demographic factors on household indebtedness

The research studies by Cox and Jappelli (1993), Crook (2001), Del Rio and Young (2005), Yilmazer and DeVaney (2005), Costa and Farinha (2012), Fasianos et al. (2014), and

Chantararat et al. (2020) exploring how socio-economic and demographic determinants impact debt patterns of household across different countries. These studies consistently find that age, income, employment status, and family size are significant factors influencing the likelihood and amount of household mortgage and non-mortgage debt. Younger households are more likely to have mortgage debt, with debt levels generally peaking in mid-adulthood and declining as households approach retirement. The probability and amount of debt are also influenced by factors such as household size, economic prospects, housing status, and the number of children. Households with children are more inclined to have mortgage debt, and those with more members are more likely to have unsecured debts. The previous research highlights the complexity of household debt behaviour and the importance of considering a wide range of socio-economic factors when examining household indebtedness.

2 Methodology of work and research methods

We use cross-sectional household-level microdata collected for the fourth wave (2021) of the Household Finance and Consumption Survey (HFCS). The HFCS is an ex ante harmonised survey coordinated by the European Central Bank (ECB). The final sample size of Slovak HFCS 2021 comprises 10,870 observations, representing 2,174 survey households (10,870/5). It should be noted that the missing values in the HFCS dataset have been imputed five times. The HFCS dataset includes multiple imputed observations along with survey weights and replicated weights.

The HFCS data provides a comprehensive understanding of household's financial circumstances and helps us identify various aspects of household's financial decision-making. Our research mainly focuses on household indebtedness and the share of financially vulnerable households in Slovakia in various adverse economic scenarios. Furthermore, the availability of HFCS microdata enables us to comprehensively analyse the indebted Slovak households' financial situation and an in-depth description of the distribution of debt levels and debt ownership across selected socioeconomic and demographic categories. First, we use logistic regression to examine how different socio-demographic and economic determinants affect the use of secured and unsecured debt by Slovak households.

2.1 Logistic regression

Firstly, a descriptive analysis was conducted to examine the proportion of indebted households across a range of socioeconomic and demographic variables, providing deeper insight into the distribution of secured and unsecured debt among Slovak households. Due to the high correlation among these variables, interpreting results based on a univariate analysis was particularly challenging. Therefore, logistic regression will be employed to assess the influence of specific socioeconomic and demographic determinants on the probability of households having secured or unsecured debts.

Logistic regression is a technique used when the dependent variable is dichotomous. Independent variables can include both qualitative and quantitative data. Using the logistic distribution, we can specify the logistic regression model as follows (Scott and Jeremy, 2014):

$$p(X) = \frac{e^{\beta_0 + \beta_1 X_1 + \beta_k X_k}}{1 + e^{\beta_0 + \beta_1 X_1 + \beta_k X_k}} \quad (1)$$

This relationship between probability $p(X)$ and the predictors is nonlinear, but the predictors can be linearized using a simple transformation. This transformation is called logit transformation and is defined as:

$$\frac{p(X)}{1 - p(X)} = e^{\beta_0 + \beta_1 X_1 + \beta_k X_k} \quad (2)$$

$$\log\left(\frac{p(X)}{1-p(X)}\right) = \beta_0 + \beta_1 X_1 + \beta_k X_k \quad (3)$$

The issue with logistic regression is that the interpretation of the dependent variable is not just as straightforward as in Linear Regression. The odds ratio is commonly employed to interpret the logit model results. This equation represents the ratio of the probability of an event occurring to the probability of it not occurring:

$$\text{odds ratio} = \frac{p(x)}{1-p(x)} \quad (4)$$

We used average marginal effects (AME) to interpret parameter estimates after logistic regression. Average Marginal effects show the average change in probability when the predictor or independent variable increases by one unit. In other words, it provides information about the average impact of a change in the independent variable on the probability of the outcome. The AME is calculated as the average of the partial derivative of the predicted probability concerning the independent variable:

$$AME = \frac{1}{N} \sum_{i=1}^N \frac{\partial P(Y_i = 1)}{\partial X_i} \quad (6)$$

To assess the assumption that different socio-demographic and economic factors affect the probability of holding secured and unsecured debt, we conducted an analysis distinguishing between households active only in the mortgage market (holding only secured debt), households active only in the non-mortgage market (holding only unsecured debt) and households active in any type of debt market (holding either secured or unsecured debt). Mortgage debt refers to loans secured by a property, such as the household's main residence or other properties, which serve as collateral. Non-mortgage debt includes unsecured loans, overdrafts, credit lines and unsecured credit card debt.

Therefore, in our logistic regressions, the dependent variable equals 1 if a household has any debt, only mortgage debt or only non-mortgage debt and 0 otherwise. The categorical independent variables include various socio-demographic and economic characteristics of households, based on the life-cycle hypothesis (LCH) and while controlling for other factors. The independent variables contain the following variables:

Age of head of the household (16-34, 35-44, 45-54, 55-62, 63+)

- Number of dependent children (1, 2, 3 and more)
- Gender of the head of the household (Male, Female)
- Education of reference person (Primary, Secondary, Tertiary)
- Main labour status (Employee, Self-employed, Unemployed, Retired, Other)
- Gross Income – Quintiles (First, Second, Third, Fourth, Fifth)
- Gross Wealth – Quintiles (First, Second, Third, Fourth, Fifth).

3 The results of the work and the discussion

The following subsection of the study presents the results of a multivariate logistic regression analysis that examines the socio-economic and demographic factors affecting the probability of Slovak households participating in the secured or unsecured debt market in 2021.

The results of a logistic regression analysis are presented in Table 1. Specifically, we examine the impact of selected socio-demographic and economic determinants on the probability of households having only mortgage debt, only non-mortgage debt, or any debt. Each debt type is presented in two columns: the first column shows the odds ratios, while the second column shows the average marginal effects (AME).

Additionally, we analyse whether the selected socio-economic and demographic characteristics vary depending on the type of debt. The term “mortgage debt” is used to describe

loans that are secured by real estate, which is typically the household's main dwelling or other properties. In contrast, “non-mortgage debt” refers to unsecured loans and the utilisation of overdraft facilities, credit lines, or credit card debts.

The regression analysis indicates that households with an older reference person are significantly less likely to have any debt or only mortgage debt compared to households with a younger reference person. However, age does not have a statistically significant effect on probability of having a non-mortgage debt. Specifically, households in the age group of 63 and over are, on average, 34% less likely to have only mortgage debt compared to those in the age group of 16 to 34. Additionally, households in the age group of 45 to 54 are, on average, 15% less likely to have any debt than those within the age group of 16 to 34. The higher likelihood of obtaining a mortgage among younger age groups is attributed to their stage of life when they typically purchase their first primary residence. These findings align with the life-cycle hypothesis (LCH) by Modigliani and Brumberg (1954), which suggests that younger households borrow and accumulate debt early in their working lives, often for purchasing their first home. As they age and their income increases, they shift towards saving and wealth accumulation in preparation for future consumption and retirement. Younger households expect their income to peak during middle age, allowing them to pay off debts and save for retirement, resulting in a lower probability of debt holding among older households. The LCH proposes that younger households make financial decisions to level out their consumption and sustain their well-being throughout their lifetime. The results of the logistic regression analysis indicate that the age of the reference person has a statistically significant and negative effect on the likelihood of holding only mortgage debt. Moreover, these results are in line with previous studies that have found that younger households are more likely to have secured debt than older households (Del Rio & Young, 2005; Costa & Farinha, 2012; Fasianos et al., 2014; Chantarat et al., 2020).

The regression results also show that the probability of having debt, especially mortgage debt, increases with the number of dependent children. For example, households with two dependent children are on average 8% more likely to have only mortgage debt than childless households. Overall, the regression analysis suggests that households with dependent children are more likely to participate in the secured debt market, as these households need to secure adequate housing for themselves and their families. The coefficients on education do not show a statistically significant effect on the probability of households participating in the debt market. Regarding employment status, the results suggest that households with an unemployed reference person were, on average, 19% less likely to have only mortgage debt than households with an employed reference person. Overall, the employment status of households does not have a significant impact on the likelihood of having other types of debt.

Furthermore, households in the highest gross wealth classes are more likely to have only mortgage debt. The increasing coefficients on gross wealth across wealth quintiles imply that the probability of having only mortgage debt increases with the value of the purchased property, as most mortgages are used to buy property as collateral. A substantial portion, up to 90%, of the gross wealth of Slovak households consists of real assets, with 70% derived from the value of the household's main dwelling (Cupák et al., 2023). Since gross wealth mainly comprises real assets that can be used as collateral, higher real wealth is expected to facilitate access to credit.

For non-mortgage debt, the coefficient tends to decrease across gross wealth quintiles, aligning with the expectation that households with higher gross wealth may have less need to finance minor expenditures using consumer or non-mortgage debt.

Table 1: Logit Regression Results: Secured & Unsecured Debt in 2021

	Any debt	Any debt	Only Mortgage debt	Only Mortgage debt	Only Non-mortgage debt	Only Non-mortgage debt
	Odds ratio	AME	Odds ratio	AME	Odds ratio	AME
Age of Reference Person (base 16-34)						
35 - 44	0.95 (0.271)	-0.01 (0.0623)	0.90 (0.2707)	-0.02 (0.0595)	1.36 (0.5478)	0.03 (0.0368)
45 - 54	0.49** (0.136)	-0.15** (0.0611)	0.45** (0.1438)	-0.15** (0.0608)	1.49 (0.5745)	0.04 (0.0359)
55 - 62	0.21*** (0.060)	-0.32*** (0.0687)	0.17*** (0.0603)	-0.26*** (0.0619)	1.20 (0.4949)	0.02 (0.0370)
63+	0.17*** (0.0933)	-0.35*** (0.1076)	0.04*** (0.0304)	-0.34*** (0.0762)	2.20 (1.4243)	0.09 (0.0788)
Nr. of dependent children (base Childless)						
1	1.67** (0.3677)	0.09** (0.0418)	1.91** (0.4936)	0.08** (0.0350)	0.90 (0.3009)	-0.01 (0.0348)
2	1.64** (0.3606)	0.09** (0.0418)	1.85*** (0.4380)	0.08** (0.0318)	1.13 (0.3059)	0.01 (0.0312)
3 and more	1.38 (0.4430)	0.06 (0.0594)	1.88 (0.7756)	0.08 (0.0576)	0.66 (0.3220)	-0.04 (0.0415)
Gender of Reference Person (base Male)						
Female	0.80 (0.1388)	-0.04 (0.0305)	0.54*** (0.1209)	-0.07*** (0.0261)	1.24 (0.2848)	0.02 (0.0258)
Education of Reference Person (base Primary)						
Secondary	0.65 (0.2708)	-0.07 (0.0720)	1.48 (1.4173)	0.05 (0.1041)	0.66 (0.2613)	-0.05 (0.0556)
Tertiary	0.66 (0.3014)	-0.07 (0.0788)	1.80 (1.7708)	0.07 (0.1078)	0.48 (0.2214)	-0.08 (0.0591)
Main labour status of Reference Person (base Employee)						
Self-employed	0.99 (0.2440)	-0.00 (0.0482)	0.90 (0.2279)	-0.01 (0.0319)	1.36 (0.4189)	0.05 (0.0484)
Unemployed	0.37* (0.2223)	-0.18* (0.0964)	0.06*** (0.0675)	-0.19*** (0.0288)	1.22 (0.8431)	0.03 (0.1039)
Retired	0.41* (0.2175)	-0.16* (0.0964)	0.96 (0.8793)	-0.00 (0.1164)	0.20*** (0.1227)	-0.13*** (0.0434)
Other	0.60 (0.5381)	-0.10 (0.1639)	1.75 (1.1947)	0.08 (0.0981)	0.36 (0.3276)	-0.10 (0.0660)
Gross Income Quintiles (base I quintile)						
II quintile	0.98 (0.2656)	-0.00 (0.0473)	0.94 (0.3333)	-0.01 (0.0444)	1.50 (0.4821)	0.04 (0.0283)
III quintile	1.54 (0.4336)	0.08 (0.0509)	1.14 (0.4131)	0.02 (0.0463)	1.64 (0.6128)	0.04 (0.0343)
IV quintile	1.12 (0.3288)	0.02 (0.0520)	0.78 (0.2849)	-0.03 (0.0447)	2.18** (0.8547)	0.08* (0.0402)
V quintile	1.82* (0.6303)	0.11* (0.0635)	1.31 (0.5366)	0.03 (0.0534)	2.23* (0.9406)	0.08* (0.0446)
Gross Wealth Quintiles (base I quintile)						
II quintile	1.28 (0.3511)	0.04 (0.0473)	2.92*** (1.1436)	0.10*** (0.0344)	0.50** (0.1450)	-0.11** (0.0460)
III quintile	1.49 (0.4115)	0.07 (0.0478)	4.52*** (1.6978)	0.16*** (0.0357)	0.33*** (0.1142)	-0.15*** (0.0474)
IV quintile	1.73* (0.4963)	0.10* (0.0501)	5.29*** (1.9859)	0.18*** (0.0367)	0.33*** (0.1093)	-0.15*** (0.0467)
V quintile	1.50 (0.4539)	0.07 (0.0526)	6.36*** (2.5485)	0.21*** (0.0402)	0.16*** (0.0630)	-0.20*** (0.0463)
Constant						
	1.28 (0.5880)		0.10** (0.1007)		0.29** (0.1607)	
Observations	2,174	2,174	2,174	2,174	2,174	2,174

Source: Author's calculation from the HFCS Slovakia, NBS & ECB

Note: Odds ratio and average marginal effects (AME) are reported, standard errors are in parentheses (calculated with bootstrap, 1.000 replications). Logistic regression estimates using multiply imputed data of five implicate. ***p<0.01, **p<0.05, *p<0.1

The coefficients associated with gross income quintiles show no significant effect on the probability of households having any debt, only a mortgage or non-mortgage debt. This observation may indicate that a simple increase in income for households at very low-income levels may not provide households with the financial capacity to secure a mortgage debt. Moreover, the gradual tightening of borrower-based measures (BBMs) by the National Bank of Slovakia (NBS), where household income levels play a crucial role in assessing mortgage eligibility, may also play a significant role.

Overall, the regression results suggest that the probability of having only mortgage debt increases with higher levels (quintiles) of gross wealth. In addition, households with more dependent children are more likely to hold mortgage debt. Age negatively affects participation in the debt market, with a more significant effect observed in the case of mortgage debt, possibly reflecting the longer maturities typically associated with these types of debts.

According to our regression analysis, age and gross wealth are the most significant determinants affecting Slovak households' debt participation probability in 2021.

Interestingly, that our univariate analysis of the distribution of mortgage and non-mortgage debt among indebted households based on their socio-economic and demographic characteristics revealed the following findings. The non-mortgage debt is more prevalent among older households and those with lower income and education levels. This could be attributed to the limited access to mortgage credit among these groups, leading them to rely more on unsecured loans. This finding supports previous research by Crook (2001) and Cox and Jappelli (1993), which indicated that borrowing constraints and lower creditworthiness are more common among lower-income and less-educated households.

Conclusion

Slovak households have experienced the most substantial annual debt growth among Euro Union countries for several consecutive years, with double-digit annual debt growth between 2014 and 2018. The aim of this paper is to examine the impact of various socio-demographic and economic determinants on the probability of indebted Slovak households using secured and unsecured debt in 2021.

Our analysis confirms an increase in household participation in the debt market in 2021, with 38% of households owning various debt instruments (mortgage or non-mortgage debt), compared to just 27% in 2011. During the initial three waves of data collection for the HFCS, the majority of indebted households held non-mortgage debt. However, in the last wave in 2021, this trend shifted towards mortgage debt, and the majority of indebted households in the survey (21.3%) had mortgage debt. The significant growth of mortgage debt can be attributed to several factors, including income growth, the long-term decline of market interest rates, and the high price growth of residential real estate.

Moreover, the logistic regression analysis reveals a statistically significant and negative association between age and the probability of households having mortgage debt. The greatest difference was found between the oldest and youngest age groups. On average, households in the age group of 63 and over are 34% less likely to have only a mortgage debt compared to those in the age group of 16 to 34. The effect of age on participation in the debt market is negative, with a more notable effect observed for mortgage loans, possibly due to the longer maturities typically associated with these types of loans. In addition, households with more dependent children are more likely to have only a mortgage debt than households without children. Another significant determinant affecting indebted Slovak household's debt participation is gross wealth. In the case of mortgage debt, we have found a statistically significant and positive relationship between gross wealth and mortgage debt. On the other hand, the coefficient for non-mortgage debt tends to decrease with increasing quintile of gross

wealth. This is consistent with the expectation that households with higher gross wealth may have less need to finance smaller expenditures through consumer or non-mortgage loans.

Additionally, we analysed the distribution of debt levels and participation across different HFCS waves. The univariate analysis was conducted only for those socio-demographic and economic characteristics of indebted Slovak households that had a statistically significant impact on the probability of households participating in the debt market, as determined by our logistic regression model.

Concerning the age of households, it is interesting to note that in the last two waves, the debt levels of households did not follow the hump-shaped profile suggested by the life-cycle hypothesis (LCH), and relatively high debt levels can be observed within the age category of 65+. Borrowers frequently extend the maturity of their housing loans, which can lead to further debt accumulation and raise concerns about financial stability. However, the debt participation of Slovak households follows the inverted U life cycle pattern as predicted by economic theories. Furthermore, mortgage debt participation and levels of mortgage debt increase with higher levels of gross wealth quintiles.

Regarding debt participation, the share of indebted households with mortgage debt is higher in the top gross wealth quintiles than in the bottom. A possible reason for this is that a relatively small percentage of indebted households in the lowest gross wealth quintiles own their main residence. This association is even more evident in the last two waves of the survey (2017 and 2021). Regarding the distribution of the value of debt across the gross wealth quintiles, the HFCS results show that the median value of mortgage and non-mortgage debt is different. As mortgage debt is primarily used to finance housing wealth, as opposed to smaller, unsecured purchases typically financed by non-mortgage debt, mortgage debt is significantly higher across all gross wealth quintiles. This applies for each survey year.

Our study found that the main socio-demographic and economic determinants influencing the probability of Slovak households having secured and unsecured debt in 2021 are reference person age, number of dependent children and gross wealth. In addition, our study reveals that relatively high debt levels can be observed within the older indebted households in the last two waves of HFCS. There is a risk that this trend will limit the ability of customers who are in financial difficulty or have inadequate pension provisions to reduce their debt repayments by extending the duration of their loans. We recommend that policymakers closely monitor this trend in the future. The high indebtedness among retired households may raise concerns about their social and financial stability.

References:

- Abdulrani, M. S., Borhan Nordin, S., Lau, C. C., Ling Lim, S., & Siow, Z. S. (2017). Rich debt, poor debt: assessing household indebtedness and debt repayment capacity. [BIS Paper No. 91f]. Basel: Bank for International Settlements.
- Albacete, N., & Lindner, P. (2013). Household Vulnerability in Austria – A Microeconomic Analysis based on the Household Finance and consumption survey. [OeNB Financial stability report No. 25]. Vienna: National Bank of Austria.
- Ando, A., & Modigliani, F. (1963). The “Life Cycle” Hypothesis of Saving: Aggregate Implications and Tests. *The American Economic Review*, 53, No. 2, pp. 55-84.
- Barba, A., & Pivetti, M. (2009). Rising household debt: Its causes and macroeconomic implications—a long-period analysis. *Cambridge Journal of Economics*, 33, No. 1, pp. 113 – 117.
- Branten, E. (2022). The Role of Risk Attitudes and Expectations in Household Borrowing: Evidence from Estonia. *Baltic Journal of Economics*, 22, No. 2, pp. 126-145.
- Cesnak, M., Cupak, A., Klacso, J. & Šuster, M. (2023). The Impact of Loan Payment Deferral on Indebted Households and Financial Stability during the Covid-19 Pandemic: Survey

- Results from Slovakia. *Czech Journal of Economics and Finance (Finance a Uver)*, 73, No. 3, pp. 220-250.
- Costa, S., & Farinha, L. (2012). Households' Indebtedness: A Microeconomic Analysis based on the results of the Households' Financial and consumption survey. [BDP Economic Bulletin and Financial Stability Report]. Lisboa: National Bank of Portugal.
- Cox, D., & Jappelli, T. (1993). The Effect of Borrowing Constraints on Consumer Liabilities. *Journal of Money, Credit and Banking*, 25, No. 2, pp. 197 – 213.
- Crook, J. (2001). The demand for household debt in the usa: evidence from the 1995 survey of consumer finance. *Applied Financial Economics* 11, No. 1, pp. 83 – 91.
- Cupák, A., Kucserová, J. J., Klacso, J., & Strachotová, A. (2023). Household Finance and Consumption Survey 2021: Results from Slovakia. [NBS Working and Discussion Paper No. 2]. Bratislava: National Bank of Slovakia.
- Debelle, G. (2004). Macroeconomic implications of rising household debt. [BIS Working Paper No. 153]. Basel: Bank for International Settlements.
- Del-Rio, A., & Young, G. (2005). The determinants of unsecured borrowing: evidence from the British household panel survey. [BoE Working Paper No. 263]. London: Bank of England.
- Eurostat. (2022). Financial balance sheets - annual data. https://ec.europa.eu/eurostat/databrowser/view/nasa_10_f_bs_custom_8743043/default/table?lang=en
- Eurostat (2022). Gross debt-to-income ratio of households. <https://ec.europa.eu/eurostat/databrowser/view/tec00104/default/table?lang=en>
- Eurostat. (2021). Owning or renting? What is the EU's housing situation? <https://ec.europa.eu/eurostat/web/products-eurostat-news/-/wdn-20211230-1>
- Fasianos, A., Godin, A., Kinsella, S., & Wu, W. (2014). Household indebtedness and financial fragility across age cohorts, evidence from European countries. [Working Paper]. Limerick: University of Limerick.
- Friedman, M. (1957). *Theory of the Consumption Function*. Princeton: Princeton University Press. ISBN 0-691-04182-2.
- Habrman, M. (2018): Úverové hody na Slovensku – Analytický pohľad na zadlženie domácností. [Discussion Paper No. 21]. Bratislava: Inštitút finančnej politiky. https://www.mfsr.sk/files/archiv/priloha-stranky/20509/20/2018_Zadlzenie_domacnosti_final.pdf
- Hall, R. E. (1978). Stochastic Implications of the Life Cycle-Permanent Income Hypothesis: Theory and Evidence. *Journal of Political Economy*, 86, No. 6, pp. 971 – 987.
- Hall, R. E., & Mishkin, F. S. (1982). The Sensitivity of Consumption to Transitory Income: Estimates from Panel Data on Households. *Econometrica*, 50, No. 2, pp. 461 – 481.
- Chantararat, S., Lamsam, A., Samphantharak, K. & Tangsawasditrat, B. (2020). Household debt and delinquency over the life cycle. *Asian Development Review*, 37, No. 1, pp. 61–92.
- International Monetary Fund. (2017). *Global Financial Stability Report: Is Growth at Risk?*. Washington, Dc, October. <https://www.elibrary.imf.org/display/book/9781484308394/9781484308394.xml>
- Keynes, J. M. (1936). *The General Theory of Employment, Interest, and Money*. John Maynard Keynes.
- Meriküll, J., & Room, T. (2020). Stress tests of the household sector using microdata from survey and administrative sources. *International Journal of Central Banking*, 16, No. 2, pp. 203 – 248, March.
- Messner, T., & Zavadil, T. (2015). Are Indebted Households Poorer? Evidence from Slovakia. [NBS Working and Discussion Paper No. 2]. Bratislava: National Bank of Slovakia. https://nbs.sk/_img/documents/publik/wp_2_2015_zavadil_messner_indebted_households_slovakia.pdf

- Mian, A., Sufo, A., & Verner, E. (2017). Household debt and business cycles worldwide. *The Quarterly Journal of Economics*, 132, No. 4, pp. 1755 - 1817.
- Minsky, H. P. (1992). The Financial Instability Hypothesis. [The Jerome Levy Economics Institute Working Paper No. 74]. <https://ssrn.com/abstract=161024>
- Modigliani, F., & Brumberg, R. (1954). Utility Analysis and the Consumption Function: An Interpretation of Cross-Section Data. In: K. K. (Ed.): *Post Keynesian Economics*. New Brunswick, NJ: Rutgers University Press. pp. 388-436.
- National Bank of Slovakia. (2019). Financial Stability Report, November 2019. https://nbs.sk/_img/documents/zaklnbs/publik/sfs/fsr_112019.pdf
- Richtárik, Š. (2017). Vplyv nízkych úrokových sadzieb na finančnú stabilitu na Slovensku. *Biatec*, 25, No. 3, pp. 2 – 6.
- Scott, S. J., & Freese, J. (2014). *Regression Models for Categorical Dependent Variables Using Stata*, Third Edition. College Station: Stata Press. ISBN 1-59718-111-0.
- Yilmazer, T., & Devaney, S. A. (2005): Household debt over the life cycle. *Financial Services Review*, 14, No. 4, pp. 285 – 304.

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COMPARISON OF THE PERCEPTION OF THE EU IN LITHUANIA AND SLOVAKIA

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Abstract: The purpose of the article is to compare the perception of the European Union in Lithuania and Slovakia and to identify how public opinion affects the EU's ability to form a unified foreign policy. The methods used are comparative analysis, interpretation of Eurobarometer and GLOBSEC Trendsdata, as well as analysis of political discourse and disinformation narratives. The results show that in Lithuania, a strong consensus based on the security narrative and an institutionalized fight against disinformation strengthens support for sanctions and EU defense integration. In Slovakia, however, societal polarization, energy dependence and elite fragmentation lead to conditional support for sanctions policies and more limited engagement. The main conclusion is that differences in the public opinion of small states become a structural factor of unity or its vulnerability within the CFSP. The article contributes to the operationalization of the concept of "unity of EU foreign policy" and emphasizes the need to consider national contexts when forming pan-European decisions.

Keywords: public opinion, Lithuania, Slovakia, European Union, foreign policy

JEL: F51, F53, F55, Z18

Introduction

The question of how European integration is perceived within individual member states has become increasingly important amid the EU's evolving geopolitical and security environment. Public trust and the narratives constructed by national elites directly influence the Union's ability to maintain internal cohesion and implement a consistent Common Foreign and Security Policy (CFSP). This article offers a comparative analysis of the perception of the European Union in Lithuania and Slovakia - two small post-socialist states that joined the EU simultaneously in 2004 yet have developed strikingly different public attitudes toward it. By examining historical experiences, political discourse, and the role of disinformation, the study seeks to explain why Lithuania maintains one of the highest levels of confidence in the EU, while Slovakia faces growing polarization and skepticism. Understanding these dynamics provides deeper insight into how national contexts shape the resilience or fragility of EU unity in times of crisis.

1 Historical experience and its impact on the perception of the European Union in Lithuania and Slovakia

The history of the post-socialist countries of Central and Eastern Europe shows that attitudes towards the European Union are formed not only based on current political and economic circumstances, but also largely under the influence of historical memory and collective experience. Lithuania and Slovakia are clear examples of how the past can structure the perception of integration processes in different ways. Even though both countries joined the European Union in the same year - 2004 - the motivations, public expectations and the symbolic significance of this step differed significantly.

1.1 Lithuanian historical experience and formation of European identity

Lithuania's experience in the second half of the twentieth century largely determined its attitude towards European integration. The period of Soviet occupation, which began in 1940, was accompanied by large-scale deportations, the destruction of national institutions and cultural assimilation. In the three major waves of deportations alone—in 1941, 1948, and 1949 – more than 130,000 people were removed from Lithuania (Budrytė, 2005). These traumatic events are firmly fixed in the collective memory and formed the idea that independence can be lost suddenly and therefore requires external guarantees.

The formation of a new political course became possible in the late 1980s, when the conditions of "glasnost and perestroika" created a new public sphere (Britannica, Sąjūdis and the Lithuanian independence movement). It was then, on June 3, 1988, that the initiative group of the Sąjūdis movement was established at the Lithuanian Academy of Sciences (Miniotaitė, ICNC, 2002). The original agenda combined environmental requirements, protection of the Lithuanian language, and democratization (Hackmann, 2020). By the beginning of 1989, the movement openly declared the need to restore sovereignty. Mass rallies in the summer and autumn of 1988 gathered tens and hundreds of thousands of participants. The culmination of the mobilization was the Baltic Chain on August 23, 1989—a human chain from Vilnius through Riga to Tallinn with a length of about 600-675 km; according to organizers and media estimates, about two million people participated in the action (The Baltic Way). The event was timed to coincide with the fiftieth anniversary of the Molotov-Ribbentrop Pact and became a program declaration of the European orientation of Baltic societies.

The struggle for independence culminated in the events of January 1991. On the night of January 12-13, Soviet troops attempted to forcibly suppress Lithuania's course for independence: forces moved to the Vilnius TV tower and TV center, resulting in 14 deaths and hundreds of injuries (Lithuanian authorities; memorial and official reports). These events, called the "January tragedy", became the moment of final mobilization of society.

After the failure of the attempt of violent crackdown, the vector of foreign policy was finally formed. Lithuanian political elites increasingly linked the country's future to Euro-Atlantic structures. In August 1993, the last Russian troops left the territory of the republic – Lithuania became the first country of the former USSR where this happened. As Thomas Janeliūnas points out, it was the combination of the memory of Soviet repression and the experience of January 1991 that made the EU-NATO course not a matter of discussion, but a strategic axiom (Janeliūnas, 2007). Thus, the idea that only membership in Western unions can guarantee the preservation of sovereignty has become firmly established in the public consciousness.

The next stage of Lithuania's journey to Europe was no longer associated with street mobilization, but with a painstaking institutional process. In December 1995, the Government officially applied for membership in the European Union (European Commission, 2003). These steps were perceived in society not as a technical bureaucratic procedure, but as a continuation of the struggle for the final consolidation of independence. When the referendum was held in May 2003, the results were convincing: with a turnout of 63.37%, 91.07% of the participants voted to join (Central Electoral Commission of Lithuania, 2003). This consolidation showed that the European choice was not a matter of partisan disputes, but an expression of national consensus. A year later, on May 1, 2004, Lithuania officially joined the European Union together with nine other Central and Eastern European countries, which finally cemented its place in the united Europe. That is why even skeptical groups accepted integration as a symbolic

choice, confirming a break with the Soviet past and a return to the European political and cultural family.

1.2 Historical background of the EU perception in Slovakia

The historical experience of Slovakia on its path to the European Union differs significantly from that of Lithuania and is more closely related to the political processes of the 1990s. After the peaceful dissolution of Czechoslovakia on January 1, 1993, the new state found itself faced with the need to build its own foreign policy strategy (Innes, 2001). In the first years after independence, Slovakia's foreign policy formally coincided with the aspirations of its neighbors from the Visegrad Group-the Czech Republic, Poland and Hungary. As early as 1993, Slovakia joined the Council of Europe and began association negotiations with the European Communities (Henderson, 2002). In 1994, the European Association Agreement was signed, which entered into force in 1995, which legally established the country's orientation towards integration (European Commission, 1995). However, internal political processes seriously complicated the implementation of these goals. The political scene remained fragmented, institutions weak, and the government of Vladimír Mečiar, which came to power in 1993, gradually shifted the emphasis from liberal reforms to a centralized style of governance. On the one hand, Slovak elites declared that their course towards Europe remained unchanged; on the other hand, increasingly frequent conflicts between the government and President Michal Kováč, pressure on the media and the opposition undermined Brussels' confidence in Slovakia's ability to meet democratic criteria (Pridham, 2002). It was during this period that the contradiction between the declared European orientation and the practice of domestic politics began to develop.

By the mid-1990s, the consequences of the domestic crisis were particularly evident on the international stage. Unlike the Czech Republic, Poland and Hungary, which were invited to join the EU in 1997, Slovakia received a negative opinion from the European Commission under the Agenda 2000 framework (European Commission, 1997). Brussels stated that the country did not meet the political criteria, primarily due to shortcomings in the functioning of democratic institutions and the rule of law. Analysts have pointed out that the authoritarian tendencies of the Mečiar government and the weakness of checks and balances were the main obstacles to integration (Pridham, 2002; Haughton, 2001). For Slovak society, this was a painful signal: European integration was no longer perceived as a formality and began to be associated with the need for a deep democratic transformation.

The key moment came in 1998, when a coalition of democratic parties led by Mikuláš Dzurinda was able to unseat the government of Vladimír Mečiar. After coming to power, the new leadership took steps aimed at reforms that could restore the EU's confidence. The European Council, at its summit in Helsinki on 10-11 December 1999, decided to open accession negotiations with Slovakia, among other applicants (European Council, 1999). This step was an important signal that the country, which is lagging behind in the standards of democracy and the rule of law, can be returned to the framework of integration processes if it meets the necessary conditions.

The final step on the Slovak road to Europe was the national referendum on membership in the European Union, held on May 16-17, 2003. According to official data, 52.15% of registered voters took part in the vote, of which 92.46% supported joining the EU (Statistical Office of the Slovak Republic, 2003; Robert Schuman Foundation, 2003). Despite concerns about a low turnout, the result was sufficient to recognize the referendum as valid. As early as May 1, 2004, Slovakia officially joined the European Union together with nine other Central and Eastern European countries, marking the largest expansion in the union's history (European Commission, 2004). This outcome symbolically consolidated the democratic and integration

course chosen after 1998, and finally brought the country to the position of a full member of the European community.

2 The role of elites, media and disinformation in shaping the EU's image

Public perception of the European Union in both Lithuania and Slovakia is not shaped solely by historical experience but also by the interaction between political elites, the media environment, and the spread of disinformation. The narratives promoted by governments, opposition actors, and information channels directly influence whether the EU is seen as a guarantor of stability or as an external constraint. This chapter examines how elite discourse and media communication have contributed to the formation of the EU's image in both countries, and how disinformation campaigns have amplified or undermined public trust in European integration.

2.1 Lithuania: Elite Consensus and Countering disinformation

After joining the European Union in 2004, Lithuania continued large-scale institutional and economic transformations aimed at adapting to the EU standards. Changes in agriculture related to the introduction of the EU Common Agricultural Policy mechanisms were particularly noticeable, which caused some dissatisfaction among farmers and rural residents (Žvaliauskas, 2006). In a broader context, integration reforms were perceived ambiguously by society: some citizens criticized them as excessively costly, but political elites interpreted them as inevitable costs accompanying the strategic course of "returning to Europe" and strengthening national security (Janeliūnas, 2019).

The financial and economic crisis of 2008-2009 was an important moment in the transformation of the public perception of the European Union in Lithuania. The economic downturn was one of the deepest in the EU: in 2009 The country's GDP shrank by 14.7% (Eurostat, 2010). This situation exacerbated the debate over the costs of integration, as some opposition parties have linked tough fiscal consolidation to the "externally imposed" European model of crisis management (Kuokštis, 2011).

Nevertheless, despite the deterioration of the macroeconomic situation, public attitudes towards the EU remained relatively stable. According to surveys, the level of confidence in the EU decreased from 65% in 2007 to 58% in 2009, but this indicator remained higher than the EU average (Eurobarometer 67, 2007; Eurobarometer 71, 2009). This indicates that the discontent of the population was mostly addressed to the national government, rather than to the European institutions.

The next major challenge for EU perception in Lithuania was the migration crisis of 2015. As part of the pan-European relocation scheme, the country committed to host 1.105 refugees (European Commission, 2015). By 2017, only 468 people had been accommodated, with a significant proportion of them soon leaving the country (EASO, 2017). The official elites, led by President Dalia Grybauskaitė, presented this decision as a manifestation of European solidarity, but the opposition and a significant part of society perceived it as being imposed by Brussels.

Empirical evidence supports the high level of skepticism at that time: according to surveys, 77% of Lithuanian citizens opposed accepting refugees in 2016 (Sutkute, 2019). At the same time, surveys show a drop in the positive image of the EU in the country from 64% in 2014 to 51% in 2016 (Eurobarometer 82, 2014; Eurobarometer 85, 2016). These changes were accompanied by increased disinformation campaigns that portrayed the EU as unable to control migration and imposing alien values in Lithuania. These narratives were regularly broadcast through pro-Russian media outlets and were documented by EUvsDisinfo (2016).

Russia's annexation of Crimea in 2014 marked a turning point in Lithuanian perception of the European Union. While social and economic issues had previously dominated public discussions, since 2014 the EU's role in ensuring security and containing external threats has become a central element of the image. Lithuanian political elites have consistently emphasized that it is EU and NATO membership that provides the country with strategic protection and strengthens its international influence (Janeliūnas, 2019).

However, in parallel with the consolidation of pro-European rhetoric, disinformation narratives have increasingly penetrated the Lithuanian information space. Russian media and affiliated resources systematically claimed that "the EU is not able to protect small states", that "sanctions destroy the Lithuanian economy more than the economies of large countries and Lithuania itself uses Russophobia for political PR" (EUvsDisinfo, 2017, 2020). The aim of these reports was to undermine confidence in European institutions and encourage Eurosceptic sentiment.

The reaction of the Lithuanian state and society was the formation of a multi-level system to counter disinformation. The Debunk.eu platform was launched in 2017 and specialized fact-checking projects have appeared in leading media fact checking (for example, Melo Detektorius on the Delfi portal), and civil networks of volunteers, known as "Lithuanian elves", have begun to actively fight Internet trolls and propaganda campaigns (Disinfo.eu, 2023). These initiatives have not only limited the spread of manipulative content but also strengthened the public perception of the EU as a defender of democratic values.

After the start of Russia's full-scale invasion of Ukraine in 2022, the importance of the EU in Lithuanian public consciousness has increased even more. Despite the rising prices and social costs caused by the sanctions, the level of support for the EU remained among the highest: according to surveys in 2022, 68% of citizens shared a positive image of the EU in Lithuania. This confirms that the discourse of security and solidarity, supported by an active anti-disinformation policy, has finally consolidated the image of the EU as a strategic guarantor of the independence and sustainability of the Lithuanian state.

Currently, the support of the European Union in Lithuania remains one of the highest in the region. According to the results of the Standard Eurobarometer 101 survey (spring 2024), 68% of Lithuanians express confidence in the EU, which is significantly higher than the EU average (European Commission, 2024). This high level reflects the persistence of pro-European sentiment in the country, despite external challenges and active disinformation campaigns.

2.2 Slovakia: Political competition and disinformation challenges

In the first years after joining the European Union, Slovak elites perceived European integration primarily as an instrument of economic modernization. The Government of Mikuláš Dzurinda and the National Bank of Slovakia actively promoted the euro project, presenting it as a symbol of market confidence and a guarantor of macroeconomic stability (Henderson, 2010).

Simultaneously, the political and media discourse began to show the first signs of tension. The first government of Robert Fico (2006-2010), formally supporting integration and the introduction of the euro, initiated the Press Act of 2008, which gave politicians an unlimited "right of reply". This move drew strong criticism from the OSCE and the European Commission, which pointed to a threat to media freedom (OSCE, 2008). An additional factor was the government's reaction to the gas crisis of January 2009, when Fico justified the need to restart the shut-down unit of the Jaslovské Bohunice V1 nuclear power plant, contrary to its obligations to the EU. These episodes revealed the duality of elite discourse: the EU was simultaneously interpreted as a guarantor of economic stability and as an external force limiting the country's sovereignty.

During the 2010s, the government of Robert Fico and his SMER-SD party played a key role in shaping the image of the EU in Slovakia. At the foreign policy level, Fico emphasized a strategic commitment to EU membership, but on the domestic stage, he actively used criticism of the "diktat of Brussels", especially in matters of migration and social policy. This rhetoric culminated in 2015, when the Slovak government filed a lawsuit in the EU Court of Justice against the system of mandatory quotas for the redistribution of refugees. Fico himself said at the time: "We will never accept the quotas imposed on us, which violate the sovereign rights of Slovakia" (Šimečka, 2017). This position found a strong response in society and was accompanied by a decline in the positive image of the EU: according to Standard Eurobarometer 85 (2016), only 44% of Slovaks rated the EU positively — one of the lowest indicators in Central Europe.

A counterbalance in the elite discourse was President Andrej Kiska (2014-2019), who consistently represented Slovakia as part of the "EU core". In 2017, he stated: "Slovakia should be at the core of the European Union, because that is where our future is decided" (Kusá, 2019). His rhetoric strengthened the position of the pro-European part of society and the liberal media. However, at the same time, disinformation narratives were actively spreading in the media space, where the EU was portrayed as a structure that "imposes migration" and "destroys national values". These narratives, captured in research by GLOBSEC and Political Capital, contributed to an increase in distrust of European institutions and increased the polarization of public perception of the EU (Bútorová & Gyárfášová, 2020).

In the early 2020s, the rhetoric of Slovak elites towards the European Union became more controversial. During the COVID-19 pandemic, the biggest criticism of the EU was expressed by radical forces, primarily the ĽSNS party, which used anti-European and anti-Western narratives. The OĽaNO movement, led by Igor Matovič, did not build a systematic Eurosceptic line, but its rhetoric was anti-elitist and criticized the "Brussels bureaucracy" in the context of the inefficiency of pan-European solutions (GLOBSEC, 2020). In contrast, President Zuzana Čaputová has consistently taken a pro-European stance, emphasizing solidarity and the rule of law as the key to overcoming crises (president.sk).

Since the start of Russia's full-scale war against Ukraine in 2022, the perception of the EU in Slovakia has become even more polarized. Čaputová and pro-European forces represented the Union as a guarantor of security and a partner in providing assistance to Ukraine. At the same time, the SMER-SD party of Robert Fico and several right-wing populist movements argued that EU sanctions "damage the Slovak economy more than Russia" (GLOBSEC Trends, 2022; 2023). These narratives were actively fueled by disinformation portals, including Hlavné správy, which remained one of the largest sources of pro-Russian disinformation until its blocking in 2022 (Návoiová & Vargová, 2023). As a result, the perception of the EU in the country turned out to be one of the most polarized in Central Europe: according to Standard Eurobarometer 101 (spring 2024), only 47% of Slovaks rated the image of the EU positively, which is significantly lower than the average (European Commission, 2024).

3 Differences in public opinion and their implications for the unity of EU foreign policy

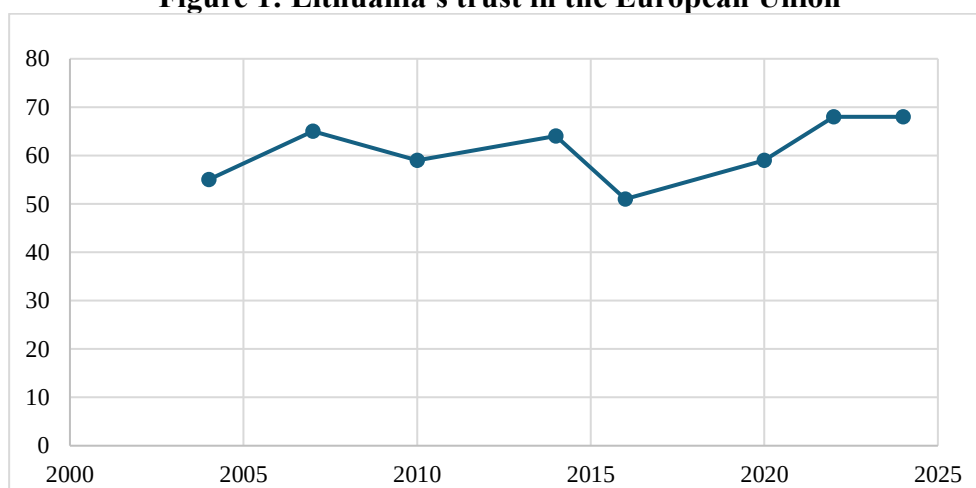
The analysis of public perception of the European Union in Lithuania and Slovakia shows not only differences in the dynamics of support for European integration, but also deeper structural factors affecting the EU's ability to act as a single foreign policy actor. While Lithuania is an example of a stable pro-European consensus, Slovakia demonstrates a model where social and elite fluctuations lead to significant polarization of the EU's perception. These differences fit within the framework of the "permissive consensus – constraining dissension" concept (Hooghe & Marks, 2009): Lithuania demonstrates the

preservation of consensus, while Slovakia demonstrates its transformation into a limiting dissension.

3.1 Lithuania: Sustainable consensus and security as a key narrative

As you can see in the graph, since 2004, public opinion in Lithuania has been characterized by relatively stable support for the EU. Even in the context of the 2008-2009 economic crisis, when the country's GDP shrank by 14.7 %, the level of confidence in the EU remained above average. The 2015 migration crisis led to a marked increase in skepticism (77 % are against hosting refugees), but this episode did not undermine the fundamental identification with the European Union. The situation changed after the annexation of Crimea and especially after Russia's full-scale invasion of Ukraine: the EU was perceived primarily as a guarantee of national security.

Figure 1: Lithuania's trust in the European Union



Source: Own elaboration based on *Standard Eurobarometer data* (European Commission, 2004–2024).

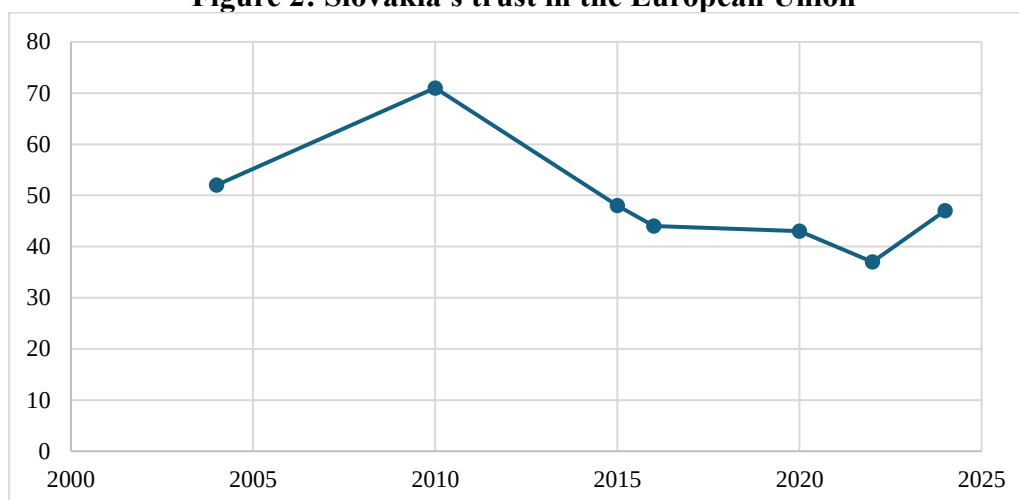
It is important to emphasize that Lithuanian political elites have demonstrated a high level of consensus on European integration for two decades. This consensus encompassed both the center-right and the center-left, and even in the face of political competition, the European choice was never called into question. This resilience has made it possible to mitigate potential fluctuations in public opinion and reinforce the perception of the EU as a strategic choice that goes beyond partisan infighting. Unlike other countries in the region, where support for integration has been subject to electoral mobilization and dividing lines, in Lithuania, European integration has become a "national axiom".

Using the concept of "permissive consensus-constraining dissension" (Hooghe & Marks, 2009), the Lithuanian case can be described as an example of preserving the "permissive consensus" characteristic of the early stages of integration in Western Europe. Unlike many other Central and Eastern European countries, where Eurosceptic sentiments came to the fore after joining the EU, the consensus in Lithuania did not transform into dissension. Moreover, external threats (Russia, energy dependence, regional security) have strengthened the EU's legitimacy in public perception. Thus, Lithuania demonstrates that even in the face of economic and migration crises, it is possible to maintain a high level of trust in integration institutions, provided that there is an elite consensus and an effective information policy.

3.2 Slovakia: Polarization and vulnerability to dissonance

In Slovakia, the lack of an elite consensus on European integration has become a key factor behind the instability of public opinion. The situation is particularly noticeable in compared with Lithuania: while there European integration has become a "national axiom", then in Slovakia it has become an arena of internal political competition.

Figure 2: Slovakia's trust in the European Union



Source: Own elaboration based on *Standard Eurobarometer data* (European Commission, 2004–2024).

You can see in the graph that in the 2000s, the EU was associated with modernization, but since the mid-2010s, it has become an object of political instrumentalization. Fico's governments have used criticism of the "Brussels diktat" to mobilize the electorate, while Presidents Kiska a Čaputová have sought to reinforce a pro-European identity. This lack of elite consensus has led to the fact that each crisis (especially the migration crisis) increased distrust, and the level of positive perception of the EU has fell to one of the lowest in the region.

Information vulnerability was also a key factor. Disinformation portals have reinforced the image of the EU as a source of threats to national sovereignty. Thus, in terms of the concept of "constraining dissension" (Hooghe & Marks, 2009), Slovakia provides a classic example of how public doubts and elite polarization limit the room for maneuver of national governments at the European level. While in Lithuania external threats have strengthened the consensus, in Slovakia internal conflicts have turned European integration into a factor of political division. This means that the country's position in the EU becomes less predictable, and its ability to support unified EU foreign policy decisions becomes structurally limited.

However, it should be emphasized that this ambivalence is not a "weakness" of Slovakia but reflects objective structural conditions. For example, high energy dependence on Russian gas and oil supplies makes sanctions a "double-edged sword": support for EU collective measures is associated with significant socio-economic costs for Slovak society. In addition, Slovakia's geopolitical position and vulnerability to external disinformation campaigns pose particular challenge for elite discourse. Regular meetings of Slovak leaders with the Russian leadership are also explained by an attempt to minimize economic risks, and not by abandoning the European orientation.

Thus, the differences between Lithuania and Slovakia illustrate the range of public perception of the EU in Central Europe. While integration has become an existential axiom in Lithuania, in Slovakia it remains a matter of finding a balance between the demands of European solidarity and objective socio-economic challenges. In this sense, the Slovak case should not be interpreted as a challenge to EU unity, but as a reminder that the formation

of a common foreign policy requires considering the diversity of internal conditions and constraints.

Conclusion

A comparative analysis of Lithuania and Slovakia shows how the historical memory, strategies of political elites, and peculiarities of the information environment shape the perception of the European Union in small states of Central and Eastern Europe. First, the Lithuanian case demonstrates that a strong elite consensus, supplemented by institutionalized mechanisms to counter disinformation, can turn European integration into a strategic axiom of national security. By contrast, the Slovak experience illustrates that the elites fragmentation, socio-economic vulnerabilities, and a polarized media space transform integration into a subject of internal political competition and doubt.

These different trajectories point to an important structural conclusion: the unity of the EU's Common Foreign and Security Policy (CFSP) cannot be taken for granted, but is constantly being redefined in the interaction of national contexts and external crises. The stability of the consensus in Lithuania and its fragility in Slovakia demonstrate the dual role of small states: they can act as both stability factors and potential sources of blocking decisions within the EU.

From a theoretical point of view, the considered cases allow us to state that the concepts of "permissive consensus" and "limiting dissension" are not linear stages but can coexist in peripheral EU states. This opens prospects for further research on how external threats, economic interdependence, and disinformation campaigns alter the balance between consensus and dissent in other member States.

Finally, the results of the study raise the question of practical implications. Strengthening resilience to disinformation, building a cross-party consensus on EU membership, and recognizing the socio-economic costs of integration are challenges not only at the national level, but also at the pan-European level. Only by taking these asymmetries into account will the EU be able to maintain confidence in its foreign policy and maintain the principle of solidarity in times of crisis.

References:

- Britannica. (n.d.). *Lithuania: Independence restored*. *Encyclopaedia Britannica*. Retrieved September 21, 2025, from <https://www.britannica.com/place/Lithuania/Independence-restored>
- Budrytė, D. (2005). *Taming nationalism? Political community building in the post-Soviet Baltic States*. Ashgate. <https://archive.org/details/tamingnationalis0000budr>
- Bútorová, Z., & Gyárfášová, O. (2020). *GLOBSEC Trends 2020: Central Europe, Eastern Europe and Western Balkans at the Crossroads*. GLOBSEC Policy Institute. https://www.globsec.org/sites/default/files/2020-12/GLOBSEC-Trends-2020_print-version.pdf
- Central Electoral Commission of Lithuania. (2003). *Referendum on Lithuania's EU membership(10–11May2003): Results*. https://www.vrk.lt/statiniai/puslapiai/rinkimai/2003/referendumas/rezultatai/rez_e_16.htm
- Debunk.org. (2023). *Code of Practice on Disinformation: Report of Debunk.org, January–July 2023*. <https://www.disinfocode.eu/reports/download/8>
- Disinfo.eu. (2023). *Disinformation landscape in Lithuania*. *European Digital Media Observatory*. <https://www.disinfo.eu/publications/disinformation-landscape-inlithuania>
- European Commission. (1997). *Agenda 2000 – Commission opinion on Slovakia's application for membership of the European Union (DOC/97/6)*. https://ec.europa.eu/commission/presscorner/api/files/document/print/en/doc_97_6/DOC_97_6_EN.pdf

- European Commission. (2003). *Comprehensive monitoring report on Lithuania's preparations for membership (SEC (2003) 1204)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52003SC1204>
- European Commission. (2003). *Comprehensive monitoring report on Slovakia's preparations for membership (SEC (2003) 1209)*. https://enlargement.ec.europa.eu/document/download/dfa61ea1-484f-4ec1-bba5-477a774c1b36_en
- European Commission. (2004). *The 2004 enlargement of the European Union: Ten new members join on 1 May 2004*. Brussels: European Commission.
- European Commission. (2015). *A European agenda on migration (COM (2015) 240 final)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52015DC0240>
- European Commission. (2024). *Standard Eurobarometer 101: Public opinion in the European Union (Spring 2024)*. <https://europa.eu/eurobarometer>
- European Council. (1999). *Conclusions of the Helsinki European Council (10–11 December 1999)*. <https://www.consilium.europa.eu/en/european-council/conclusions/>
- Eurostat. (2010). *National accounts and GDP – Lithuania*. <https://ec.europa.eu/eurostat>
- EUvsDisinfo. (2016–2020). *Disinformation cases: Lithuania. European External Action Service*. <https://euvsdisinfo.eu>
- GLOBSEC. (2022). *GLOBSEC Trends 2022: Central & Eastern Europe one year after invasion*. GLOBSEC Policy Institute. <https://www.globsec.org/what-we-do/publications/globsec-trends-2022>
- GLOBSEC. (2023). *GLOBSEC Trends 2023: Central & Eastern Europe under the shadow of war*. GLOBSEC Policy Institute. <https://www.globsec.org/what-wedo/publications/globsec-trends-2023>
- Hackmann, J. (2020). Baltic national movements, 1986–1992: Origins, trajectories, agendas. *Studies on National Movements*, 6(1), 26. <https://openjournals.ugent.be/snm/article/id/85334/>
- Haughton, T. (2001). Hocus pocus: The European Union and the transformation of Slovak politics. *Journal of Common Market Studies*, 39(5), 723–739. <https://onlinelibrary.wiley.com/10.1111/1468-5965.00331>
- Henderson, K. (2010). *The Slovak Republic: Europe's new heart?* Routledge.
- Hooghe, L., & Marks, G. (2009). A postfunctionalist theory of European integration: From permissive consensus to constraining dissensus. *British Journal of Political Science*, 39(1), 1–23. <https://www.cambridge.org/core/journals/british-journal-of-political-science/article/abs/postfunctionalist-theory-of-european-integration-from-permissive-consensus-to-constraining-dissensus/60EA0C58491C06327A235761B08878D6>
- Innes, A. (2001). *Czechoslovakia: The short goodbye*. Yale University Press.
- Janeliūnas, T. (2020). *Foreign policy analysis of a Baltic State: Lithuania and the "Grybauskaitė doctrine"*. Routledge.
- Kuokštis, V. (2011). *Lithuania's response to the financial crisis: Austerity and internal devaluation (CASE Network Studies and Analyses No. 424)*. Center for Social and Economic Research (CASE).
- Kusá, D. (2019). Slovakia's European choice in the speeches of President Andrej Kiska. *Slovak Journal of Political Sciences*, 19(1), 52–68. <https://sjps.fsvucm.sk/index.php/sjps/article/view/93>
- Miniotaitė, G. (2002). *Nonviolent resistance in Lithuania: A story of peaceful liberation (Monograph No. 8)*. Albert Einstein Institution / ICNC. https://www.nonviolent-conflict.org/wp-content/uploads/2021/03/AEI_Monograph_8.pdf
- Návojevová, M., & Vargová, B. (2023). The role of disinformation portals in Slovakia: Case of Hlavné správy. *Communication Today*, 14(2), 34–49.

- OSCE. (2008). *OSCE Representative on Freedom of the Media: Review of the Slovak Draft Press Act*. Organization for Security and Co-operation in Europe. <https://www.osce.org/fom/49454>
- Pridham, G. (2002). EU enlargement and consolidating democracy in post-communist states: Formality and reality. *Journal of Common Market Studies*, 40(5), 953–973. <https://onlinelibrary.wiley.com/doi/10.1111/1468-5965.00404>
- Robert Schuman Foundation. (2003). *Referendum on Slovakia's accession to the European Union (16–17 May 2003): European Elections Monitor*. <https://www.robert-schuman.eu/en/monitor/191>
- Statistical Office of the Slovak Republic. (2003). *Referendum on EU membership (16–17 May 2003): Results*. https://volby.statistics.sk/ref/ref2003/webdata/home_a.htm
- The Baltic Way. (n.d.). *About / History*. *Latvian National Commission for UNESCO*. Retrieved September 21, 2025, from <https://thebalticway.eu/en/about/history>

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USE OF GREEN HYDROGEN IN AGRICULTURE. PRODUCTION IN AUSTRALIA¹

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Abstract: Energy transformation has become an urgent challenge of the 21st century, where green hydrogen is gaining importance as we gradually move away from fossil fuels. Green hydrogen is a flexible and clean energy carrier that allows energy to be stored and transported over long distances, overcoming the limitations of traditional electricity grids. As a result, this item is becoming an important global factor that can influence dependencies between countries. The aim of the study is to highlight the importance of green hydrogen in agriculture, as well as its future and the challenges associated with its production. The article also aims to describe Australia's participation in the development of hydrogen energy, describe its main objectives and long-term visions. The results show that Australia is an active player on the global stage in green hydrogen production because of local support and regulations.

Keywords: Green Hydrogen, Australia, production, agriculture, CO₂

JEL: Q20, Q42

Introduction

Green hydrogen is at the center of discussions on global energy transformation in many parts of the world. Agriculture, including livestock production, is a significant source of environmental burden, as it produces approximately one-third of the CO₂ emissions. The ever-increasing demand for food, combined with deepening globalization, requires the active use of energy resources. In this context, renewable energy sources appear to be a new alternative and a way to contribute to the diversification of the energy mix and reduce dependence on fossil fuels. The agriculture sector must therefore be sustainable in order to meet current and future nutritional needs with an emphasis on environmental stability (Maganza, 2023). As stated by Herco Pollet Water Group, green hydrogen is produced using clean water (H₂O) that is pre-treated in special equipment and then split into hydrogen and oxygen molecules by electrolysis. The energy required for this process is supplied by wind and solar energy (Herco Pollet Water Group, 2025). This production method eliminates greenhouse gas emissions, making hydrogen "green" and significantly different from so-called "gray" or "black" hydrogen. The global hydrogen trade is expected to reach approximately \$30 billion by 2030. This is a significant figure, but still relatively small given that greenhouse gas emissions continue to grow at an alarming rate (Hirachand, 2024).

In the Australian context, the development of green hydrogen is strategically important. The country has extensive renewable energy resources, political support and a clear regulatory framework to support hydrogen projects. Prerequisites for the development of green hydrogen include the availability of cheap renewable energy, investment in infrastructure, technological innovation in electrolysis and effective collaboration between government, research institutions and the private sector. Based on these prerequisites, this article asks the research question: "What impact can the integration of green hydrogen into agricultural systems have on reducing

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carbon footprints in the context of climate challenges and what are the prerequisites for its development in Australia?”.

To address the research question, the article will primarily focus on the role of green hydrogen in agriculture. We will attempt to describe the benefits of using green hydrogen and its impacts on individual production processes within agricultural production. At the same time, the prerequisites for the development of green hydrogen in Australia, its geographical distribution and local initiatives to support technological development are examined. To achieve its objectives, the article uses a systematic analysis of strategic documents in the field of energy transformation, primarily Australian sources, such as the Australian Government, the Department of Climate Change, Energy, Environment and Water Resources and others.

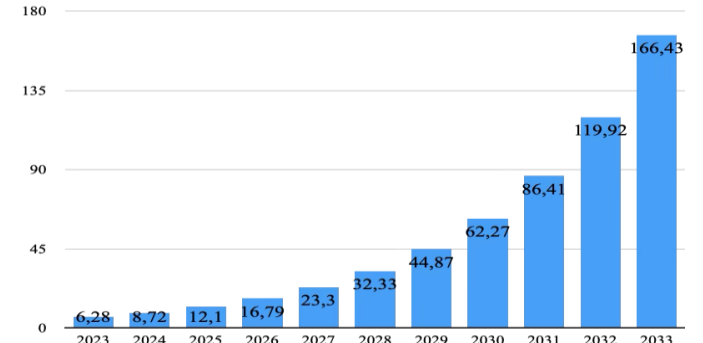
1 Use of green hydrogen in agriculture

Population growth, especially in developing countries, is leading to a steady increase in demand for agricultural commodities. However, crop and livestock production is characterized by a high degree of volatility in response to climate change and environmental impacts, which directly affects the availability and distribution of these resources. The multifunctional nature of the primary sector contributes significantly to maintaining rural settlement and social inclusion. Stability in the agricultural sector therefore has a fundamental impact on national security and geopolitical balance, as food shortages can often lead to conflict (Hirachand, 2024).

According to Stargate Hydrogen, green hydrogen is an important technological tool for transforming the agricultural sector. Its importance lies in its ability to provide clean energy input into processes that have so far been largely dependent on fossil fuels or demanding chemical components. The integration of green hydrogen into agriculture represents a new stage in the process of innovatively improving economic practices with minimal impact on the environment, including water management and biodiversity. The importance of green hydrogen lies in several aspects that go beyond its traditional use.

Analysis of the global green hydrogen market shows dynamic and exponential growth. In 2023, its value reached 6.28 billion USD. Projections for 2030 indicate an increase to 62.27 billion USD and up to 167 billion USD by 2033. This trend indicates an extraordinary potential for economic and technological development, accompanied by increasing demand for clean energy and pressures to reduce the carbon footprint. The rapid growth of the market is supported by several factors: political commitments to reduce greenhouse gas emissions, investments in renewable energy sources, technological advances in electrolyzers and expanding hydrogen application options in industry, transport and agriculture. These assumptions create favorable conditions for its development and show that green hydrogen can play a key role in strengthening global competitiveness.

Figure 1: Green hydrogen market size



Source: Own processing based on Vision Research Report (2025)

Fertilizers. Fertilizers are a fundamental element of the food system, as they directly influence agricultural productivity by adding nutrients to the soil. As Babaei mentioned, more than 70% of the ammonia produced worldwide is used in fertilizer production, making it essential for modern agriculture (Babaei et al., 2025). Current production methods, mainly for nitrogen fertilizers, remain energy intensive. Decarbonizing ammonia production is key to achieving global climate goals in agriculture. The use of hydrogen in ammonia synthesis is currently based on the Haber-Bosch process (gray hydrogen from fossil fuels), which has significant environmental consequences. For every ton of ammonia produced using traditional methods, approximately 1.6 tons of CO₂ are released. In this context, greater attention is therefore being paid to innovations based on green hydrogen and Power-To-X technologies (Muhsen & Hamida & Tarawneh, 2025). The transition to green hydrogen will enable significant CO₂ reductions in conventional methods, making agriculture more sustainable.

Technical security. Currently, agricultural machinery runs on diesel or gasoline engines, which contribute to increased CO₂ emissions. With the expansion of agricultural practices, there is increasing pressure for sustainable practices and clean solutions during production. Roldán explains that hydrogen-powered vehicles are much quieter, which improves working conditions for farmers and reduces noise limits in the field. At the same time, these systems can be economically advantageous as they do not require frequent maintenance and repairs (Roldán, 2025). Although electric tractors are becoming increasingly common, their limited range and long charging times are significant barriers to their widespread adoption, especially on farms with large areas of land (Minnuo, 2025). Looking ahead, Stargate Hydrogen anticipates that hydrogen will be able to replace fossil fuels in agricultural machinery such as tractors, combine harvesters, and irrigation pumps, which will reduce operating costs.

Plant protection. Research into the application of hydrogen water in plant physiology is yielding new insights into its potential in horticulture. Experimental studies by Jiqing, Zhouheng, and Xuejun have shown that treating plants with hydrogen water leads to a shift in phenological manifestations. In addition, the importance of hydrogen water in increasing plant resistance to stress that could be caused by drought or other climatic changes has been noted. Hydrogen water contributes to strengthening the resistance and tolerance of genes in many plants, including rice, roses, and alfalfa. Practical applications, such as irrigating field crops with hydrogen water, therefore show promise for sustainable development and stabilization of agricultural production (Jiqing & Zhouheng & Xuejun, 2014). Hydrogen-rich water (HRW) was used for scientific purposes in assessing the effectiveness of green hydrogen in agriculture. The study showed that HRW treatment could beneficially affect the incidence of rot, reducing lipid peroxidation by increasing SOD activity and free radical scavenging activity. The results of the analysis are conclusive - HRW treatment could delay ripening and affect fruit aging during storage by regulating antioxidant defense (Alwazeer, 2024).

Water. The availability of water resources is a major challenge of the 21st century and a significant limitation to sustainable development, with many parts of the world facing acute freshwater shortages. In the context of green hydrogen production, which requires water electrolysis, consumption is expected to be relatively marginal, as the study indicates. (Ramirez et al., 2023) However, it is necessary to take into account the strategy of diversifying water sources and the selection of locations for project implementation. According to the authors, the electrolysis process, which requires highly purified water, does not have to be carried out exclusively with fresh water. Currently, there are modern technologies that enable the transformation and purification of seawater, municipal wastewater, or industrial waste

to parameters suitable to produce green hydrogen. Fuel cells also function like batteries, but they do not discharge or need recharging. Hydrogen fuel cells can provide reliable energy for desalination plants that convert seawater into drinking water. It is an alternative route that would not jeopardize the food security of countries (Stargate Hydrogen, 2024). These processes are used in the chemical and energy industries, demonstrating the readiness to integrate green hydrogen into the global economy.

Green hydrogen is coming to the fore as a modern element in sustainable agricultural practices. Its integration into agriculture offers an opportunity to significantly reduce the negative impact caused by CO₂ production while maintaining ecological stability. Diversifying energy sources and eliminating potential geopolitical risks and conflicts related to energy appears to be an alternative way to use green hydrogen, not only in agriculture but also in other sectors of the economy. This creates the conditions for expanded cooperation between countries, export contacts, and strategic partnerships that can significantly increase state revenues and contribute to strengthening the position of the entity as a key partner. Such cooperation promotes the inflow of investment into strategic manufacturing sectors, supporting training and technology transfer. As VISUNA points out, with governments transitioning to a low-carbon economy, a sharp increase in demand for green hydrogen technologies and infrastructure is expected (Visuna, 2025).

2 Green Hydrogen Production in Australia

The energy system is undergoing a gradual but fundamental transformation, driven primarily by the need to reduce greenhouse gases. This transformation did not arise in isolation but stems from the interconnectedness of the global system and the reciprocal relationships not only between individual countries, but also between companies and institutions. Every measure, such as investments in renewable energy sources or support for hydrogen, affects other countries, and these consequences have an impact on internal stability or the balance of power on the international stage. In the context of complex cooperation, the transition to green technologies is the result not only of environmental considerations, but also of global political and technological interconnections that force states to cooperate and seek new solutions. The most cost-effective production of green hydrogen can be achieved in regions where there is an optimal combination of abundant renewable resources and geographical conditions.

Figure 2: Global solar energy potential

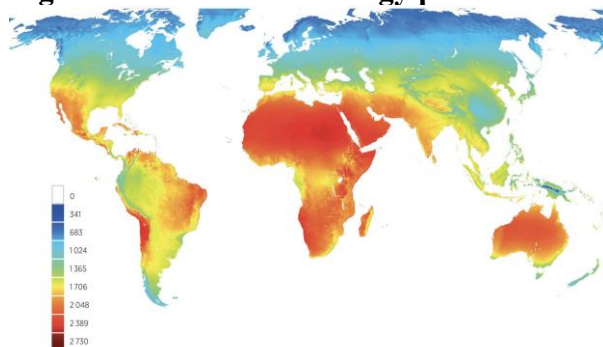
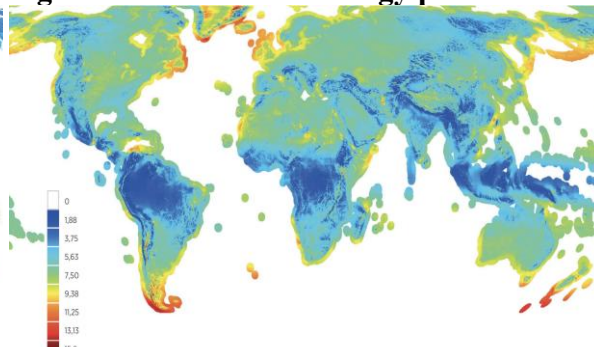


Figure 3: Global wind energy potential



Source: IRENA (2022)

Note: pic. 1: average annual global horizontal radiation (kWh/m²),
2: average annual wind speed (m/s) at a height of 100 m.

Based on statements made by the Australian government, it can be said that the country has ambitious plans in the field of green hydrogen production. As Minister for Climate Change and Energy Chris Bowen noted: „*Australia's regions have the resources, technical skills*

and track record with international partners to seize this opportunity and become a global hydrogen powerhouse, we need to make sure we don't get left behind as the rest of the world moves.” (The Hon Chris Bowen MP. Minister for Climate Change and Energy, 2023). This strategic goal is based on a combination of geographical, energy, and economic factors that give the country a comparative advantage in hydrogen production. According to the Australian Government, 35% of total electricity production came from renewable energy sources, mainly solar (16%) and wind (12%) in 2023. Solar and wind energy have been the main drivers behind the more than doubling of renewable energy production over the past decade. Energy production from small solar power plants increased by 17% in 2023 (Australian Energy Statistics, 2024).

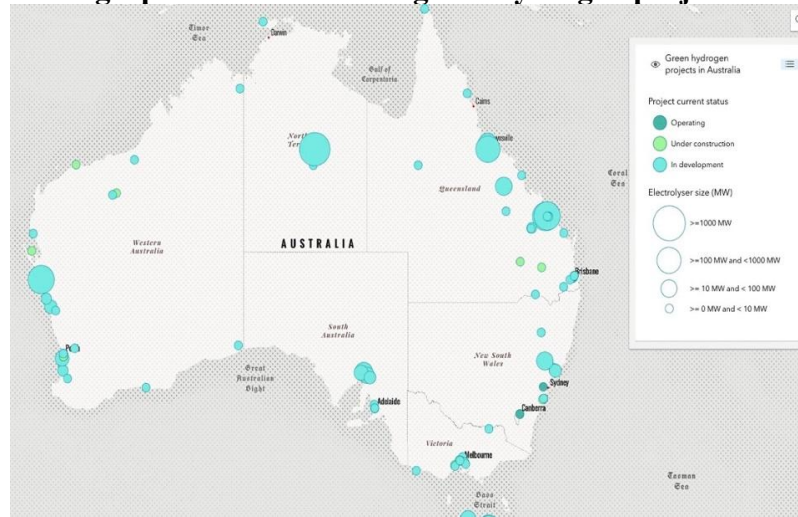
Table 1: Energy production by sources in Australia in 2024

	Value	Units	Year
Total energy supply, Australia			
Coal and coal products	1391769	TJ	2024
Natural gas	1494251	TJ	2024
Oil and oil products	1973540	TJ	2024
Solar, wind and other renewables	311023	TJ	2024
Biofuels and waste	187666	TJ	2024
Hydropower	50641	TJ	2024

Source: Own processing based on IEA (2025)

According to the Australian Government, Department of Climate Change, Energy, Environment and Water, Australia has set a vision to become a world leader in a clean, innovative and competitive hydrogen industry. Australia currently has over 100 green hydrogen projects, with a project value estimated at between A\$230 billion and A\$300 billion, making it one of the leaders in this field (The Honourable Chris Bowen, MP, Minister for Climate Change and Energy, 2022). It is also estimated that Australian hydrogen could prevent greenhouse gas emissions of 98-186 million tonnes of CO₂ per year by 2050 (Green Hydrogen Organisation, 2025).

Figure 4: Geographic distribution of green hydrogen projects in Australia



Source: Own processing based on: <https://greenhydrogenprojectaustralia.surge.sh/>

The Green Hydrogen Organization reports on projects adopted by the Australian government to achieve its 2025 targets. The key strategic document is the National Hydrogen Strategy (2019), which sets out framework targets, support for innovation, and export channels. A revision of the national strategy was published in September 2024. It set four goals, which are supported by 34 measures. The goals are as follows:

- A) Ensure the competitiveness of Australian hydrogen on the world stage,
- B) Identify and support the most promising sectors of demand for hydrogen,
- C) Raise public awareness of the benefits of hydrogen,
- D) Establish trade and support partnerships with hydrogen (Green Hydrogen Organisation, 2025).

However, it should be emphasized that the National Hydrogen Strategy is not a single tool or a single framework project but rather provides a basic vision and direction. In practice, several projects, programs, and legislative measures are being developed to create a comprehensive support ecosystem for the development of the hydrogen economy. For the purposes of this study, the following table systematically documents key green hydrogen projects in Australia, broken down by their stage of implementation (in preparation, implemented or planned) and supplemented with data on planned investments. This structured overview serves as an analytical basis for comparing the size, regional distribution and financial scope of individual initiatives and allows for the identification of patterns and priorities in the development of the hydrogen economy. In the context of the research methodology, the table represents a standardized tool for the systematic categorization of projects, which supports both quantitative and qualitative analysis of the current status and trends of green hydrogen development in Australia. Green hydrogen projects were identified based on publicly available sources, including official government reports, energy agency reports, and professional publications. Projects were categorized by country and project objective. The collected data was processed into a clear table that allows visualization and comparison of projects according to their importance, scale of investment, and regional distribution.

Table 2: Selected Australian hydrogen projects

STATE	Hydrogen Specific Support	Hydrogen Eligible Support	Project	Main Goal
ACT	1 138 695	17 000 000	Hydrogen Test Facility	The main goal is to test how “green hydrogen” interacts with the existing gas infrastructure. The project was carried out in several phases. Tests showed that the existing plastic gas network (polyethylene / nylon) is compatible with 100% hydrogen i.e. no leaks were detected in the tested replica under voltage. Appliance tests showed that common kitchen or heating devices can also operate with hydrogen or a mixture of hydrogen and natural gas.
NSW	3 264 100 000	1 300 000 000	Hunter Valley Hydrogen Hub	Aims to provide a safe, reliable and commercial hydrogen supply chain in the industrial and port area of Newcastle. The proposed facility will produce renewable hydrogen through electrolysis using recycled water. It will gradually replace natural gas in the production of low-carbon ammonia and ammonium nitrate for agricultural businesses in New South Wales.
NT	0	57 000 000	Darwin H ₂ Hub	It is an export-planned large-scale green hydrogen power plant + hydrogen production plant, designed to use solar energy + batteries + electrolyzer, and produce “green hydrogen.” The project is intended to help transform Australia towards a “net-zero” economy - replace fossil fuels, support heavy industries.
QLD	485 450 000	9 446 000 000	Goondiwindi Hydrogen	The goal is multi-level and focuses on the Production of hydrogen for local industry, agriculture and transport. The pilot project is intended to demonstrate that small community hydrogen projects are feasible outside of large industrial centers. Utilizing existing infrastructure, such as wastewater treatment plants and available water, which saves costs and reduces the need for external water sources.
SA	89 440 000	150 000 000	Hydrogen Park South Australia (HyP SA)	This is a hydrogen demonstration project by Australian Gas Networks (AGN / AGIG), with a 1.25MW electrolyzer. The aim is to verify the safety, reliability and regulatory standards for the wider deployment of hydrogen. Hydrogen is also being tested as a fuel for industry and mobility, such as vehicles, industrial processes.
TAS	280 100 000	9 700 000	Hydrogen Devonport	This is a project to produce “green” hydrogen in the area near the city of Devonport. It is being implemented by Countrywide Hydrogen Pty Ltd, which plans not only to produce hydrogen but also to provide refuelling infrastructure as part of the project. Hydrogen Devonport is part of a wider concept/programme called Hydrogen HyWay#1. The main goal is the decarbonisation of heavy road transport - the project focuses on supplying “green hydrogen” to heavy goods vehicles, which will reduce CO ₂ emissions.

				The project is considered a successful model as it shows that not only large “hubs”, but also regional / smaller communities can switch to renewable hydrogen- with available technologies (electrolyser, renewable energy) and government support.
VIC	119 400 000	2 054 900 000	Hydrogen Park Murray Valley	The project aims to demonstrate and implement a “renewable gas mix” (a blend of up to 10% by volume). By introducing hydrogen into the gas grid, the project contributes to national and regional commitments to reduce greenhouse gas emissions, diversify energy sources and increase energy security. In addition to supplying “green gas” to the existing grid, the project also pursues wider variables: the project is located next to a wastewater treatment plant, which allows the potential use of recycled water to produce hydrogen. The use of renewable hydrogen should save thousands of tonnes of CO ₂ per year. The hydrogen produced in the project has the potential to go not only into the gas grid, but also into industry or transport.
WA	193 294 000	240 750 000	Murchison Green Hydrogen Project	The funding amounts do not represent specific investments in the projects listed in the table. They are selected projects that illustrate the different areas of focus of Australian states in testing and implementing green hydrogen projects. The project aims to produce renewable hydrogen and ammonia. It is also export-oriented, as it will supply “clean fuel” to Asian countries. The project takes advantage of the advantageous combination of strong wind and sunlight typical of the location. The project is still awaiting a final investment decision (FID) and full regulatory approvals.
Total	4 432 922 695	13 275 350 000		

Source: Own processing based on Commonwealth Scientific and Industrial Research Organisation (2025)

The financial figures in the table do not reflect specific investments in individual projects. The projects were selected as examples to provide a representative overview of Australian state green hydrogen activities. The projects were selected as representative examples to illustrate the diverse initiatives of Australian states to test and implement green hydrogen technologies. This approach allows for an analysis of the diversity of approaches across the country to green hydrogen development. Direct type of state financing of all green hydrogen projects represents financial investments that directly support the development of green hydrogen. These are infrastructure construction projects, base expansion, testing, installation of filling stations or the development of the technology itself. They are targeted investments. On the other hand, Hydrogen Eligible Support represents indirect support for the green hydrogen sector. These are broader projects that are not exclusively about hydrogen but focus on clean energy. It can represent investments in energy sources, schemes that are not exclusively focused on hydrogen, or support industrial districts.

On the other hand, the development of the hydrogen economy in Australia is also supported at the local level in the form of financial incentives or comprehensive legislation that attracts investment in this sector. As reported by Baker McKenzie Resource Hub, on February 11, 2025, the Australian Parliament passed legislation introducing tax incentives, including

to produce renewable hydrogen HPTI. The aim of the support is to increase the resilience of the sector and reduce dependence on imports. The Renewable Hydrogen Production Tax Incentive (HPTI) provides a refundable tax credit of AUD 2 per kilogram of hydrogen produced, thereby supporting its production as a key element in the transition to low-carbon energy (Global Hydrogen Policy Tracker, 2025).

The Guarantee of Origin scheme was adopted in Australia through the Future Made in Australia Act 2024. This legislation, together with supporting laws, creates a legal framework for the certification of the carbon footprint of products such as green hydrogen. REGO (Renewable Electricity Guarantee of Origin) is part of this scheme and extends the existing renewable electricity certificate system, providing certainty for investors and supporting the energy transition (Baumgurtel & Riley & Clements, 2024).

According to the Australian Government, state governments will work together on clearer regulations for the hydrogen industry. Jointly adopted regulations will help develop the hydrogen industry by making regulations more consistent and understandable. Governments have committed to issuing regulatory guides that will address barriers to regulatory transparency and effective approval processes for emerging hydrogen industry applications (Australian Government. Department of Climate Change, Energy, the Environment and Water, 2025).

Conclusion

Green hydrogen is an alternative energy carrier that has the potential to become a leader in clean and sustainable energy production. The usability of green hydrogen in global agriculture is of fundamental importance in the transition to sustainable farming methods. The integration of green hydrogen into agricultural systems represents a promising tool for reducing the carbon footprint of a sector that is traditionally heavy on greenhouse gas emissions. The use of hydrogen produced from renewable sources allows replacing fossil fuels in powering agricultural machinery, powering equipment, or in fertilizer production processes, thereby directly reducing CO₂ and other greenhouse gas emissions. In addition, the integration of hydrogen solutions supports the flexibility of the energy system and potentially enables the combined use of energy, water, and nutrients within agro-energy and agro-industrial concepts, thereby strengthening the environmental sustainability of agriculture. Experimental studies have shown that the use of hydrogen water brings positive results in increasing plant resistance to stress, which is often affected by climate change.

The article defined the Australian government's main priorities and visions in the field of green hydrogen production, with Table 1 providing an overview of specific projects in this area. Australia's regional and climatic conditions, particularly its high solar intensity and the availability of wind resources, provide a suitable basis for the development of hydrogen production and its integration into agricultural systems. Overall, it can be concluded that green hydrogen has the potential to become a significant component of low-carbon agriculture, while its effective implementation requires the simultaneous development of technology, infrastructure and political-economic mechanisms. Australia's combined approach has the potential to contribute to achieving national and global climate goals while strengthening competitiveness.

Although the technological and economic aspects of green hydrogen are relatively well-researched today, the real potential for its integration into agriculture will also depend on the ability of communities and businesses to adapt to new systems. It is conceivable that decentralized models of hydrogen production and use, such as farms combining solar or wind power plants with small electrolyzers, could enable smaller agricultural entities to participate in the energy transition. This approach could also support local resilience to energy shocks, increase self-sufficiency and stimulate innovative practices within the circular economy.

References:

- Alwazeer, D., Hancock, J.T., Russell, G., Stratakos, A.Ch., Longna, L., Engin, T. & LeBaron, T.W. (2024): Molecular Hydrogen: A Sustainable Strategy for Agricultural and Food Production Challenges. *Frontiers in Food Science and Technology*. <https://www.frontiersin.org/journals/food-science-and-technology/articles/10.3389/frfst.2024.1448148/full>
- Australian Energy Statistics. (2024). *Renewables*. Australian Government. Department of Climate Change, Energy, the Environment and Water. <https://www.energy.gov.au/energy-data/australian-energy-statistics/renewables>
- Babei, R., Ting, D.SK. & Cariveau, R. (2025). Hydrogen pathways for green fertilizer production: A comparative techno-economic study of electrolysis and plasmalysis. *International Journal of Green Hydrogen*. <https://www.sciencedirect.com/science/article/pii/S0360319925045732>
- Baumgurtel, M. & Riley, M. & Clements-Markham, L. (2024). Pressing Go on Clean Energy Certification: Understanding the Future Made in Australia (Guarantee of Origin) Bill 2024. *Hamilton Locke*. <https://hamiltonlocke.com.au/pressing-go-on-clean-energy-certification-understanding-the-future-made-in-australia-guarantee-of-origin-bill-2024/>
- Benefits of Green Hydrogen: A Renewable Revolution. (2025). *VISUNA*. <https://visuna.com/benefits-of-green-hydrogen/>
- Commonwealth Scientific and Industrial Research Organisation. (2025). Industry. <https://research.csiro.au/hyresource/projects/facilities/>
- Commonwealth Scientific and Industrial Research Organisation. (2025). Hydrogen test Facility – ACT Gas Network. *Commonwealth Scientific and Industrial Research Organisation*. <https://research.csiro.au/hyresource/hydrogen-test-facility-act-gas-network/>
- Global Hydrogen Policy Tracker - Australia. Hydrogen Developments. (2025). *Baker McKenzie*. <https://resourcehub.bakermckenzie.com/en/resources/hydrogen-heat-map/asia-pacific/australia/topics/hydrogen-developments>
- Green Hydrogen - Advantages and Disadvantages. (2025). *Energy Efficiency Delivered*. <https://www.eficaa.com/green-hydrogen-advantages-anddisadvantages#:~:text=Overall%2C%20while%20green%20hydrogen%20offers,%2C%20efficiency%2C%20and%20competing%20technologies.>
- Green Hydrogen Organisation. (2025). *Australia*. <https://gh2.org/countries/australia>
- Growing Australia's hydrogen Industry. (2025). Australian Government. Department of Climate Change, Energy, the Environment and Water. <https://www.dcccew.gov.au/energy/hydrogen>
- Hirachand, K. (2024). Green Hydrogen and India – a match? *Gastech. Exhibition Conference in Bangkok, Thailand*. <https://www.gastechevent.com/press-collection/press-release/2024/july/green-hydrogen-and-india-a-match/>
- Hydrogen-Powered Tractors: The Next Big Shift in Clean Agriculture? *MINNUO*. <https://minnuoagro.com/hydrogen-powered-tractors-the-next-big-shift-in-clean-agriculture/>
- International Renewable Energy Agency. (2022). Geopolitičeskije aspekty transformaciji energetiky: vodorodnij faktor. *International Renewable Energy Agency*. https://www.irena.org/media/Files/IRENA/Agency/Publication/2022/Jan/IRENA_Geopolitics_Hydrogen_2022_RU.pdf
- International Renewable Energy Agency. (2025). *Energy mix. Australia*. International Renewable Energy Agency. <https://www.iea.org/countries/australia/energy-mix>

- Jiqing, Z. & Zhouheng, Y. & Xuejun, S. (2014). Progress in the study of biological effects of hydrogen on higher plants and its promising application in agriculture. *National Library of Medicine*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC4177722/>
- Maganza, A. (2023). Toward Sustainability: An Overview of the Use of Green Hydrogen in the Agriculture and Livestock Sector. *National Library of Medicine*. <https://pmc.ncbi.nlm.nih.gov/articles/PMC10451694/>
- Muhsen, H. & Hamida, F. & Tarawneh, R. (2025). The Potential of Green Hydrogen and Power-to-X to Decarbonize the Fertilizer Industry in Jordan. *MDPI*. <https://www.mdpi.com/2077-0472/15/6/608>
- Potential of Green Hydrogen. (2025). *Herco Pollet Water Group*. <https://hercowater.com/en/waterguide-water-technology/green-hydrogen>
- Ramirez, K. (2023). Hydrogen Reality Check: Distilling Green Hydrogen's Water Consumption. *RMI*. <https://rmi.org/hydrogen-reality-check-distilling-green-hydrogens-water-consumption/>
- Roldán, J. A. (2025). Hydrogen-Powered Tractors and Agricultural Equipment: A Green Revolution in the Field. <https://ingenieroemprendedor.com/english/blog/hydrogen-powered-tractors-and-agricultural-equipment-a-green-revolution-in-the-field/>
- Sustainable Agriculture - Green Hydrogen is a Powerful Resource for Future Farms. (2024). *Stargate Hydrogen*. <https://stargatehydrogen.com/blog/hydrogen-on-sustainable-agriculture/>
- The Hon Chris Bowen MP. Minister for Climate Change and Energy. (2023). *State of Hydrogen report Reinforces Australia's Hydrogen Powerhouse potential*. Australian Government. Department of Climate Change, Energy, the Environment and Water. Media Releases. <https://minister.dcceew.gov.au/bowen/media-releases/2022-state-hydrogen-report-reinforces-australias-green-hydrogen-powerhouse-potential>

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THE ACTIVITIES OF THE OPEC ORGANIZATION IN THE CONTEXT OF CONTEMPORARY INTERNATIONAL RELATIONS¹

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Abstract: OPEC is a central supranational organization influencing global oil prices. Its position is influenced by the ability of member countries to agree on export volumes and thus set the direction for the international oil market. This article focuses on the importance and activities of the OPEC organization, as well as the challenges it currently faces. In terms of strengths, the organization has the key ability to regulate global oil prices. On the other hand, there are differences in the interest of individual member countries, as well as the negative perception of the organization by the international community as a form of cartel.

Keywords: OPEC, Crude Oil, International Trade

JEL: F53, O13

Introduction

The energy sector and related energy security are increasingly discussed topics within the international community, also in connection with the war in Ukraine and the continuing instability in the Middle East region. Energy availability and supply chain stability are key aspects that are reflected in important indicators such as economic performance and competitiveness. The oil market is a significant part of the energy trade. It is largely limited by its supply on world markets. The Organization of Petroleum Exporting Countries (OPEC) is an association of countries that cumulatively dominate this sector in terms of the amount of oil they offer (OPEC Annual Statistical Bulletin, 2025c) and thus play a significant role in supply and influencing global price developments. In this article, we offer a comprehensive overview of the current problems and challenges facing this organization. We focus on the characteristics and development of the organization and, using SWOT analysis, we examine the strengths and weaknesses as well as the opportunities and threats that may have a fundamental impact on the future of the entire organization. The article primarily uses the method of analyzing texts and available online sources. From a research perspective, this article serves as a starting point for further in-depth research on the issue under investigation.

1 Establishment and structure of the organization

The Organization of Petroleum Exporting Countries is an international economic organization whose main task is to ensure the stability of supply chains and strengthen the position of its members in the global oil market. The coordination of its member countries' mutual procedures is particularly evident in influencing oil prices on world markets (OPEC, 2025a). At the same time, the organization abstains from political matters, as its activities are limited exclusively to adopting regulations concerning the economic field. (Roeben, 2024). OPEC was founded in 1960 at a conference in Baghdad by five founding members – Iran, Iraq,

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Kuwait, Saudi Arabia and Venezuela. Over time, other members joined the organization, and it currently coordinates the mutual policies of 12 member countries – 5 founding countries plus Libya, United Arab Emirates, Algeria, Nigeria, Equatorial Guinea, Congo and Gabon (OPEC, 2025b).

The establishment of the organization is linked to the efforts of Middle Eastern countries to limit the position of the seven major oil companies that time known as the 'Seven Sisters' (Anglo-Persian Oil, Gulf Oil, Standard Oil of California (SOCAL), Texaco, Royal Dutch Shell, Standard oil company of New Jersey and Standard Oil company of New York) in favor of oil-producing countries. OPEC's priority thus became to restore the sovereignty of countries over their natural resources and to ensure fairer revenues from oil sales for the benefit of its member countries (Ghoshal & Pradhan, 2024). The volatility of oil prices is a key factor influencing the position of exporting countries. Fluctuations in world markets were particularly pronounced in the 1970s and 1980s, caused by geopolitical changes and changes in production, especially in advanced developed economies. In recent decades, the organization's activities have been influenced by several significant events, such as armed conflicts in the Middle East, the Asian crisis, the global economic crisis of 2008, and the COVID-19 pandemic. Nevertheless, the organization still retains a key influence on the global oil market (OPEC, 2025a).

Table 1: Member States of the OPEC with the year of accession/withdrawal

<i>Country</i>	<i>Accession</i>	<i>Withdrawal</i>	<i>Country</i>	<i>Accession</i>	<i>Withdrawal</i>
Saudi Arabia	1960		UAE	1967	
Kuwait	1960		Algeria	1969	
Iran	1960		Nigeria	1971	
Iraq	1960		Ecuador	1973	1992, 2020
Venezuela	1960		Gabon	1975	1995
Qatar	1961	2019	Angola	2007	2024
Indonesia	1962	2009, 2016	Equatorial Guinea	2017	
Libya	1962		Congo	2018	

Source: OPEC. (2025b). Member Countries. <https://www.opec.org/member-countries.html>

Table 1 shows the member states along with the year when they joined and left the organization. Qatar officially ended its membership in 2019. Angola terminated its membership in 2024. Gabon withdrew from OPEC in January 1995 yet re-entered the Organization in 2016. Indonesia paused its membership in 2009, resumed it in 2016, but shortly afterward opted to suspend its participation again in November 2016. Ecuador halted its membership in 1992, returned to the organization in 2007, and later chose to leave once more in 2020 (OPEC, 2025b).

Since 2016, the Organization has also been operating on the OPEC+ platform (Li et al. 2024) bringing together OPEC member countries and non-member countries, including the Russian Federation, Brazil, Mexico and Kazakhstan (Ye et al. 2025). The aim of this expanded platform is to deepen the coordination of mutual economic activities related to oil production with other key players outside OPEC and to respond to new oil suppliers on world markets (Li et al. 2024).

1.1 Structure and mechanisms of the organization

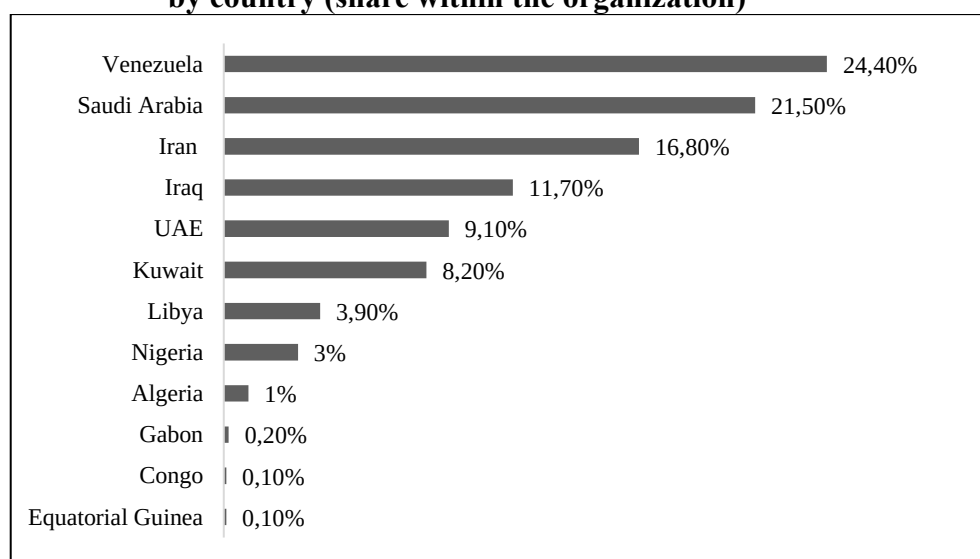
The internal structure of the organization is based on three bodies – The Conference, The Board of Governors consisting of governors from each member country, and The Secretariat as the main executive body responsible for implementing decisions adopted at The Conference (Akinrolabu & Haruna, 2021). The key body is the Conference, where representatives of individual member countries meet twice a year, whose main task is

to determine quotas for oil production. Quotas are determined on an annual basis and are based on the reserves of individual countries as well as production in previous time periods. The organization may take a decision to increase, decrease, or maintain the amount of oil production. Decisions at the Conference are taken by unanimous vote (Claes & Garavini, 2020). The organization can also influence prices on global markets not only through direct instruments for regulating global supply, but also indirectly. The mere announcement of restriction or increase in production sends a signal that can cause fluctuations on global markets (Li et al. 2024).

2 OPEC's position in the context of the global oil market

The global oil market is largely influenced by the ability of major exporters of this commodity to flexibly supply consumer markets. Currently, OPEC countries hold approximately 79,1% of all proven oil reserves (data for 2023). By comparison, the Russian Federation holds only about 5% and the United States 3% (OPEC Annual Statistical Bulletin, 2024). In terms of internal structure, the largest oil reserves are found in Venezuela, accounting for 24,4% of the organization's total reserves (data for 2024). Saudi Arabia follows with 21,5% and Iran with 16,8 %. Significant reserves are also present in other Middle Eastern countries such as Iraq (11,7%), the United Arab Emirates (9,1%) and Kuwait (8,2%) (Statista, 2025).

Figure 1: Distribution of OPEC crude oil reserves in 2024, by country (share within the organization)



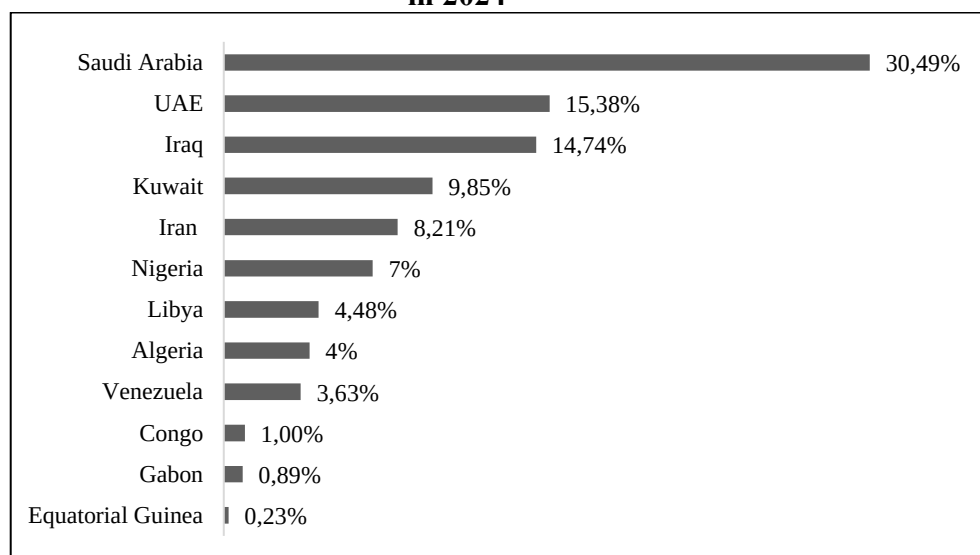
Source: Statista. (2025) Distribution of OPEC crude oil reserves in 2024, by country.
<https://www.statista.com/statistics/1370179/opeccrudeoilreservessharebymembercountry/>

The key factor in assessing the organization's impact on overall international oil trade is the level of exports of this commodity. When comparing export performance on the oil market, OPEC is currently the largest exporter and has maintained its dominant and unchanging position based on available data for the last five years. In 2024, OPEC's share of total global oil exports was 43,96% with no significant change in this figure over the recent period. A regular share of 40% gives its member countries a decisive position, particularly in terms of price setting. Stability can also be seen in terms of the significant difference in the share of total exports between OPEC and other key regions and countries such as North America, Europe and the Russian Federation (OPEC Annual Statistical Bulletin, 2025c).

Saudi Arabia is the largest exporter of crude oil and petroleum products in terms of external structure. Approximately 30,49% of the organization's total exports in 2024 came

from this country. It is followed by the United Arab Emirates with a 15,38% share and Iraq with a 14,78% share of total OPEC's exports. Venezuela, with the largest proven oil reserves, accounts for only about 3% of exports, while Equatorial Guinea has the smallest share with 0,23%. The key region is therefore the Middle East, whose exports account for more than 70% of the total volume (OPEC Annual Statistical Bulletin, 2025c).

Figure 2: Share of OPEC Members' exports of crude and petroleum products in 2024



Source: OPEC. (2025c). Annual Statistical Bulletin 2025.
<https://publications.opec.org/asb/chapter/show/139/2537>

3 Strengths and weaknesses of the organization

OPEC represents an important comprehensive platform for cooperation among oil-exporting countries. This fact is also the strongest point of this group, as its uniqueness gives its members advantage and represents the only project of its kind that fundamentally influences not only the oil market, but also the overall discussion on the global energy sector. Closely linked to its activities is its second strength, which is its ability to make decisions that lead to changes in the price of oil on world markets. The coordination of mutual policies aimed at adjusting the supply of oil on world markets can contribute not only to the stabilization of oil sales revenues, but also to the overall stabilization of international trade in this commodity by reducing price volatility (Akinrolabu & Haruna, 2021).

Despite its historical role as a major stabilizing force in global oil markets, OPEC faces several structural weaknesses that constrain its long-term effectiveness. First, OPEC's internal cohesion is undermined by divergent economic priorities and political tensions among member states, which complicate collective-decision-making and often lead to quota non-compliance (Gross 2024, Claes & Garavini 2020). Second, the organization's ability to influence global prices is increasingly challenged by the rise of non-OPEC producers – particularly U.S. shale- whose flexible production profiles reduce the impact of coordinated output adjustments (Ghoshal & Pradhan 2024). Third, OPEC economies remain highly vulnerable to external shocks due to their heavy dependence on hydrocarbon revenues, limited economic diversification, and exposure to volatility in global energy demand (Claes & Garavini, 2020). Fourth, OPEC has often been characterized as a classic oil cartel, exercising market power by coordinating production among its member states to influence global oil prices. Currently, scholars cannot agree on whether OPEC meets the conditions to be labelled a cartel, and thus a significant number of studies do not bring specific conclusions (Claes & Garavini, 2020).

4 The future of OPEC

The challenges and opportunities facing OPEC include, above all, climate change and new sources of oil production. The relationship between OPEC and global climate change mitigation efforts is characterized by structural tensions between oil-dependent development strategies and the international community's decarbonization objectives – especially in the advanced economies. As major hydrocarbon exporters, OPEC member states face significant economic exposure to declining fossil-fuel demand driven by climate policies, yet their collective production decisions continue to influence global emissions trajectories (Ghoshal & Pradhan 2024). The emergence of new, technologically enabled sources of oil – most notably U.S. shale – has further complicated OPEC's position by weakening its traditional market influence and increasing supply-side competition. Shale producers can reduce OPEC's ability to stabilize prices and have pressured member states to reassess long-term strategies (Ghoshal & Pradhan 2024). Although some OPEC members have begun articulating diversification policies and investing in low-carbon technologies (Ye et al., 2025), these initiatives remain limited relative to the scale of projected oil revenues and domestic consumption patterns. Consequently, OPEC's position in international climate negotiations often emphasizes equity, technological support, and a “just transition” for oil-exporting economies rather than rapid fossil-fuel phase-outs. This evolving interplay between climate imperatives and shifting global oil market dynamics underscores the challenge of aligning resource-dependent economies with the long-term goals of Paris Agreement (Claes & Garavini 2020).

Conclusion

OPEC is an important organization in terms of regulating strategic energy commodities such as oil. It creates space for coordinating the trade policies of its member countries and contributes to the stability of international trade. The aim of this paper is to describe the advantages and disadvantages of this organization, as well as the opportunities and challenges associated with its future. The organization's strength lies in its ability to respond flexibly to fluctuations in global markets and to influence price stability directly or indirectly. At the same time, there are also negatives, including differences in approaches to solving international trade problems among individual members, vulnerability to price fluctuations, and increased competition in the form of new oil exporters such as the United States. Together, these factors highlight the organization's diminishing capacity to shape long-term market trajectories and underscore the broader challenges facing resource-dependent economies in an evolving global energy system. In terms of opportunities and challenges, a key aspect influencing the future of the entire organization is its ability to adapt to new conditions on global markets caused by climate change. The transition to renewable sources may not be a threat to OPEC countries, but rather an opportunity. Countries must coordinate their efforts to contribute to strengthening the debate on the diversification of economies in the context of the decarbonization of the global economic system, thereby increasing their competitiveness in areas other than the export of crude oil and oil products.

References:

- Akinrolabu, D. R., & Haruna, M. A. (2021). Organization of Petroleum Exporting Countries (OPEC) at 60: Challenges, Achievements and Prospects Towards Global Economic and Investment Development. *Archives Journal of Scientific Research*, 3(2). pp 182-196.
- Claes, D. H., & Garavini, G. (2020). OPEC and the global energy order: Past, present and future challenges. In *Handbook of OPEC and the Global Energy Order* (pp. 1-12). Routledge.
- Ghoshal, N., & Pradhan, S. K. (2024). Cartel to Player: OPEC Dynamics in the Global Oil Market. *International Journal of Politics and Security*, 6(1), 132-151.

- Gross, M. (2024) The Future of the Organization of the Petroleum Exporting Countries. Honors Theses, University of Nebraska-Lincoln. 642. <https://digitalcommons.unl.edu/honorstheses/642>
- Li, J., Hong, Z., Yu, L., Zhang, C., & Ren, J. (2024). Do OPEC+ policies help predict the oil price: A novel news-based predictor. *Heliyon*, 10(14).
- OPEC. (2024). *Annual Statistical Bulletin 2024*. <https://www.opec.org/assets/assetdb/asb-2024.pdf>
- OPEC. (2025a). *Brief History*. <https://www.opec.org/brief-history.html>
- OPEC. (2025b). *Member Countries*. <https://www.opec.org/member-countries.html>
- OPEC. (2025c). *Annual Statistical Bulletin 2025*. <https://publications.opec.org/asb/chapter/show/139/2537>
- Roeben, V. (2024). What drives OPEC production policy?. *The Journal of World Energy Law & Business*, 17(1), 19-34.
- Statista. (2025) *Distribution of OPEC crude oil reserves in 2024, by country*. <https://www.statista.com/statistics/1370179/opec-crude-oil-reserves-share-by-member-country/>
- Ye, R., Yang, X., Zhou, Y., Lin, C., Chen, Y., Chen, J., & Bian, M. (2025). Energy demand security in OPEC+ countries: A revised 4As framework beyond supply security. *Energy*, 320, 135261. <https://doi.org/10.1016/j.energy.2025.135261>

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ACADEMIC MOBILITY IN AFRICA: POLICY FRAMEWORK AND STRUCTURAL BARRIERS

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Abstract: Academic mobility has become an increasingly important aspect of higher education policy and international collaboration, particularly in regions facing structural and economic challenges. This paper examines how structural barriers affect academic mobility in Africa. We apply a qualitative approach, combining induction, deduction, and comparative analysis of academic studies and international policy reports. The findings show that mobility can strengthen higher education, promote knowledge exchange, and reduce brain drain, but its impact is limited by inconsistent recognition of qualifications, financial constraints, and dependence on external funding.²

Keywords: academic mobility, Africa, higher education, structural barriers

JEL: I23, F22, O55

Introduction

African nations collectively represent one of the largest sources of internationally mobile students, with Nigeria, Morocco, Cameroon, Algeria, Zimbabwe, Kenya, Senegal, Angola, Ghana, and Sudan ranking among the most significant contributors. Historical legacies of colonialism continue to influence mobility patterns, as student flows remain closely connected to the linguistic and cultural affiliations of anglophone, francophone, and lusophone regions. Consequently, learners often pursue studies in destinations that share these historical and linguistic ties. For instance, students from francophone contexts such as Mali and the Republic of Congo are more likely to study in France, whereas those from English-speaking countries like Nigeria and Ghana typically prefer the United Kingdom, the United States, or Canada. Although the scale and direction of outward mobility vary by country, the United States, the United Kingdom, France, Canada, and Germany continue to be the dominant destinations for students from sub-Saharan Africa. Although international mobility has expanded in recent decades, its benefits are not evenly shared across African countries. Many universities still face limited capacity, financial dependence, and ongoing brain drain, which restrict their ability to benefit fully from global academic exchange. While mobility offers significant opportunities for strengthening higher education, building research capacity, and fostering regional integration, its effectiveness is often constrained by fragmented recognition systems, financial limitations, restrictive visa regimes, and dependence on external funding (Ali, 2016, pp. 146-147). The aim of this paper is to examine whether structural barriers have an impact on academic mobility in Africa. We apply a qualitative research approach, combining induction, deduction, and comparative analysis of scholarly literature and international policy documents.

1 Background of Academic Mobility

Academic mobility, which includes students and faculty traveling abroad for study, teaching, or research, has its roots in the cosmopolitan universities of medieval Europe and has gradually evolved into structured modern programs. Initially, most students moved to pursue

² This paper is part of the Student migration and networking for academic mobility and inclusive cross-border cooperation. project no. I-25-102-00

full degrees in more advanced education systems, a pattern known as vertical mobility. From the mid-1970s, temporary exchanges and short-term study visits became more frequent, emphasizing intercultural experience and academic recognition at the home institution. Faculty participation also increased through initiatives such as the European Joint Study Programme, fostering cooperation across borders. The introduction of ERASMUS in 1987 further strengthened European academic mobility, providing funding, practical support, and official acknowledgment of study periods, while distinguishing between program participants and independently organized travelers (Lanzendorf & Kehm, 2010).

According to the 2019 UNESCO Global Convention on the Recognition of Qualifications in Higher Education, academic mobility refers to the physical or virtual movement of people abroad for study, research, or teaching. This broad definition highlights the relevance of distance education and cross-border higher education. Mobility thus applies not only to students but also to university campuses, academic programmes, and curricula (UNESCO, 2023, pp.6-8).

International student mobility in tertiary education has risen significantly over the past decade. Enrolments in OECD countries increased from roughly 3 million in 2014 to more than 4.6 million in 2022, even as the COVID-19 pandemic posed serious challenges. China and India remain the main sending countries, while destinations such as the United States, the United Kingdom, Germany, France, Canada, and Australia attract most of these students. Participation is strongly influenced by economic disparities, with students from wealthier nations forming the bulk of those studying abroad, and by academic interests, as STEM fields and doctoral programmes are particularly popular among internationally mobile learners (OECD, 2025, p.2).

2 Definition of Intra-African Academic Mobility

Intra-African academic mobility can be understood as the movement of students and academics between African countries for short- or long-term study, training, teaching, or research. In the higher-education literature, this form of mobility is treated as a regional (intra-regional) variant of international mobility, distinct from movements between world regions. It encompasses credit-bearing exchanges and full degree study within the continent and sits within broader processes of internationalisation in which universities cooperate, recognise learning across borders, and facilitate the transfer of people and knowledge inside (Africa Woldegiorgis & Doevenspeck, 2015, p.106). Intra-African academic mobility strengthens higher education systems in Africa by facilitating institutional cooperation, enhancing research capacity, fostering recognition of qualifications between countries, and enabling knowledge exchange. It also addresses challenges such as uneven educational quality, limited access to specialised programmes domestically, and mitigates brain drain when individuals remain within the continent for their academic growth (Ali, 2016, pp. 145-146).

2.1 Regional Initiatives and Barriers

Academic mobility has historically been a core element of higher education, as both people and knowledge have always moved across borders. In Africa, this tradition dates back to colonial times when foreign universities established branches that shaped the continent's academic systems. In the present era, mobility is strongly influenced by globalization and new technologies, but it is also limited by commercialization, political instability, and lack of resources. Despite these obstacles, initiatives such as the African Union's Higher Education Harmonization Programme, the Nyerere Mobility Scheme, and the Pan-African University reflect growing efforts to strengthen intra-African exchanges (Knight & Woldegiorgis, 2017, pp. 113-114). Among the regional initiatives in Africa designed to support intra-continental academic movement is the Mwalimu Nyerere mobility scheme set up by the African Union under the Accra Declaration. Its aim is to encourage student exchange between universities

across African nations. Still, such mobility programs tend to incur high costs and demand robust institutional mechanisms to be effective.

Despite its potential benefits, intra-African mobility encounters numerous obstacles that limit its impact. Differences in how qualifications are recognised across national systems create uncertainty for students and staff, while weak institutional frameworks make credit transfer complicated. Other barriers include restrictive visa regulations, high travel expenses, and limited funding opportunities, all of which discourage participation. Unequal development among universities further intensifies the problem, since only a few institutions attract most mobile students and academics. Addressing these issues requires coordinated policies, investment in regional cooperation, and efforts to build trust between higher-education systems (Woldegiorgis & Doeverspeck, 2015, pp. 109-110).

2.2 Policies and Practices of Academic Mobility in Africa

The growing demand for higher education and the need to expand Africa's human capital have led to the development of regional and continental initiatives that promote intra-African student mobility. Many of these efforts, partly inspired by the Bologna Process, focus on quality assurance, credit transfer, and cooperation with international partners. Their purpose is not only to strengthen Africa's research capacity but also to support sustainable development by reducing poverty and producing more highly trained graduates.

Key examples include the 2004 Accra Declaration, which reaffirmed the commitment to widening access to higher education, and the Nwalimu Nyerere Scholarship Scheme introduced in 2007 to fund African students, particularly in science and technology, with the condition that graduates remain on the continent for at least two years. Another significant initiative is the African Centres of Excellence programme, created by the World Bank in collaboration with African governments, which supports priority fields such as STEM, agriculture, health, and education. Established in phases beginning in 2014, the programme set up centres across West, Central, East, and Southern Africa to foster regional cooperation and build institutional capacity (Ali, 2016, pp.151-152).

Regional initiatives within Africa have significantly shaped patterns of academic mobility by creating structures that promote cooperation and mutual recognition of qualifications. In East Africa, for example, efforts coordinated by the Inter-University Council for East Africa have facilitated smoother student exchanges through harmonised tuition fees, credit transfer mechanisms, and recognition frameworks. Similar developments can be observed in West Africa, where ECOWAS introduced a convention on the equivalence of degrees and diplomas, laying the groundwork for structured mobility across its member states. The Southern African Development Community has advanced this agenda further through the National Qualifications Framework, which aligns national systems and enables the comparability of academic standards. Despite these achievements, student mobility still faces barriers related to inconsistent teaching quality, fragmented curricula, and difficulties in measuring the broader impact of internationalisation (Nyerere, 2022, pp.110-112).

The Youth Mobility for Africa initiative, part of the Global Gateway Africa–Europe Investment Package, brings together programmes such as Erasmus+ and the Intra-Africa Academic Mobility Scheme to expand learning opportunities within Africa and between Africa and the EU. It focuses on strengthening higher education, investing in human capital, and positioning Africa as a study destination. Its main goals are to promote inclusive mobility, harmonise education systems for regional integration, enhance the quality and relevance of African universities, and improve employability and youth participation. By aligning with the Youth Action Plan, Agenda 2063, and the Africa–EU Innovation Agenda, the initiative reinforces long-term cooperation in education and skills development across both continents (European Commission, 2023a).

The Intra-Africa Academic Mobility Scheme is an EU initiative designed to strengthen academic exchanges among African universities. It funds consortia of higher education institutions and offers scholarships to students, trainees, and staff. As part of the Youth Mobility for Africa flagship initiative, the programme supports social, economic, and human development across the continent. A major priority is to build skills for climate change adaptation and the green transition. The scheme also promotes inclusivity by encouraging the participation of women, disadvantaged groups, and persons with disabilities. It improves institutional capacity by helping universities manage mobility flows, partnerships, and career services. Another key goal is the recognition and transparency of qualifications across participating institutions (European Commission, 2023b).

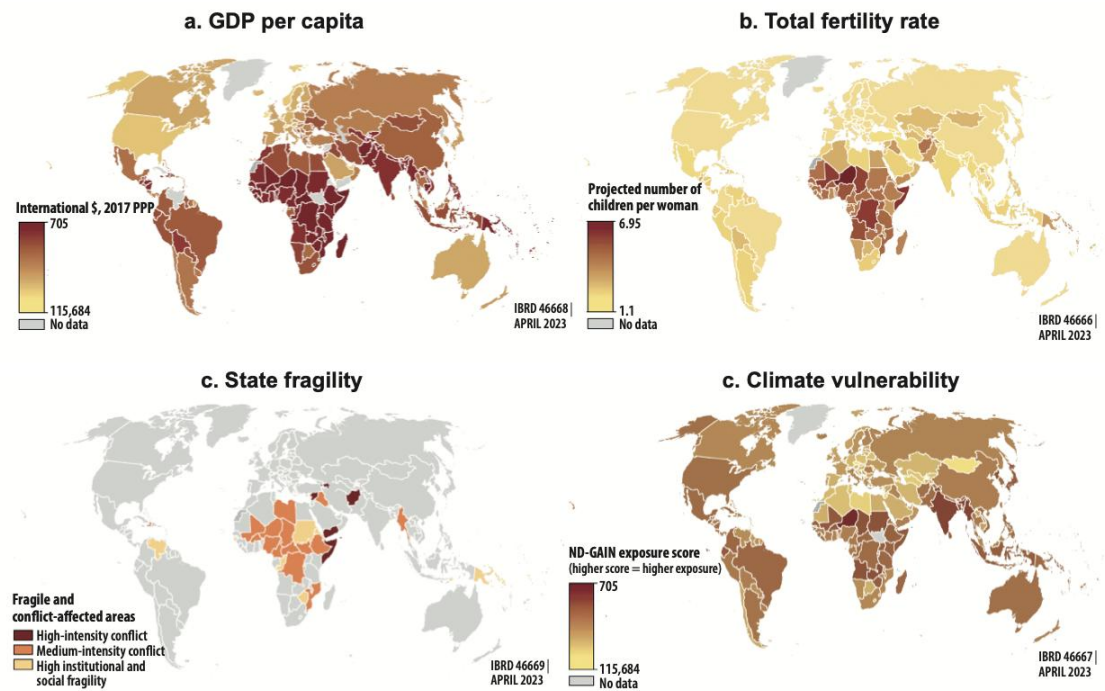
3 Structural Inequalities and Critical Perspectives

African mobility is often framed through the lens of brain drain, highlighting the departure of African scholars from the continent or pointing to structural deficiencies such as weak infrastructure in higher education. Colonialism created enduring links between African universities and those of former colonial powers, shaping both institutional structures and disciplinary traditions. Language and cultural affinities have further channelled mobility patterns, with francophone, anglophone, and lusophone ties directing students and academics towards Europe. While these connections have enabled African scholars to establish themselves in global academic networks, they also reflect persistent colonial power dynamics. For decades after independence, many African universities continued to rely on foreign teaching staff or scholars trained in Europe and North America (Laakso, 2020, pp. 444-445).

Colonial education systems in Africa largely prioritized the training of administrative staff rather than fostering technical and scientific expertise, which contributed to long-term technological underdevelopment and a weak connection between education and local contexts. At the same time, colonial powers focused on the export of raw materials while neglecting the production of essential goods for local communities. This created a structural disconnection between agriculture and industry, increased dependence on food imports, and limited economic progress, as the profits from exports were rarely reinvested into African economies (Ocheni & Nwankwo, 2012, pp.51-53).

Beyond these colonial and linguistic legacies, mobility is also shaped by structural factors such as economic disparities, demographic pressures, state fragility, and climate vulnerability (see Figure 1).

Figure 1: Structural Drivers of African Migration



Source: WDR 2023

Source: WILLIAMS, W. (2024): African Migration Trends to Watch in 2024, p.4

Financial and institutional constraints remain among the most persistent structural barriers to higher education transformation in Africa. Saidi et al. (2025) observe that limited and unstable funding restricts innovation, constrains the quality of teaching, and widens disparities between institutions. As enrolment rates increase across the continent, public resources have failed to keep pace, resulting in overcrowded classrooms, outdated infrastructure, and reduced access to quality learning materials. Rigid organizational structures and weak linkages between universities and industry further limit responsiveness to labour market needs. Such conditions perpetuate educational inequalities and hinder universities' ability to equip graduates with relevant skills for sustainable socio-economic development. (Saidi et al., 2025, pp. 180-182). These systemic limitations intersect with broader policy reforms that have redefined the governance and financing of higher education across the continent. Akala (2021) argues that neoliberal reforms in African higher education have transformed universities from providers of public goods to institutions operating as private goods. This shift has undermined academic freedom, eliminated programs deemed financially "non-negotiable," and increased tuition fees, thereby excluding large segments of students from disadvantaged backgrounds. Akala further argues that the influence of transnational agencies and donor organizations perpetuates neocolonial dynamics by directing the operational priorities of African universities. Such pressures suggest that mobility initiatives and scholarship programs, while seemingly empowering, may actually reinforce structural inequalities (Akala, 2021, pp.1-2).

In understanding academic mobility, it is important to examine not only structural or policy obstacles, but also the decision-making processes of students themselves. Albien and Mashatola (2021) argue that choices to study abroad are influenced by a combination of financial capacity, perceived personal and academic benefits, and institutional support structures. Many potential participants from lower-income contexts hesitate to engage in mobility due to fears of financial insecurity, lack of social networks, and uncertainty about

credential recognition. Consequently, even well-designed mobility programmes may primarily attract those who are already socio-economically advantaged, reproducing rather than reducing inequality (Albien & Mashatola, 2021, pp. 293–295).

3.1 Harmonisation Efforts and Persistent Challenges

At the continental level, harmonisation reforms inspired by the Bologna Process aim to make degrees comparable and recognisable to facilitate movement, but uneven national commitment and implementation slow progress—leaving practical barriers around qualification recognition and system compatibility in place across Anglophone, Francophone and Lusophone spaces (Adamu, 2021, pp.104-108).

However, despite these ambitious frameworks, serious challenges remain as progress reports from the African Union highlight persistent visa and residency barriers, administrative delays in credit transfer and the absence of harmonised curricula which undermine the effectiveness of mobility schemes. Furthermore, many programmes depend heavily on external funding, particularly from the EU, while limited domestic financial commitment raises concerns about long-term sustainability and true African ownership of the agenda (African Union, 2018, pp.5-8).

Much of the literature emphasises economic outcomes, the efficiency of exchange programmes, their role as tools of soft power, and the integration of foreign academics into local contexts. At the same time, other studies highlight epistemological dimensions, including the relationship between knowledge and mobility and the wider societal impact of university education. Scholarship schemes have drawn particular attention, with scholars examining how they shape professional trajectories, disciplines, institutions, and national cultures, while also being influenced by them in turn (Laakso, 2020, p.443).

Conclusion

Academic mobility has become a central aspect of higher education worldwide, yet in the African context it is shaped by colonial histories, linguistic and cultural ties, and uneven institutional capacities. Although mobility contributes to the strengthening of higher education, the development of research networks, and the reduction of brain drain, its outcomes are often limited by fragmented systems of qualification recognition, restrictive visa regimes, insufficient financial resources, and dependence on external donors. Our analysis was based on secondary sources, including scholarly literature, international policy documents, and comparative studies of both African and European mobility schemes.

This paper has shown that academic mobility in Africa offers important opportunities for strengthening higher education, promoting regional cooperation, and supporting knowledge exchange. At the same time, its impact is limited by structural barriers such as fragmented qualification systems, unequal resources, visa restrictions, and dependence on external funding. Regional initiatives provide promising frameworks, but their effectiveness remains uneven and often benefits only a small group of privileged participants. We conclude that academic mobility in Africa can contribute to more inclusive and sustainable higher education, but this requires stronger harmonisation, greater domestic investment, and policies that address persistent inequalities.

Despite its growing relevance, academic mobility in Africa remains a relatively underexplored topic in academic discourse. Much of existing scholarship continues to focus on student flows between Africa and the Global North, rather than intra-African exchanges. Future research should pay greater attention to intra-African academic mobility and emerging regional partnerships that strengthen African-led cooperation. Stronger institutional networks within the continent can, in turn, reduce dependence on external donors.

References:

- Adamu, A. Y. (2021). Harmonisation of higher education in Africa: 20 years after the Bologna Process. *Tuning Journal for Higher Education*. 9(1), pp. 103–126. [http://dx.doi.org/10.18543/tjhe-9\(1\)-2021pp103-126](http://dx.doi.org/10.18543/tjhe-9(1)-2021pp103-126)
- Albien, A. J., & Mashatola, N. J. (2021). A Systematic review and conceptual model of international student mobility Decision-Making. *Social Inclusion*, 9(1), pp. 288–298. <https://doi.org/10.17645/si.v9i1.3769>
- African Union. (2018). *First progress report of the Chairperson of the Commission on Academic Mobility Scheme in Africa*. <https://afripol.peaceau.org/uploads/auc.report.academic.mobility.prc.29.03.18.pdf>
- Akala, B. M. (2021). A critical reflection on neoliberalism policies and neo-colonialism at African universities. *Journal of Decolonising Disciplines*. 3(2), pp. 1–20. doi:10.35293/jdd.v3i2.3546
- Ali, O. A. (2016). Intra-Africa student mobility: benefits for Africa and factors militating against it. Johannesburg: Ali Mazrui Centre for Higher Education Studies, University of Johannesburg, 2016. *International Journal of Higher Education Studies*. 12(2) (Special Issue), pp. 146–147. ISSN 1916-7822.
- European Commission. (2023b). *Global Gateway – Youth mobility in Africa*. https://international-partnerships.ec.europa.eu/policies/global-gateway/youth-mobility-africa_en
- European Commission. (2023a). *Intra-Africa Academic Mobility Scheme*. https://www.eacea.ec.europa.eu/grants/2021-2027/intra-africa-academic-mobility-scheme_en
- Knight, J., & Woldegiorgis, E. T. (2017). Academic mobility in Africa. *SensePublishers eBooks* (pp. 113–133). https://doi.org/10.1007/978-94-6300-956-0_7
- Laakso, L. (2020). Academic mobility as freedom in Africa. *Politikon*, 47(4), 442–459. <https://doi.org/10.1080/02589346.2020.1840023>
- Lanzendorf, U., & Kehm, B. (2010). Student and faculty transnational mobility in higher education. In *Elsevier eBooks* (pp. 559–565). <https://doi.org/10.1016/b978-0-08-044894-7.00850-2>
- Nyerere, J. (2022). Intra-Africa academic mobility and the Fourth Industrial Revolution, pp. 110–112. https://www.researchgate.net/publication/362651836_IntraAfrica_Academic_Mobility_and_the_Fourth_Industrial_Revolution
- Ocheni, S. & Nwankwo, B. (2012). Analysis of Colonialism and Its Impact in Africa. *Cross-Cultural Communication*. 8(3), pp. 46-54.
- OECD. (2025). *What are the key trends in international student mobility?* https://www.oecd.org/content/dam/oecd/en/publications/reports/2025/03/what-are-the-key-trends-in-international-student-mobility_495dcfac/2a423a76-en.pdf
- UNESCO. (2023). *Academic mobility*. <https://unesdoc.unesco.org/ark:/48223/pf0000389878>
- Saidi, M. et al. (2025). Breaking Through the Barriers for Transforming Higher Education in African Universities: Experiences from Egerton University, Kenya. *African Journal of Rural Development*, 9(3), pp. 177–192. ISSN 2415-2838. <https://afjrdev.org/index.php/jos/article/view/506>
- Williams, W. (2024). *African migration trends to watch in 2024*. pp.14. <https://africacenter.org/wp-content/uploads/2024/05/African-Migration-Trends-2024.pdf>
- Woldegiorgis, E. T., & Doevenspeck, M. (2015). Current trends, challenges and prospects of student mobility in the African higher education landscape. *International Journal of Higher Education*, 4(2). <https://doi.org/10.5430/ijhe.v4n2p105>

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KYRGYZSTAN'S TRADE PATTERNS AND FDI: CHANGES IN RECENT YEARS

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Abstract: The Kyrgyz Republic is a land-locked member of the Eurasian Economic Union (EAEU) and a strategically important actor in Central Asian trade networks. Although economically small, the country has increased its integration within the EAEU and has become a key transit point for goods entering the Union, particularly since Western sanctions on Russia. Kyrgyzstan relies heavily on international trade, exporting minerals - especially gold - as well as coal, copper, ores, textiles, and agricultural products. At the same time, it is resource-poor compared to Kazakhstan and highly dependent on imports of fuel, machinery, transport equipment, and chemicals. This article examines the structural changes in Kyrgyzstan's trade patterns following the 2022 Russia-Ukraine escalation, drawing primarily on trade and investment data from the National Statistical Committee of the Kyrgyz Republic.

Keywords: Kyrgyzstan, Eurasian Economic Union, Sanctions, Trade, Remittances

JEL: F15, F18, F63

Introduction

Kyrgyzstan, a former republic of the Soviet Union, is geographically centrally located in Central Asia, but double-landlocked. The country is part of the Chinese-driven Belt and Road Initiative (BRI) (Omurova et al., 2023). After the fall of the Soviet Union the country was an early liberalizer in both economic and political views. It became a rather open economy after first seeing a catastrophic decline during the transition time from the Soviet Union but achieved macroeconomic stabilization fairly quickly (Athukorala & Hill, 2023). The country focused on economic reforms with attention to the development of import-substitution, so that basic companies are supported to produce competitive products for the world market. This is clearly supported by Foreign Direct Investments (FDI). Apart from the Baltic states, Kyrgyzstan was among the first ex-Soviet countries to accede to the WTO in 1998. At this point of time the export performance was very disappointing, as demand increased for high value-added products due to a better lifestyle, and also the import of more processed food, however the agricultural sector lacks technology and equipment. During the Soviet Union era Kyrgyzstan was very much focused on the agricultural sector, producing cotton in the south, grain in the north, as well as livestock. However, while the primary sector still stays an important pillar, in particular for the engagement of people, it is not the driver of economic growth. To address this issue the program "Financing of Agriculture I-IV" was firstly introduced in 2013 (Kimsanova & Herzfeld, 2022).

A solid resource base, in particular precious and rare earth metals and favorable natural and climatic conditions, ensure a stable influx of foreign exchange through metal exports. This is also supported by tourism services, which have experienced rapid growth since the pandemic in 2020 and the difficulty of Russian citizens to travel to Western countries, such as to the EU (Migranyan & Krishtal, 2024). However, in comparison to other countries in Central Asia, Kyrgyzstan (along with Tajikistan) is resource-poor compared to Kazakhstan and Turkmenistan. While the country could benefit from regional trade cooperation within Central Asia, the cooperation is rather weak and resource-rich neighbours are more reluctant

to push for cooperation, having energy rent as a source of income, while Kyrgyzstan relies to a large extent on the remittances earned by citizens working in (resource-rich) neighboring countries, such as Russia. While the remittances account for up to 30% of the GDP, they also contribute to maintaining relative social peace at a low cost. Remittances are untaxed by the government and do not support the development of the financial sector or the establishment of new businesses as they are largely used to cover daily needs. The country also depends on the export of gold as a source of foreign currency but has the second lowest GDP per capita in Central Asia after Tajikistan. Furthermore, the country has the largest external debt, accounting for approximately 85% of GDP (Ostrowski & Malikov, 2025).

In 2024 GDP was USD 17.5 billion (World Bank Group, 2025a) with an annual growth in 2024 of 9% (World Bank Group, 2025b) reaching almost 12% in the first half of 2025 (Trading Economics, 2025). The GDP per capita is around USD 1,400. While China is by far the largest trading partner for imports (more than 40% of imports are from China), the goods imported from China are mostly low-quality goods in a large quantity. From the export side Russia is the leading trading partner (Tobakalov, 2020).

To empower local production and trade, several free economic zones, known as Naryn, Karakol, Bishkek and Mayak, were created. These free economic zones are also home to many foreign investments and are a center of technologies to use natural resources and minerals to produce energy, food and medicine (Tobakalov, 2020). However, the country has a strong risk of growing energy shortages. At the same time the country has a high hydroelectric potential for generating electricity up to 142.5 billion kWh per year, although a shortage results due to the low water level of the Toktogul Reservoir. Issues in coordination of water use with Central Asian neighbouring countries cause further problems. The electricity shortage reached in 2022 up to 3.2 billion kWh, and it might further increase by 2026 to 5–6 billion kWh (Migranyan & Krishtal, 2024).

This article provides a comprehensive analysis of the current trade structure and FDI in Kyrgyzstan. It highlights the key information about the current structure of imports and exports, in particular focusing on patterns which occurred after the Western sanctions imposed from 2022 onwards on Russia due to the conflict between Russia and Ukraine. In this light also the change in the structure of FDI is highlighted. Data on FDI and trade is largely derived from the National Statistical Committee of the Kyrgyz Republic, which is freely accessible. Literature in Russian is translated by the author. This article should highlight and address the challenges the country has, but also the prospects in particular for foreign companies in extraction of mineral resources, such as gold, renewable energy, but certainly also possibilities of trade with the country.

1 Kyrgyzstan's international relations

Kyrgyzstan is, along with Armenia, Belarus, Kazakhstan and Russia, a member of the EAEU. The EAEU originated from the Customs Union, formed by Russia, Kazakhstan and Belarus in 2010. The aim is the free movement of goods, services, capital and labor, comparable to the EU. The EAEU focuses on a coordinated and harmonized single policy across selected sectors of the economy. With the EAEU, Kyrgyzstan has access to the larger, tariff-free market which provides a larger export market in particular for agri-food products, with the Russian market as the most important one. Indeed, from the total EAEU-exports Kyrgyzstan accounts for less than one percent (Bekbolotova et al., 2025).

The relations with the EU build on the Partnership and Cooperation Agreement from 1999 which managed relations of the EU to the Central Asian countries including Kyrgyzstan. This took place after Kyrgyzstan entered the WTO in 1998. The EU adopted a new strategy for Central Asia in 2007, updating it in 2019 to build the relations among the countries in a new way (Valeeva, 2019). In June 2024, the Enhanced Partnership and Cooperation Agreement

(EPCA) between the EU and Kyrgyzstan was signed during a visit of the Kyrgyz President Sadyr Japarov in Brussels. From the EU side it was noted that the agreement will also strengthen the protection of human rights and fundamental freedoms and will promote cooperation with civil society (Putz, 2024).

The relations with the EU are also important as the EU is one of the country's main donors. In recent years, the EU has provided budget support to Kyrgyzstan in areas such as education (EUR 36 million), social protection (EUR 30 million), and support for electoral reform (EUR 13 million). The EU also financed a EUR 30 million macro-financial assistance program. In strategic plans between the EU and Kyrgyzstan, the idea to align with the National Sustainable Development Strategy 2040, as well as the Taza Koom digital transformation program and the Taza Suu program, was also included (Valeeva, 2019). Interestingly, the EU Executive Vice-President and Commissioner for Trade Valdis Dombrovskis mentioned that the signed EPCA will also support preventing the circumvention of EU sanctions against Russia, by proposing further trade with the EU (Putz, 2024).

In 1997, the Asian Development Bank began implementing the CAREC program, the goal of which was to develop regional cooperation between countries such as Azerbaijan, Kazakhstan, China, Kyrgyzstan, Mongolia, and others. The planned results of CAREC are financial integration, expanded trade, and increased regional macroeconomic stability (Mirboboev, 2023). International financial organizations such as the IMF, the World Bank or the IDA support the country's economy with financial support to build enterprises for export-oriented production from local raw materials. Furthermore, the Asian Development Bank, the International Finance Corporation and the Islamic Development Bank support this, albeit at another level (Tobakalov, 2020).

With the presidency of Japarov, the country has stabilized in terms of organizing clear rules for doing business, streamlining the tax administration system and redistributing property rights in the public sector. This, combined with a high degree of liberalization, developing market institutions and focusing on a more competitive and entrepreneurial environment with lower entry barriers to the domestic market, should represent a more competitive economic model for the country (Migranyan & Krishtal, 2024).

Facilitation of trade with the Central Asian neighbouring countries is relatively underdeveloped. From the side of energy-rich Kazakhstan little activity to foster trade with Kyrgyzstan, Turkmenistan and Uzbekistan has been evident. At the same time the non-tariff trade barriers stay high as Kazakhstan is very dependent on the energy exports to neighbouring countries (Ostrowski & Malikov, 2025). With the conflict between Russia and Ukraine, and related sanctions from the West on Russia, being historically the largest investor in Kyrgyzstan, Russia needs to shift its foreign trade flows and has to strengthen the interaction with friendly countries (Migranyan & Krishtal, 2024).

Kyrgyzstan was among the first supporters of the BRI and is sharing a border with Xinjiang for about 1,063 kilometers in the west, with Irkeshtam and Kashgar City serving as border crossing points in the area of the Torugat Pass. Also, a railway has connected the countries since 2003. With the construction of the China-Kyrgyz-Uzbekistan railway line, a new network with the logistics center in the Naryn border region should be developed. Indeed, the relations between the countries were growing even before the BRI, in particular after the establishment of diplomatic relations in 1992. The growing cooperation with China can be seen in the fields of agriculture, infrastructure and communications development, and indeed also in terms of trade and investment (Imankulova, 2024). China is the main investor in the Kyrgyz economy under the BRI, but the local population is concerned about China bringing its workers to Kyrgyzstan, although the country currently has high unemployment (Alix et al., 2022).

Other sectors of cooperation with China can be found in the minerals sector, in the development of e.g. non-ferrous metal deposits, the polymetallic deposit “Kuru-Tegerek”, the Ishtanbodi gold mine, or the Taldi-Brak mine. Also, with Chinese funds a coal mine in the Osh region is being developed and for example the Kyzyl-Ki cement plant in the same region (Imankulova, 2024). Several authors discuss the trade relations of Kyrgyzstan with China. Omurova, Arzymatova and Lysenko, for instance, made an in-depth analysis of the relations with China, as trade relations increased intensively over the last decade. However, the authors note an increasing Sinophobia occurring since the Covid crisis (Omurova et al., 2023).

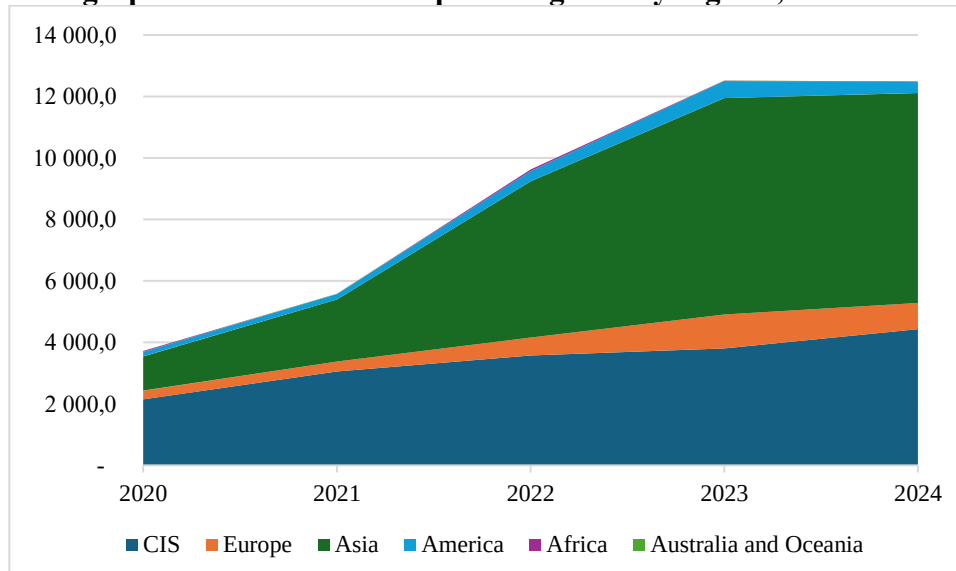
The post-Soviet Central Asian countries — Kazakhstan, Kyrgyzstan, Tajikistan, Turkmenistan and Uzbekistan — generally maintain mutually beneficial relations with China (Sim & Aminjonov, 2024).

2 New Patterns of Trade

Since the further escalation of the conflict between Russia and Ukraine in 2022, the trade patterns of Kyrgyzstan changed significantly. While this paper does not analyze the conflict itself, or the derived sanctions from the Western countries — in particular the EU, the USA, the UK, Switzerland and Australia — the changing flows of imports and exports should be highlighted. Generally, China became the main source of imports, increasing strongly from USD 1.4 billion in 2021 to USD 5.4 billion in 2024. At the same time, imports from Europe increased significantly and exports to Russia by 140% from a level of USD 1.9 billion in 2021 to USD 2.7 billion in 2024, which might be an indicator of reexporting imported goods to Russia.

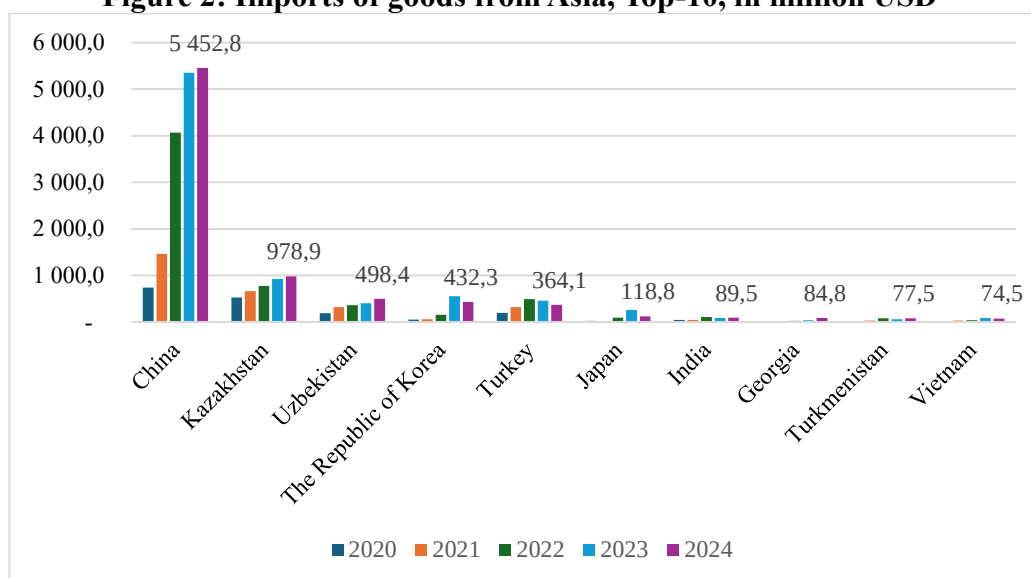
Figure 1 shows the development of the imports of goods by regions to Kyrgyzstan. While the imports from CIS countries steadily increased over the last years, the imports from Asia increased due to the dominance of China in the regional group. Imports from Europe were generally on a lower level (USD 290 million in 2021), but since 2022 (USD 526 million) the number increased to USD 766 million in 2024.

Figure 1: Geographic distribution of imports of goods by regions, in million USD



Source: Authors' illustration based on National Statistical Committee of the Kyrgyz Republic (2025c)

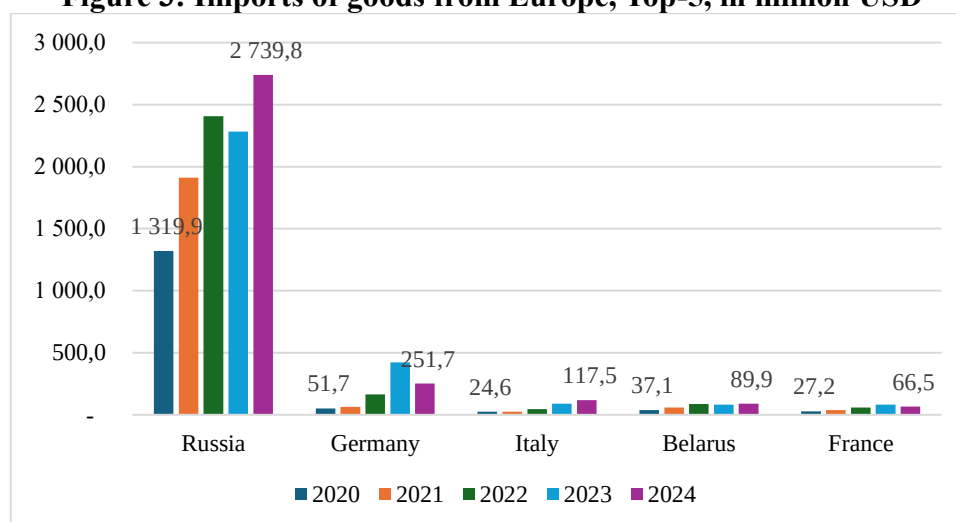
Figure 2: Imports of goods from Asia, Top-10, in million USD



Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025c)

Figure 2 shows the imports from the largest growing group of regional partners, Asia. While in 2020 the share of China was negligible (USD 737 million), it became by far the largest partner for imports (USD 5.4 billion) in 2024. As noted earlier, the neighboring countries such as Kazakhstan and Uzbekistan account for a relatively low share of imports; however, this share is increasing constantly over the years. For instance, the exports from Kazakhstan increased from USD 520 million in 2020 to USD 979 million in 2024; from Uzbekistan from USD 189 million in 2020 to USD 498 million in 2024.

Figure 3: Imports of goods from Europe, Top-5, in million USD

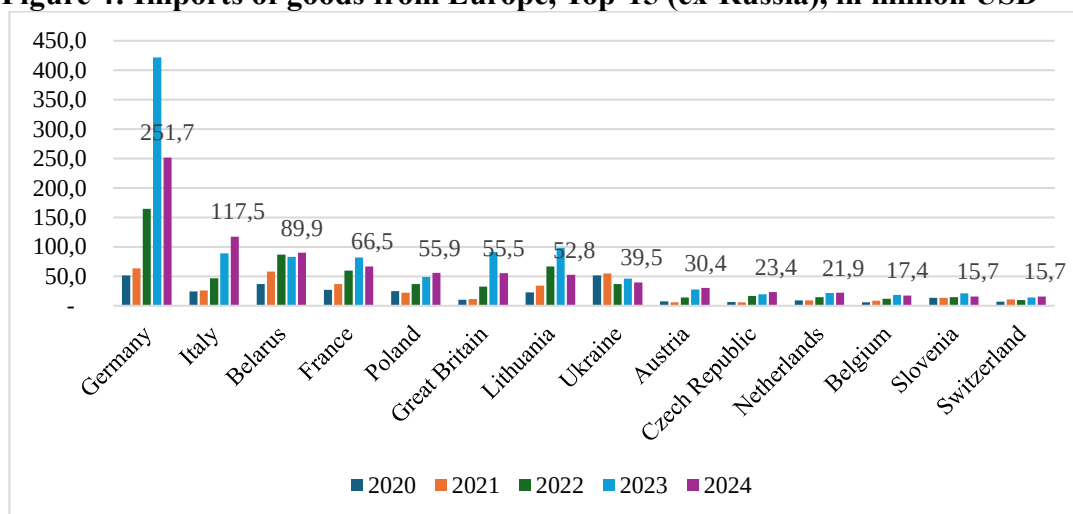


Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025c)

The relatively small but strongly growing group of European partners should be considered more carefully. On the one hand this group includes Russia, from which imports increased from USD 1.3 billion in 2020 to USD 2.7 billion in 2024. Figure 3 shows the Top 5 trading partners for imports, where Russia is clearly the largest partner in comparison to the other four partners. Accordingly, to understand if the imports from the European countries

(and possible re-export to Russia) take place, those countries must be considered more closely. Figure 4 focuses on the Top 15 trading partners from Europe, excluding Russia.

Figure 4: Imports of goods from Europe, Top-15 (ex-Russia), in million USD

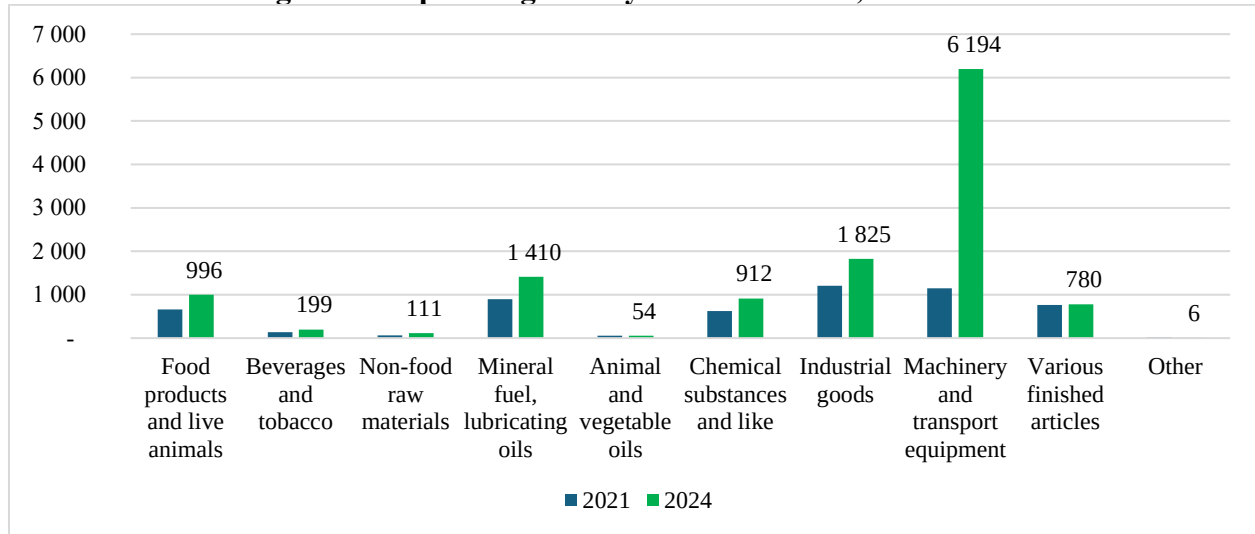


Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025c)

It is interesting to see that from almost all European countries, including Belarus which is part of the EAEU, exports to Kyrgyzstan increased since 2020, often with a significant increase from 2022. Ukraine remains an exception. For instance, exports from Germany increased — peaking at more than sixfold growth in 2024 — and other countries show similar patterns. Italy's exports increased 4.5-fold, France almost doubled, and Poland increased 2.5-fold. The exports from the UK increased fivefold.

Historically, on the import side, a large share was dedicated to mineral fuels and oils. However, if product groups before the Western sanctions on Russia and the latest information from 2024 are compared, it is visible that in particular the share of machinery and transport equipment has increased more than fivefold. No other category showed such a high increase as visible in Figure 5 below. A possible explanation could be that companies of countries in the EU conduct direct supplies with Russia but indicate Kyrgyzstan in the transport documents (TAdviser, 2025). Other sources claim that re-exports might be substantially under-recorded in the official external statistics. This can be the case as trade within the Eurasian Customs Union does not have a mandatory Customs declaration and inspection, which could lead to under-reported statistical surveys (International Monetary Fund, 2024).

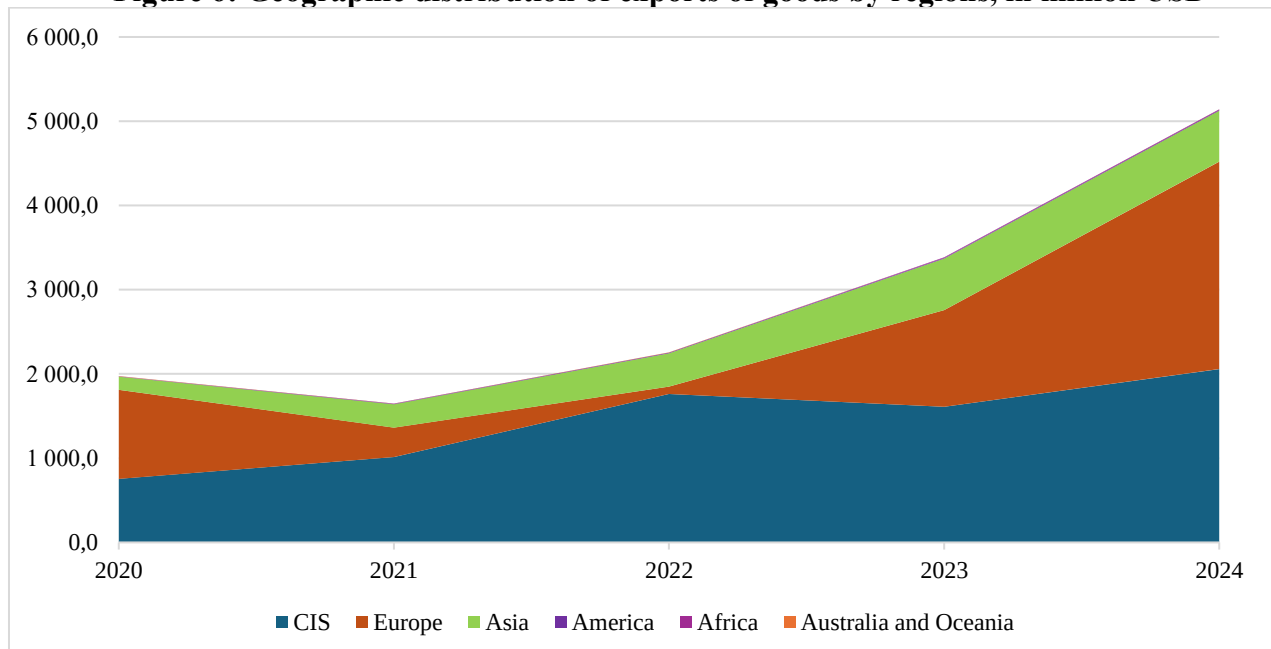
Figure 5: Import of goods by SITC branches, in million USD



Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025d)

As mentioned, the country has consistently run a large trade deficit. However, over the last years the exports from Kyrgyzstan increased year by year. While in 2020 the largest exporting region was Europe with approximately USD 1 billion of exported goods, the total exports to Europe increased to USD 2.5 billion in 2025. Again here, the volumes of exports to Europe increased strongly in the years from 2022 onwards. The exports to the CIS-countries increased during this time from only USD 750 million in 2020 to slightly more than USD 2 billion in 2024. Europe remains the largest region for exports ahead of the CIS-countries. In the same period the total exports increased considerably from USD 2 billion to more than USD 5.1 billion.

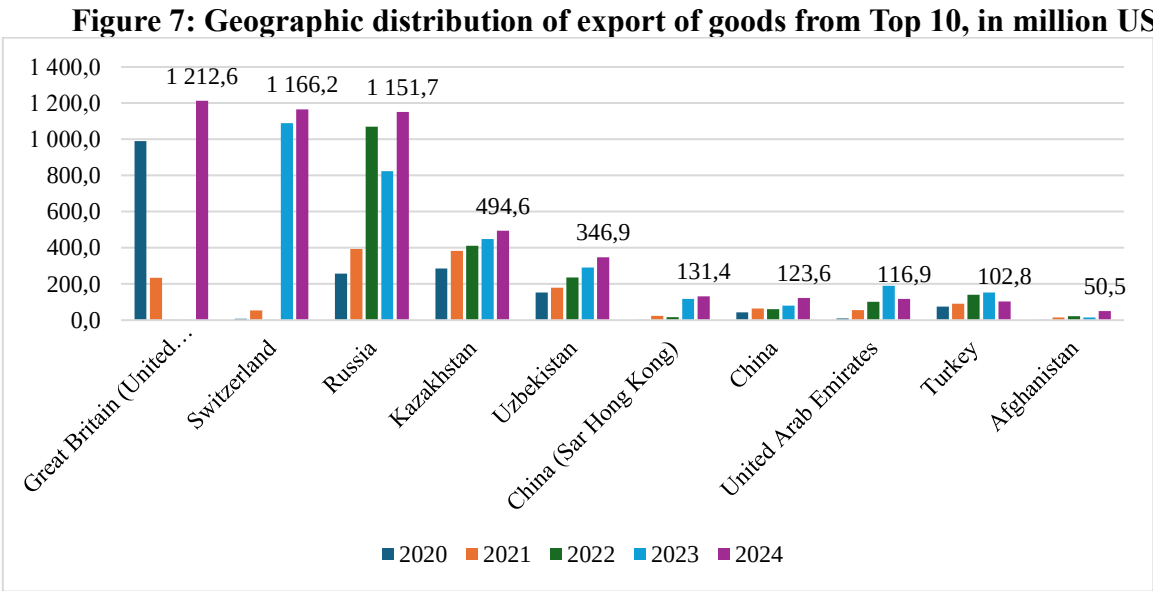
Figure 6: Geographic distribution of exports of goods by regions, in million USD



Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025f)

Focusing again on the detailed list of the fastest growing exporting partners, Figure 7 highlights the tendency of exports with the Top 10 trading partners for the period from 2020 until 2024. While China has a low share of exports, the Central Asian neighbours (Kazakhstan

and Uzbekistan) have shares of USD 495 million and USD 357 million respectively — not among the largest but constantly growing over the last years. The largest exporting destinations are the UK and Switzerland, in different years, what might be explained with the export of gold. Russia’s share as the third largest export destination grew strongly from USD 357 million in 2020 to USD 1.1 billion in 2024.



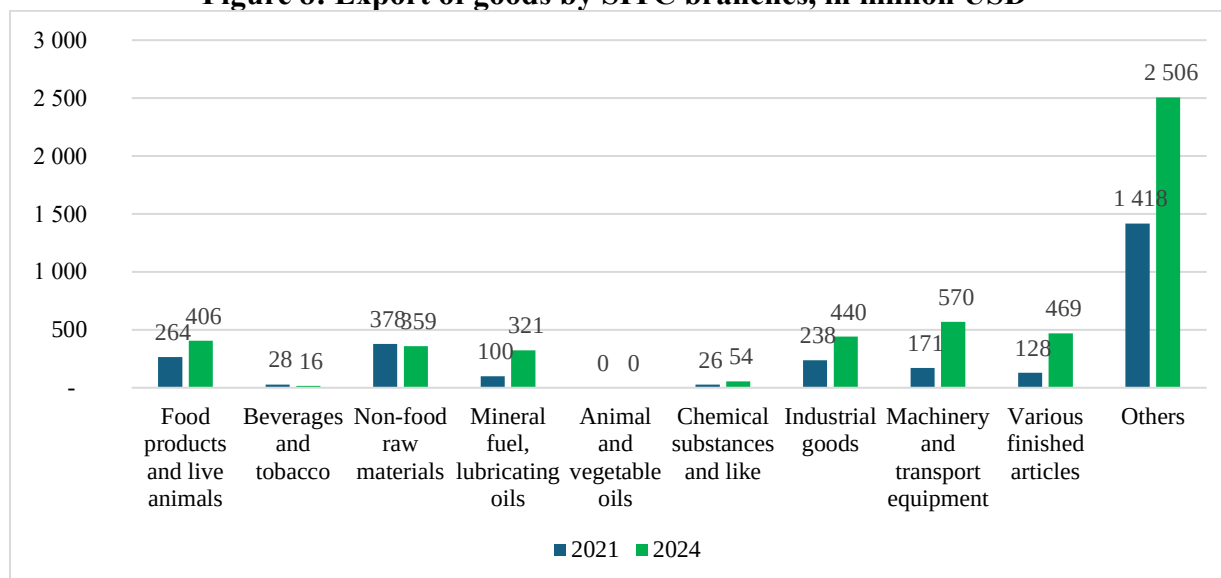
Source: Authors’ illustration based National Statistical Committee of the Kyrgyz Republic (2025f)

On a constant basis Russia stays Kyrgyzstan’s primary export market. Kyrgyzstan traditionally supplies the Russian market with fruits (2% of its total Russian imports in 2022), lead and lead products (19%), copper and copper products (5.5%), and cotton (9%). Russia is Kyrgyzstan's main supplier of oil and petroleum products (82% of total imports in 2022) and ferrous metals (75%). This role has been increasing over the past five years. Russia also plays a significant role in ensuring Kyrgyzstan's food security, covering its needs for grain, vegetable oil and vegetables. Kyrgyzstan's self-sufficiency in grain is 69%, vegetable oil 8.4%, and vegetables 81% (Migranyan & Krishtal, 2024).

The country’s exported goods largely focus on precious stones and metals, with 38% of the total exports, and mineral fuels and oils with 7.2%. In 2024, the country had a trade deficit of USD 8.17 billion (Trading Economics, 2024).

Focusing on the comparison between 2021 and 2024, Kyrgyzstan enlarged the export of mineral fuels by more than three times, while the non-food raw materials sector stayed constant. The export of food products and live animals increased by 53% to USD 406 million. A very strong growth was seen in the sector of machinery and transport equipment, which was rising already on the import-side. The export of machinery and transport equipment increased from USD 171 million in 2021 to USD 570 million in 2024 — more than a threefold increase, as seen in Figure 8.

Figure 8: Export of goods by SITC branches, in million USD

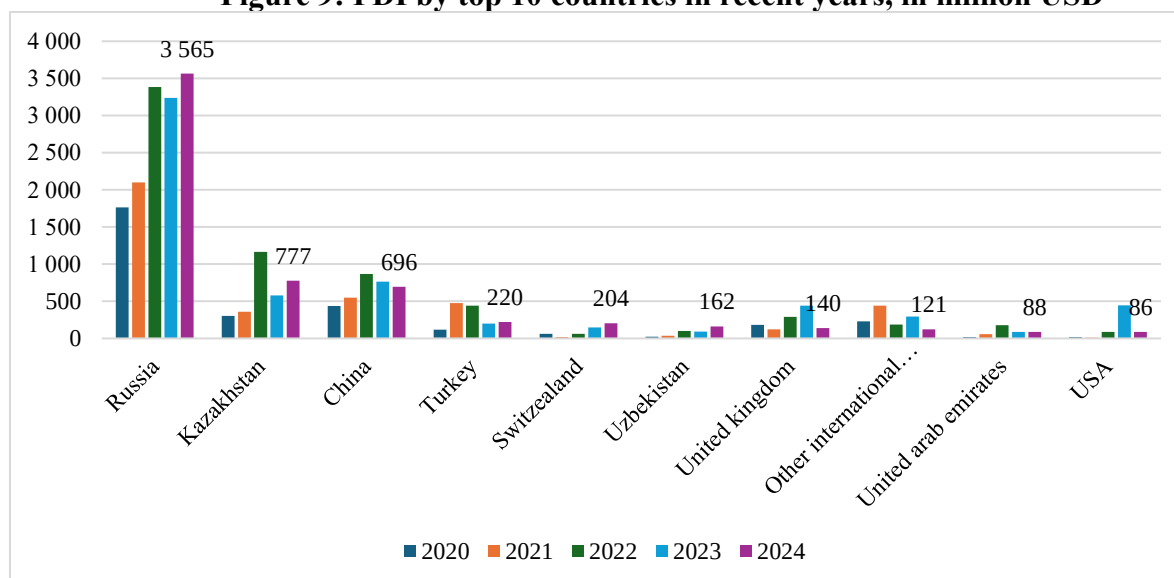


Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025e)

3 Foreign Direct Investments

The following figure shows the development of FDI over the last years for the Top 10 investing countries. Russia increased its share as an investment partner, in particular since 2022. While Russian FDI were about USD 158 million in 2004, until 2024 the FDI increased twentyfold to approximately USD 3.5 billion. Neighboring countries Kazakhstan and China are ranked second and third. Interestingly, if combined, the CIS countries — Azerbaijan, Armenia, Belarus, Georgia, Kazakhstan, Moldova, Russia, Tajikistan, Turkmenistan, Ukraine and Uzbekistan — account for 68% of the total FDI in 2024. Still, the share of Ukraine decreased significantly and steadily over the past 10 years, from around USD 40 million in 2014 to USD 1.7 million in 2024 (Migranyan & Krishtal, 2024).

Figure 9: FDI by top 10 countries in recent years, in million USD

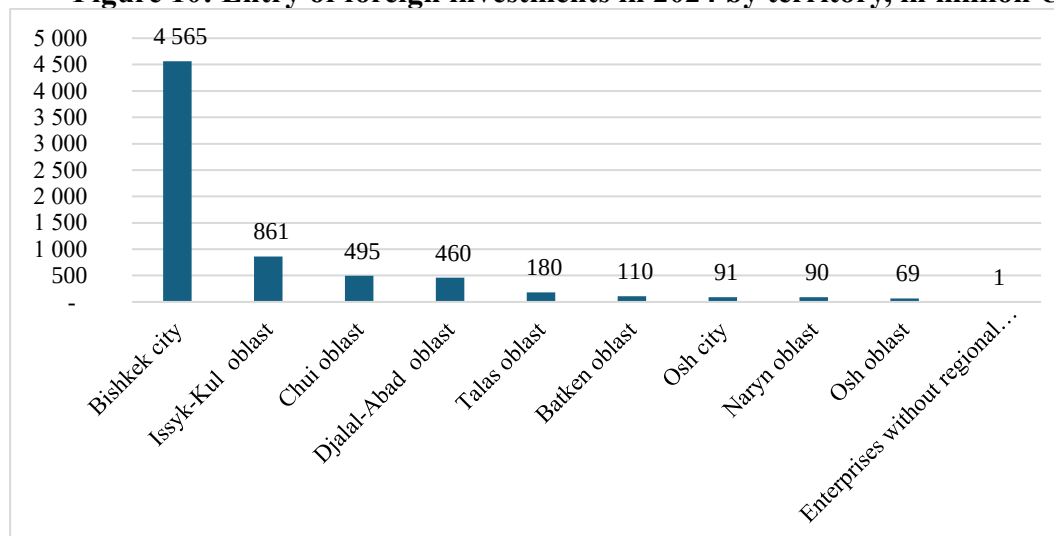


Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025a)

The regional distribution of FDI is rather unequal, as most FDI are concentrated in the capital city of Bishkek, where about USD 4.5 billion of the FDI is concentrated — more

than 65% of the total FDI in 2024. Among the foreign companies recently investing in Kyrgyzstan is also the Canadian company Cameco, which organized a joint venture with the country to develop the Kumtor gold deposits in the Issyk-Kul region and the Zher UY in the Talas region (Tobakalov, 2020).

Figure 10: Entry of foreign investments in 2024 by territory, in million USD



Source: Authors' illustration based National Statistical Committee of the Kyrgyz Republic (2025b)

Conclusion

The article focuses on the current structure of trade of the Central Asian Republic of Kyrgyzstan. Attention is put on the changing trade patterns possibly caused by Western sanctions on Russia. While both imports and exports from different world regions increase, it is in particular the imports from Europe which show very high growth rates, but also the export of machinery and equipment increased, which possibly could be explained by re-exporting imported goods from the West to Russia. However, it is not the focus of the article to analyze if the sanctions regime is effective or not.

The article also highlights the changes in the structure of trade and FDI, while the latter are to an increasingly large extent from Russia. While China obviously boosts its exports to Kyrgyzstan year on year, China seems to be more interested in the supply of goods rather than setting up local production in Kyrgyzstan or becoming a buyer of Kyrgyzstan's products.

The country's trade landscape demonstrates progress however key challenges still exist. While the strategic policies of the country focus on diversification and trade facilitation, the continued regional cooperation, in particular also with the BRI, is highly relevant. The country may focus on the production of higher-grade products to become more independent from the agricultural sector. The participation in the EAEU is certainly a strong driver of trade within the Union. But it may significantly hinder relations with countries from outside the EAEU, in particular with the West. Still, the trade relations with the Central Asian neighbouring countries seem generally to improve.

The challenge for the country remains the deteriorating infrastructure, which is partly in place since the Soviet Union. Besides infrastructure, a structural energy deficit might hinder the further increase of local production. Accordingly, fostering investments in renewable energy might be a chance for the country to overcome this issue. Projects in cooperation, also in the construction of roads, mining or manufacturing, would be important to increase other sectors of the economy which show a good potential for cooperation with China.

Other challenging factors remain high inflation and tightening monetary policy, along with a relatively large public debt burden. An unknown effect from Western sanctions on Russia

might become an opportunity for Kyrgyzstan as a hub for trade but will also put pressure on the country from the EU and other international institutions. In particular, the long-term effect of the sanctions remains a potentially strong influencing factor.

Summarizing, it seems that while the country has a rather open economy, its trade profile reflects both the opportunities of growing integration with Eurasian economic partners and the persistent challenges such as trade deficits, import dependency, and the need for export diversification.

References:

- Alix, J., Baizakova, K., Nicharapova, J., & Rakhimov, M. (2022). *Logistics & diplomacy in Central Asia*.
- Athukorala, P., & Hill, H. (2023). Trade policy in a ‘double-landlocked’ transition economy: Kyrgyzstan. *The World Economy*, 46(12), 3455–3471. <https://doi.org/10.1111/twec.13416>
- Bekbolotova, S., Djanibekov, N., & Herzfeld, T. (2025). How does regional economic integration impact trade in small economies? Evidence from Armenia and Kyrgyzstan’s EAEU accession. *Eurasian Geography and Economics*, 1–29. <https://doi.org/10.1080/15387216.2025.2475904>
- International Monetary Fund. (2024). *Kyrgyz Republic: Selected issues*. <https://doi.org/10.5089/9798400269462.002>
- Imankulova, S. (2024). Discussion on strategic trade cooperation between China and Kyrgyzstan under the background of “One Belt, One Road.” *Highlights in Business, Economics and Management*, 27, 431–437. <https://doi.org/10.54097/pbqzn23>
- Kimsanova, B., & Herzfeld, T. (2022). Policy analysis with Melitz-type gravity model: Evidence from Kyrgyzstan. *Journal of Asian Economics*, 80, Article 101482. <https://doi.org/10.1016/j.asieco.2022.101482>
- Migranyan, A., & Krishtal, I. (2024). Economy of Kyrgyzstan: Stable growth and quality of development. *Russia and New States of Eurasia*, 3, 168–179. <https://doi.org/10.20542/2073-4786-2024-3-168-179>
- Mirboboev, R. (2023). The role of trade and economic integration in the development of Central Asia. *Bulletin of Science and Practice*, 2, 94–103. <https://doi.org/10.24412/2411-1945-2023-2-94-103>
- National Statistical Committee of the Kyrgyz Republic. (2025a). *Entrance of foreign investment*. <https://stat.gov.kg/en/>
- National Statistical Committee of the Kyrgyz Republic. (2025b). *Entrance of foreign investments by region*. <https://stat.gov.kg/en/>
- National Statistical Committee of the Kyrgyz Republic. (2025c). *Geographic distribution of imports of goods*. <https://stat.gov.kg/en/>
- National Statistical Committee of the Kyrgyz Republic. (2025d). *Import of goods by SITC branches*. <https://stat.gov.kg/en/>
- National Statistical Committee of the Kyrgyz Republic. (2025e). *Export of goods by SITC branches*. <https://stat.gov.kg/en/>
- National Statistical Committee of the Kyrgyz Republic. (2025f). *Geographic distribution of exports of goods*. <https://stat.gov.kg/en/>
- Omurova, J., Arzymatova, A., & Lysenko, Y. (2023). Economic relations of Kyrgyzstan and PRC: History, problems, prospects. *World Economy and International Relations*, 67(6), 116–123. <https://doi.org/10.20542/0131-2227-2023-67-6-116-123>
- Ostrowski, W., & Malikov, A. (2025). Energy rents, remittances and regional trade cooperation in Central Asia. *Europe-Asia Studies*, 77(5), 798–827. <https://doi.org/10.1080/09668136.2025.2512119>

- Putz, C. (2024, June 28). Kyrgyzstan, EU sign enhanced partnership and cooperation agreement. *The Diplomat*. <https://thediplomat.com/2024/06/kyrgyzstan-eu-sign-enhanced-partnership-and-cooperation-agreement/>
- Sim, L.-C., & Aminjonov, F. (2024). Statecraft in the steppes: Central Asia's relations with China. *Journal of Contemporary China*, 33(148), 618–633. <https://doi.org/10.1080/10670564.2022.2136937>
- TAdviser. (2025, July 3). Kyrgyzstan increased annual exports by 13.1% thanks to Russia. Imports have shrunk. https://tadviser.com/index.php/Article:Foreign_trade_of_Kyrgyzstan
- Tobakalov, Ch. (2020). Relations of sovereign Kyrgyzstan in the economic and social spheres. *Bulletin of Science and Practice*, 6(10), 410–414. <https://doi.org/10.33619/2414-2948/59/36>
- Trading Economics. (2024). *Kyrgyzstan exports by country*. <https://tradingeconomics.com/kyrgyzstan/exports-by-country>
- Trading Economics. (2025). *Kyrgyzstan GDP expands 11.7% in the first half of 2025*. <https://tradingeconomics.com/kyrgyzstan/monthly-gdp-yoy/news/470247>
- Trading Economics. (2025). *Kyrgyzstan imports*. <https://tradingeconomics.com/kyrgyzstan/imports>
- Valeeva, R. A. (2019). Development of cooperation between Kyrgyzstan and the European Union at the present stage. *Post-Soviet Issues*, 6(3), 288–296. <https://doi.org/10.24975/2313-8920-2019-6-3-288-296>
- World Bank Group. (2025a). *GDP (current US\$) — Kyrgyz Republic*. <https://data.worldbank.org>
- World Bank Group. (2025b). *GDP growth (annual %) — Kyrgyz Republic*. <https://data.worldbank.org>

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SECURITY CRITERIA AND SENSITIVE SECTORS IN FDI SCREENING REGULATIONS

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Abstract. Foreign direct investment (FDI) has traditionally been viewed as a vehicle for economic exchange, but recent geopolitical developments have highlighted its potential to function as an instrument of strategic influence, coercion, and dependency. This paper provides a comparative and conceptual examination of security criteria and sensitive sectors across major global FDI screening regimes, focusing on the European Union, the United States, China, and the United Kingdom. The analysis reveals that despite divergences in their legal and institutional configurations, these jurisdictions increasingly recognize the security risks associated with emerging technologies, digital infrastructure, and control over sensitive data. As geopolitical competition intensifies and technological interdependence deepens, FDI screening is likely to become a structural feature of the contemporary international economic order, necessitating a deeper understanding of the legal and policy foundations of these regimes to assess future trajectories of global investment governance.

Keywords: national security, FDI, investment screening

JEL: F10, F50, K33, P45

Introduction

In contemporary international economic relations, foreign direct investment (FDI) plays a central role in facilitating trade, promoting development, and integrating national economies into global value chains. For decades, the prevailing assumption underlying investment liberalization was that cross-border capital flows largely served economic purposes: expanding markets, improving efficiency, and fostering innovation. However, recent geopolitical developments have demonstrated that foreign investment is not merely a vehicle for economic exchange but can also function as an instrument of strategic influence, coercion, and dependency. Scholars of security studies have long observed that economic interactions may become “securitized” when states perceive them as potential threats rather than purely commercial transactions, a dynamic reflected in Buzan’s conceptualization of security as a socially constructed process shaped by political narratives and threat perceptions (Buzan et al., 1998). Likewise, Farrell and Newman’s theory of “weaponized interdependence” shows how states can strategically exploit asymmetric network relations, such as control over supply chains, standards, and technological ecosystems, to exert leverage over others (Farrell & Newman, 2019).

Against this backdrop, FDI has increasingly come to be understood as a domain in which economic openness intersects with national-security vulnerabilities. Investments in sectors such as critical infrastructure, advanced technology, communications, data governance, and strategic raw materials can create channels of influence that extend beyond commercial considerations. In some circumstances, foreign acquisitions may provide external actors, including foreign governments or state-supported firms, with access to sensitive technologies, control over essential supply chains, or informational advantages that can be used to shape domestic political or strategic outcomes. As a result, states across the world have expanded their investment-screening mechanisms and tightened national-security review

procedures, reflecting a broader reconceptualization of FDI as both an opportunity and a risk within an era of heightened geopolitical competition. Because the terms like National Security, Economic Security and Security itself is rather vague, it is of great importance that we must give the proper definition of such terms and things that are also used in screening regulations of FDI, examine the criteria most frequently articulated in FDI screening frameworks, along with the sectors that are placed under scrutiny and designated as “sensitive”. In other words, sectors deemed strategically or economically indispensable.

Much attention has been devoted to the political motivations behind screening regimes or the legal implications for international investment law, yet less systematic analysis has been devoted to the content of the criteria themselves and the logic behind sectoral designation. Different jurisdictions, including the European Union, the United States, China, the United Kingdom, use divergent formulations of what counts as a “security interest,” and their lists of sensitive sectors vary widely in breadth and specificity. Some states adopt broadly worded security tests that grant regulators significant discretion, while others enumerate detailed sectors, such as semiconductors, energy infrastructure, defense, biotechnology, or personal-data-intensive services, are subject to enhanced review.

Understanding how these criteria and sectors are constructed is essential for evaluating the transparency, predictability, and legitimacy of modern FDI screening frameworks. It also allows us to assess whether the expansion of “sensitive sectors” reflects genuine security vulnerabilities or whether it risks serving as a proxy for protectionist industrial policy. Against this background, this paper aims to provide a comparative and conceptual examination of security criteria and sensitive sectors across major global screening regimes.

1 Evolving understanding of security

Any analysis of security criteria and sensitive sectors in FDI screening must begin with the observation that the very meaning of “security” has undergone profound transformation. One might naturally think that national security referred primarily to military preparedness, territorial sovereignty, and protection against external armed threats, and would not be wrong. Accordingly, only a narrow set of industries, such as defense, production or nuclear technology were considered security relevant. However, the late 20th and early 21st centuries witnessed accelerating globalization, digitalization, and technological convergence, fundamentally reshaping the landscape of vulnerabilities and dependencies. This has led to an expanded, and often contested, understanding of what constitutes national and economic security.

According to Farrel and Newman, global economic networks, which before were presumed to promote peace through mutual dependence, can instead be used as instruments of geopolitical leverage. States with control over key nodes of global value chains (e.g., advanced semiconductors, digital platforms, SWIFT financial messaging) may exploit these chokepoints to exert pressure on rivals (Farrel and Newman, 199). Consequently, sectors associated with such chokepoints often become central to FDI screening frameworks, as governments seek to prevent adversaries from gaining control over strategic economic infrastructures.

An issue becomes a matter of security not because of its inherent characteristics but because political actors frame it as an existential threat requiring exceptional measures. This lens helps explain why sectors as diverse as 5G telecommunications, cloud computing, critical minerals, pharmaceuticals, or satellite infrastructure have increasingly been labelled as “sensitive.” The designation reflects political and strategic judgment rather than purely technical assessment.

The evolution toward economic security has further broadened the scope of what is deemed sensitive. Economic security refers to the resilience of domestic supply chains, technological sovereignty, macroeconomic stability, and the ability to maintain critical

functions during crisis. As a result, FDI screening regimes increasingly target sectors that underpin long-term competitiveness and innovation, such as advanced manufacturing, quantum technologies, renewable energy infrastructure and much more.

2 Comparative Overview of Security Criteria in Major Jurisdictions

The expansion of FDI screening mechanisms across major economies is accompanied by significant variation in the substantive criteria used to assess whether a foreign investment may threaten national security. Although many jurisdictions employ similar conceptual categories, such as defense, critical infrastructure, and sensitive technologies - there is no universally accepted definition of what constitutes a “security risk.” Screening regimes differ not only in their legal mandates, but also in the breadth of discretion afforded to regulators, the specificity of criteria, and the overall transparency of the review process. This section provides a comparative analysis of security criteria in 4 key jurisdictions: the European Union (EU), the United States (US), the United Kingdom (UK), People’s Republic of China (PRC), highlighting areas of convergence and divergence in their approaches to defining and operationalizing security concerns in FDI reviews.

2.1 Jurisdictions

2.1.1 European Union

The EU’s FDI screening framework is built around Regulation (EU) 2019/452, which lays down the essential legal structure for the scrutiny of foreign direct investments in the European Union, aiming to create a system that harmonizes the sovereignty of Member States with a unified European strategy for investments that may impact security. As stated, in Article 1, the Regulation does not grant the European Commission the power to halt transactions; rather, it establishes a procedural framework that facilitates collaboration between Member States and the Commission, while emphasizing that the responsibility for protecting national security remains with the Member States (Regulation 2019/452, pp. 1-2, 6). The Regulation embraces a deliberately wide-ranging and adaptable definition of security, as detailed in Article 4, which provides a non-exhaustive list of considerations for national authorities when assessing whether an investment might influence security or public order. These considerations include the potential effects of a transaction on vital infrastructure such as energy, transport, water, health, communications, data storage, or financial systems, as well as essential technologies like artificial intelligence, robotics, semiconductors, cybersecurity, aerospace, defense, energy storage, quantum, and nuclear technologies. Furthermore, Member States are encouraged to evaluate whether an investment could impact the security of supply of crucial inputs, such as energy, raw materials, or food; whether it might lead to access to sensitive information, including personal data; and whether it could affect media freedom and pluralism. Article 4(2) also advises authorities to consider if the foreign investor is under the control of a third-country government, whether through ownership, substantial funding, or involvement in intelligence or military forces, highlighting the Regulation’s focus on the geopolitical aspects of investments (Regulation 2019/452, p. 7).

While the Regulation sets out a unified set of substantive criteria, it grants significant leeway to national authorities in interpreting “security or public order” and deciding which sectors require increased scrutiny. This decentralized strategy is bolstered by the cooperation mechanism outlined in Articles 6 and 7, which mandates that Member States inform the Commission and other Member States about ongoing screening processes, while also allowing them to request information and offer opinions. These opinions, including those from the Commission under Article 7(3), are advisory and not obligatory, leaving the Member State where the investment is intended with the ultimate power to approve, impose conditions on, or reject the transaction. Consequently, Regulation 2019/452 creates a hybrid framework that

merges EU-level coordination with national decision-making independence, facilitating some alignment in security evaluations while still allowing for variation in both the content and execution of screening across Member States.

Recently, The European Commission has indicated plans to impose stricter regulations on foreign investors to tackle issues where companies from non-EU countries, especially China, are taking advantage of the EU's open market without significantly boosting employment or contributing to technological advancement in Member States. These proposed changes, still under discussion, are anticipated to be part of a larger set of economic measures to be unveiled next month. The main aim is to strengthen Europe's industrial foundation and promote economic growth amid a general slowdown in the macroeconomic environment. The rapid growth of Chinese industrial ventures in the EU has sparked concerns among policymakers and analysts. There is increasing worry that these investments might be used to heighten Europe's technological reliance on China, aligning with Beijing's long-term geopolitical goals. Further observations suggest that some foreign companies might attempt to lessen the effects of possible EU sanctions or trade actions by establishing production sites within the Union, thereby complicating the enforcement of economic restrictions (Financial Times, 2025).

EU Commissioner for Industry, Stéphane Séjourné, highlighted in an interview with the Financial Times that revised criteria should ensure that FDI generates broader economic benefits, including integration into European supply chains rather than merely establishing isolated production capacity. Séjourné has been actively promoting the “Made in Europe” agenda, and he indicated that the forthcoming rules may introduce obligations relating to local employment and technology transfer in specific strategic sectors, notably in battery manufacturing (Financial Times, 2025). At the same time, the Commissioner underscored that the Union intends to rely primarily on investment regulation rather than tariff instruments, distinguishing the EU’s approach from that of the United States. Although the proposed documents will not explicitly reference China, Séjourné acknowledged that Chinese investment remains the most substantial and therefore requires particular scrutiny. According to European Commission data, Chinese FDI inflows into the EU increased by approximately 80% in 2024, reaching €9.4 billion (Financial Times, 2025).

A prominent example is CATL’s planned battery facility in Spain, which anticipates bringing 2,000 workers from China during the construction phase while ultimately creating an estimated 3,000 jobs, the majority of which are expected to be filled by local employees. Nevertheless, labor unions have expressed concern over the limited willingness of the company to share critical technologies. The Spanish government has expressed support for the Commission’s initiative to tighten FDI-related requirements, arguing that such measures will enhance economic security and stability while ensuring that foreign investment contributes more significantly to employment creation and technological value within Europe (Financial Times, 2025).

2.1.2 United States

The Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA) marked a major expansion in the scope and power of the U.S. Committee on Foreign Investment in the United States (CFIUS), effectively redefining what constitutes national security risk in foreign direct investment. Unlike earlier frameworks that focused primarily on full acquisitions of U.S. companies, FIRRMA extends CFIUS’s jurisdiction to include non-controlling investments, particularly where the target business involves critical technologies, critical infrastructure, or sensitive personal data (TITLE XVII, 2018). Under FIRRMA, a key consideration for review is whether the investment could afford a foreign investor the ability to acquire or influence “substantial interest” in a TID (technology, infrastructure, data) business. This includes control over or access to export-controlled

technologies, dual-use goods, or emerging critical technologies that may affect U.S. technological leadership or military capabilities (ibidem). The Act also identifies critical infrastructure (like telecommunications, energy, and transportation networks) as a core area of concern. Additionally, FIRRMA explicitly requires CFIUS to assess risks associated with sensitive personal data, namely, whether a transaction would provide a foreign person with access to such data in a manner that could compromise U.S. national security (ibidem).

In November 2024, Treasury released a final rule further defining the scope of CFIUS' authority as it relates to enforcement actions and setting penalties. The modifications to the implementing regulations of CFIUS (31 C.F.R. Part 800 and 802, 2020) expand upon the Enforcement and Penalty Guidelines released by CFIUS in October 2022. These changes incorporate insights gained by CFIUS regarding compliance, deterrence, enforcement, and the management of U.S. national security risks related to CFIUS' activities. For example, enhanced ability to investigate and request information. CFIUS may request the following types of information from transaction parties: (I) information to monitor compliance with or enforce the terms of a mitigation agreement, order or condition; (II) information to determine whether transaction parties have made material misstatements or omitted material information during the course of previously concluded review or investigation (including in such cases where the transaction parties' CFIUS filing was rejected by CFIUS); and (III) information necessary to determine whether the non-notified transaction would constitute a "covered transaction" that is subject to CFIUS' jurisdiction for review (Zucker, 2025).

The OIR (Outbound Investment Regulation), which became effective on January 2, 2025, also reflect the U.S. government's increased concerns about China and the potential economic rivalry and national security threat it poses to the United States. Specifically, the OIR aim to address national security threats from "countries of concern" (currently identified as China, Hong Kong, and Macau) that seek to leverage advanced technologies to boost their military, intelligence, surveillance, or cyber capabilities. Under the OIR, entities involved in certain high-tech sectors (currently, AI, semiconductors, and quantum computing) and associated with countries of concern are classified as "covered foreign persons." "Covered transactions", which include various types of investment, by U.S. individuals and their "controlled foreign entities" (including non-U.S. subsidiaries) in covered foreign persons either require notification to the U.S. government or are prohibited, depending on the specific activities of the covered foreign person (Zucker, 2025).

"The Trump Administration has previewed its intent to expand the OIR to cover additional industries (such as biotechnology, aerospace and advanced manufacturing). The new administration also has suggested that it will reduce or eliminate existing exemptions for passive investments and investments in public securities, all of which would impose new compliance burdens on deal parties" (ibidem).

2.1.3 United Kingdom (NSI Act 2021)

Recent reporting suggests that the United Kingdom's current approach to national-security screening has been shaped directly by earlier shortcomings in its foreign investment regime. According to a BBC investigation, China invested approximately £45 billion in UK companies and projects since the early 2000s, with the UK becoming the most significant destination for Chinese high-tech investment among the G7 when adjusted for population and GDP (Hatton, 2025). Several of these transactions, including the 2017 acquisition of Imagination Technologies by the China-linked Canyon Bridge private equity fund, provided foreign investors with access to advanced semiconductor design capabilities with potential military applications. Much of this activity accelerated after China's "Made in China 2025" industrial strategy, which encouraged strategic overseas acquisitions in high-technology sectors such as semiconductors, aerospace, robotics, and electric vehicles. Former senior intelligence

officials quoted in the report argue that the UK had been “far too free” in allowing foreign ownership in strategically important science and technology sectors (ibidem, 2025). Director Sir Jeremy Fleming, the cumulative effect of these cases demonstrated that the UK had underestimated the long-term strategic intent behind Chinese investment, even as the Chinese government restricted foreign access to its own critical sectors. These developments contributed to a broader international trend of tightening investment-screening frameworks between 2017 and 2020, culminating in the introduction of the NSIA in 2021.

The NSIA does not define a single all-encompassing definition of “national security.” Instead, it establishes a hybrid screening regime which combines a mandatory notification regime for acquisitions affecting certain sensitive sectors, along with a call-in power allowing the government to review any acquisition (even outside those sectors) if it suspects a threat to national security.

According to the official guidance, the NSIA’s mandatory notification regime currently covers 17 sectors of the economy considered sensitive to national security, i.e. sectors in which acquisitions must be notified if a control threshold is met. They include advanced materials, advanced robotics, artificial intelligence, civil nuclear activities, communications, computing hardware, critical suppliers to government, cryptographic authentication, data infrastructure, defense, energy, military and dual-use technologies, quantum technologies, satellite and space technologies, suppliers to emergency services, synthetic biology and transport. These sectors are viewed by the UK government as carrying elevated national-security relevance, requiring closer scrutiny when foreign (or cross-border) investors seek control (NSIA, 2021).

While the NSIA does not list a formal “security-criteria catalogue” akin to Article 4 in the EU’s FDI regulation, its design and the sensitivity of the sectors reflect certain *de facto* criteria that guide screening and call-in decisions: The regime is concerned with acquisitions that could threaten the integrity or resilience of critical infrastructure, undermine the United Kingdom’s technological or industrial capabilities, create vulnerabilities within essential supply chains, or expose sensitive data to foreign control. It also reflects concerns about dual-use technologies, the potential military or strategic value of advanced scientific developments, and the implications of foreign influence (particularly state-linked or state-directed influence) over strategic economic activities. These concerns underpin the Government’s authority to “call in” for review any transaction, even outside the seventeen sensitive sectors, if there is reasonable suspicion that the acquisition may give rise to national security risks (NSIA, 2021).

2.1.4 China (Measures on Security Review of Foreign Investment)

Unlike the EU and U.S. frameworks, which typically delineate sector-specific or function-specific criteria, the Chinese regime employs deliberately broad formulations that integrate national security, economic security, and social stability into a single, comprehensive concept of risk. Under Article 2, any foreign investment that “would or could affect national security” must be subject to review. The law thereby implicitly adopts a risk-based approach: it is not limited to a small list of predefined “defense” industries but potentially covers any sector or investment that can pose security concerns, depending on context and control structure (Measures, 2021). To operationalize this broad mandate, the Measures create an Operational Mechanism, jointly overseen by the National Development and Reform Commission (NDRC) and the Ministry of Commerce of the People's Republic of China (MOFCOM). The Mechanism is empowered to accept filings directly from foreign investors, coordinate inter-agency review, and decide whether to approve, condition, or prohibit transactions. The 2021 Measures divide covered investments into two broad categories:

Military/Defence-Related Investments (automatic review): Any foreign investment in sectors related to national defense or security, including the arms industry and related supply sectors or investments in proximity to military facilities or defense-industry facilities

automatically require pre-notification and review, regardless of whether actual control is obtained. “Important” Civil Sectors (review if foreign control is obtained): For non-defense sectors, the Measures require security review when a foreign investor obtains “actual control” over enterprises operating in certain “important” industries. These industries include: key agricultural products; energy and natural resources; major equipment manufacturing; critical infrastructure; transportation services; information technology and internet products or services; financial services; cultural industries and services; advanced / key technologies; and other sectors deemed “important. (ibidem)

Because the law does not exhaustively define every “important” sector, the determination remains partly discretionary, giving regulators flexibility to adapt to evolving security, economic, or technological conditions. “Actual control” is defined broadly: it may result from (I) a foreign investor holding a majority equity share (50 percent or more), (II) holding less than 50 percent but having sufficient voting rights or board influence to control decision-making, or (III) other circumstances that grant decisive influence over business strategy, finances, human resources, technological operations, or similar key dimensions (Norton Rose Fulbright, 2020). The 2021 Measures reflect a holistic conception of national security in China - one that merges military defense concerns with economic security, technological autonomy, control over critical infrastructure, and regulation of sensitive industrial and service sectors. This aligns with China’s broader industrial and technological strategy, ensuring state capacity to control foreign ownership in sectors deemed vital to national development or strategic autonomy. For foreign investors, this regime introduces heightened regulatory risk and uncertainty: given the broad, partly discretionary definitions of covered sectors and “actual control”, many investments even outside traditionally sensitive sectors may trigger review. The risk is compounded by the lack of public, detailed criteria for sectoral classification and by the regulators’ wide discretion to interpret “security-relevant” factors considering evolving policy priorities.

3 Comparison

A cross-jurisdictional comparison of the EU, United States, United Kingdom, and China reveals that despite growing convergence in the recognition of FDI as a potential vector of national-security risk, the substantive criteria and institutional design of screening mechanisms differ significantly. These differences reflect not only divergent legal traditions but also distinct geopolitical priorities, economic structures, and strategic cultures. One major line of divergence concerns the scope and precision of security criteria. The EU adopts a hybrid approach: its Regulation 2019/452 provides a detailed but non-exhaustive list of risk factors, e.g. effects on critical infrastructure, sensitive technologies, supply security, personal data, and media pluralism, while leaving the final interpretation of “security or public order” to the discretion of Member States. In practice, this results in a moderately broad but fragmented system in which national authorities operationalize the concept differently. Art. 6 para. 1 of the Screening Regulation currently requires Member States to “notify the Commission and the other Member States of any foreign direct investment in their territory that is undergoing screening” However, at the same time, there are still Member States which do not screen any foreign direct investment, and the mechanisms in place are diverging significantly in their respective scope of application. Even the Member States’ interpretations of what falls into the ambit of “screening” according to Art. 6 para. 1 of the Screening Regulation are diverging, with Germany, for example, only notifying cases of in-depth examination. This can lead to undersharing, i.e. information relevant to other Member States or the Union not being fed into the cooperation mechanism. (Hindelang & Huth, 2024) It is one of the most important issues that EU has to address, lest this Regulation promote cooperation and consensus among its members. The United States, in contrast, defines national-security concerns primarily

through the TID (technology, infrastructure, data) framework established by FIRRMA, linking review to access or control rather than sectoral classification alone. The US approach is function-specific: the central question is whether an investment provides foreign actors with capabilities that could compromise military readiness, technological primacy, critical-infrastructure integrity, or the privacy and security of US citizens. By comparison, the UK's NSIA 2021 embodies a dual system, combining a mandatory notification obligation for seventeen high-risk sectors with a broad call-in power. This structure gives the British government more targeted *ex ante* control than the EU, while retaining discretion similar to the US framework. China diverges most sharply: its 2021 Measures adopt an open-ended definition of national security that encompasses military security, economic security, social stability, cultural security, and technological sovereignty, with broad regulatory authority to prohibit or condition transactions that may affect any of these areas. Its list of "important industries" is intentionally flexible and can include virtually any sector deemed strategically significant.

A second dimension of comparison concerns the sectoral scope of sensitive areas. Across all jurisdictions, traditional sectors such as defence, military-dual-use technologies, and nuclear capabilities continue to receive heightened scrutiny. Yet, modern screening frameworks extend far beyond these classical domains. The EU's Article 4 explicitly includes artificial intelligence, robotics, semiconductors, cybersecurity, quantum computing, energy storage, and space technologies. The United States similarly prioritizes emerging technologies, advanced manufacturing, critical minerals, and digital infrastructure. The UK's list of seventeen mandatory-notification sectors overlaps substantially with US and EU concerns, particularly in relation to advanced technologies, data infrastructure, communications, synthetic biology, and quantum technologies. China's list is the broadest, encompassing not only strategic technologies but also key agricultural products, cultural sectors, financial services, and major equipment manufacturing. The expansion of sensitive sectors in China reflects its holistic understanding of national security within the framework of "comprehensive national security", in which economic and technological vulnerabilities are considered inseparable from broader political and social stability.

A third axis of comparison concerns the role of foreign state influence as a security criterion. The EU's Article 4 expressly requires Member States to consider whether an investor is controlled by a third-country government, receives significant government funding, or has a history of activities affecting national security. The United States likewise evaluates ownership structure, state linkage, and ties to "countries of concern" (currently China, Hong Kong, and Macau), especially under outbound-investment rules. The UK regime incorporates these considerations implicitly through its call-in power, enabling intervention even outside mandatory sectors when foreign influence is suspected. The Chinese regime, by contrast, does not focus on the risks posed by foreign state influence but rather on protecting domestic industries from foreign control. For China, the central issue is not whether a foreign investor is state-linked but whether the transaction could undermine China's economic resilience, technological autonomy, or defense capabilities.

A fourth area of divergence relates to the degree of regulatory discretion. The US and Chinese systems grant authorities extensive investigative powers, including the ability to review non-notified transactions and impose mitigation measures such as governance restructuring or restrictions on technology transfer. The UK's NSIA likewise grants broad call-in powers and the ability to impose remedies. In contrast, the EU's institutional design relies on decentralized implementation and cooperation, with the Commission playing a primarily advisory role. This results in varying degrees of regulatory assertiveness across the Member States, with some (e.g., Germany, France, Italy) adopting highly active screening policies, while others maintain lighter frameworks.

Conclusion

Despite the divergences among national screening regimes, several important points of convergence emerge from this analysis. Across the EU, the United States, the United Kingdom, and China, governments increasingly recognize the security risks associated with emerging technologies, digital infrastructure, and control over sensitive data. Each jurisdiction has expanded the scope of its screening mechanisms in response to geopolitical tensions, most notably concerns regarding Chinese outbound investment, dual-use technologies, and the potential strategic implications of foreign control over critical assets. All four systems reflect a shared understanding that economic interdependence can create strategic vulnerabilities requiring active state intervention. Correspondingly, each regime has shifted from a predominantly reactive model toward preventive scrutiny, reflecting the broader insight that national security in a globalized economy depends not only on military capabilities but also on technological leadership, supply-chain resilience, and control over critical inputs.

At the same time, these jurisdictions operationalize their security concerns through markedly different legal and institutional configurations. The EU relies on a cooperative but decentralized structure that blends EU-level coordination with Member State autonomy. The United States pursues a capability-oriented model centered on protecting critical technologies, infrastructure, and data. The United Kingdom employs a hybrid system that combines clearly defined high-risk sectors with broad discretionary powers to address emerging threats. China adopts the most comprehensive and state-centric approach, integrating economic, technological, and social stability concerns into an expansive conception of national security. These differences underscore not only distinct strategic priorities but also competing normative visions of how openness to foreign investment should be reconciled with national-security imperatives.

Taken together, the analysis suggests that FDI screening has become a structural feature of the contemporary international economic order rather than an exceptional measure. As geopolitical competition intensifies and technological interdependence deepens, it is likely that screening mechanisms will continue to expand in scope and sophistication. Understanding the legal and policy foundations of these regimes is therefore essential for assessing future trajectories of global investment governance and the evolving balance between economic openness and national security.

References:

- Buzan, B., Wæver, O., & de Wilde, J. (1998). *Security: A new framework for analysis*. Lynne Rienner Publishers.
- Code of Federal Regulations, 31 C.F.R. §§ 800, 802. (2020). <https://home.treasury.gov/policy-issues/international/the-committee-on-foreign-investment-in-the-united-states-cfius/cfius-laws-and-guidance>.
- Zucker, J. et al. (2025). *The evolving global foreign direct investment and national security review landscape 2025*. Dechert. <https://www.dechert.com/knowledge/publication/the-evolving-global-foreign-direct-investment-and-national-secur.html>
- Farrell, H., & Newman, A. L. (2019). Weaponized interdependence: How global economic networks shape state coercion. *International Security*, 44(1), 42–79.
- Financial Times. (2025). *EU to tighten investment rules to stand up to China*. <https://www.ft.com/content/a7190e3e-8656-401e-8645-f342d1a63793>
- Hatton, C. (2025, January 14). *China's investment spree in UK gave it access to military-grade technology, BBC told*. BBC News. <https://www.bbc.com/news/articles/cvgmy5d7k84o>

- Hindelang, S., & Huth, J. P. (2024). *Towards a centralisation of FDI screening in the EU? On the functioning and effects of the cooperation mechanism in the Commission's proposal for a revised screening regulation*. CELIS Institute.
- Measures for Security Review of Foreign Investment (PRC). (2021). https://www.bakermckenzie.com/-/media/files/insight/publications/2021/01/foreign_investment_security_review_measures.pdf
- National Security and Investment Act. (2021). <https://www.legislation.gov.uk/ukpga/2021/25/enacted>
- Regulation (EU) 2019/452 of the European Parliament and of the Council of 19 March 2019. (2019). <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:32019R0452>
- U.S. Department of the Treasury. (2018). *Foreign Investment Risk Review Modernization Act of 2018 (FIRRMA)*. https://home.treasury.gov/system/files/136/The-Foreign-Investment-Risk-Review-Modernization-Act-of-2018-FIRRMA_0.pdf

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GLOBAL CHALLENGES OF MODERN TIMES FOR THE DEVELOPMENT OF TOURISM INFRASTRUCTURE IN THE ODESSA REGION: INVESTMENT DETERMINANTS AND EUROPEAN SUPPORT

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Abstract: The article focuses on analysing the global challenges of modern times for the development of tourism infrastructure in the Odessa region on the bases of investment determinants and European support. The study presents the processes by which the state regulates the tourism industry, organizes existing models of state control of tourism-related activities, identifies current tourism industry trends, and assesses the impact of these trends on the Odessa region. Strategic regulation concerns the state of the country's tourism potential, the implementation of planned target programs, monitoring the external and internal environment, as well as changes in the country's economic and social policy.

In the article, the author pays attention to current military tourism. The military tourism study is to determine the economic potential of military tourism as a tool for regional development and post-war reconstruction of Ukraine in the context of the Sustainable Development Goals. The author contend that Ukraine must establish regional investment and tourism plans, especially in light of population improvement and macroeconomic expansion. The main strategies for increasing the region's attractiveness are the creation of favourable conditions for investors, the implementation of transparent and effective processes for facilitating investments, and the active involvement of private capital in the building of tourism infrastructure.

Keywords: investment policy, military tourism, tourist attractiveness, tourism infrastructure, state regulation, municipal program

JEL Classification: H00, E22, M21

1 Introduction

The tourism industry is one of the most significant areas of the global economy. Numerous nations have designated the tourism industry as a top priority for the advancement of their economies and cultures.

At the current stage of integration, the development of the tourism and recreation industry is one of the most dynamic processes, which is due to globalization, increasing living standards in economically developed countries, large-scale investments in attractive tourist regions, and increasing population mobility. In Ukraine, the tourism industry is at the stage of renewed development, but its functioning has a significant impact on the economy and is quite promising. Our state has quite real opportunities and conditions for increasing and activating tourism potential, in particular, due to the presence in the country of unique natural and recreational resources, historical and cultural monuments, rich flora and fauna, and areas of various forms of recreation. Particularly relevant in modern conditions is the improvement of methods of organizational and financial and resource support for the development of tourism at the macro-, meso-, and micro-levels. Accordingly, the activation of tourism enterprises should be based on expanding the capabilities of regional management of investment processes in this direction and combining effective state regulation of the economy with market self-regulation (Fabozzi, 2008).

To implement these decisions, it is necessary to effectively manage tourist flows at the regional level, namely in the European Union. The main structures that manage the tourism industry in the regions of the EU countries are the Committee on Regional Policy of the EU Council of Ministers and the European Regional Development Fund, which operates within the EU budget. In the process of attracting domestic and foreign investment capital by regional economic entities in the tourism industry, it is advisable to use a system of priority potential sources of investment policy in the industry. However, there are several problems that need to be solved, unfortunately, the military conflict with Russia is a priority problem for regional economic development.

Accordingly, harmonization of national standards in the area of tourism with international and European standards will contribute to improving the quality of the national tourism product and servicing consumers of tourism services. The current issue that needs to be resolved is the liberalization of the visa regime, in particular for citizens of countries that are target markets for Ukraine. Overcoming existing negative trends, creating systemic and comprehensive prerequisites for the development of tourism and resorts in the state should become one of the priority areas for accelerating the country's economic growth, supporting employment, structural modernization of the economy, and filling budgets at all levels. The most developed regional tourist complexes can become the basis for forming a network of special economic zones and territories of priority development of the tourism and recreation type in Ukraine. It is important to create a favourable investment climate not only for foreign investors, but also for our own, which will allow creating stable working conditions with a view to using long-term investments.

Ukraine's integration into European structures requires the development and implementation of a model of relations with and management of regions that would meet the principles of the European Union's regional policy, contribute to the establishment of new forms of cooperation in the "centre-regions" format, and the generally recognized practice of internal interregional cooperation and international cooperation of territories.

Strategic regulation concerns the state of the country's tourism potential, the implementation of planned target programs, monitoring the external and internal environment, as well as changes in the country's economic and social policy (Karpenko, 2018).

The conditions of socio-economic and political development in different countries explain the various approaches to state regulation of tourism. These approaches include political and economic stability, the contribution of tourism to the country's budget, and the attractiveness of the country for tourists, including its historical and cultural monuments, unique natural resources.

According to the strategy for the development of tourism and resorts in Ukraine for the period until 2026, organizational, legal, financial and economic mechanisms of state regulation of the tourism industry are traditionally distinguished. In particular, it is worth noting that the influence of state and local authorities at different levels determines the general principles of the development of the organizational mechanism of state regulation for the tourism industry in Ukraine (Melnychenko & Shvedun, 2017).

2 Literature review

Important aspects of studying the experience of using mechanisms of state regulation in the tourism sector of Ukraine are highlighted by many Ukrainian and foreign scholars. Features of the Development of the Tourism Industry in Ukraine are analysed in the scientific works of a number of authors: Melnychenko O. (2017), Shvedun V. (2017), Yurkevych O. (2012), and others. An international tourism, formation of the system of fair business practice of the company under conditions of corporate responsibility, the purpose of public administration, the need to establish efficient state regulatory frameworks, and the use

of effective instruments and techniques for state investment policy in the travel and tourism industry are discussed in the works of Bozhydarnyk T. (2019), Karpenko, L. (2019), Pashko P. (2019), Bouton L. (2020), and others.

Author Font X. wrote in 2016 critical review of certification and accreditation in sustainable tourism governance. With a focus on poor nations, this study aims to contribute to conversations about the viability and merits of employing agency money for accreditation and certification as instruments for sustainable development. This document intends to show why a cost-benefit analysis of certification as a tool for sustainable development in poor nations is essential.

More specifically, Fabozzi F. (2008). proposes investment management and investment modelling of territorial attractiveness. The topics of modern portfolio theory and current investment analysis in various fields are researched by such scholars as Elton E., Gruber M., Brown L., and Getzmann R. (2014). Modern research in the context of globalization and developments in European integration, the problems of fundamental alternatives and the investment paradigm impact development were investigated by Karpenko L. (2019).

In the scientific works of the authors Karpenko and Rudolf (2025) questions regarding the impact of international grants and programs on the development of the tourism industry in Ukraine are explored.

Many domestic and foreign scholars and professionals focus their research on topics related to regional investment strategies in the travel and tourism sector. Numerous topics related to tourism research and luring foreign investments to enhance the investment climate are covered in the writings of both domestic and international economists and scholars. As a result, as several scholarly and practical studies have shown, the topic is relevant and requires continued research.

3 Research goal, methods and research base

The goal is to study the practice of using mechanisms of state regulation for the tourism sector, systematize existing models of state regulation in tourism activities, identify modern trends in the tourism industry and their impact in the Odessa region.

The theoretical, methodological, and applied concepts of creating investment strategy tools and organizing investments for territorial growth are the main areas of interest for this work. The studies approach is based on the fundamental concepts of public administration theory, Ukraine's primary legal frameworks, and scholarly works by national and international authorities on issues related to investment area regulation.

The studies information base comprised data from the Ukrainian Ministry of Economic Development and Trade, the Verkhovna Rada, the State Statistics Service, the Cabinet of Ministers, bibliographic sources, and the author's own calculations.

4 Data and methodology

The implementation of cluster initiatives is contingent upon the establishment of a favourable macroeconomic, informational, and legal environment as well as active state regional policy intervention in the clustering space. Establishing a reliable information platform, conducting a comprehensive analysis and coordination of cluster policy at each step of the process, and coordinating the efforts of government, the private sector, and state agencies are all crucial to promoting the development of clusters in Ukraine.

Ukraine has rich tourist and recreational resources, which, if properly used, can contribute to the highly effective development of the tourism industry. Despite some progress, the development of tourism is hampered by many reasons, the most significant of which are the lack of proper condition in the tourism infrastructure, the slow growth rate of financing for the development of the material and technical base of tourism (Bouton, 2020).

According to estimates by the World Economic Forum, held in 2020, Ukraine took first place in the ranking of countries with the smallest share of the tourism industry in GDP, which amounted to only 1.5%. At a time when the tourism industry in the world GDP is about 10%.

Financing is one of the main conditions through which the foundation of a market economy is built and the desired result from the tourism industry of Ukraine is achieved. Accordingly, first, this is profit (income) in the country's economy and social effect. Financial support for the tourism industry has several features and specific features, primarily related to the mechanism of its functioning. The mechanism for implementing the state's tourism policy includes: drawing up target programs for the development of tourism at the state and regional levels; developing specific measures to achieve the set goal; state regulation of the development of the tourism sector; components of an organizational and economic nature.

For the gradual and regulated development of this industry, only the implementation of systematic measures by the state that will promote the development of tourism will contribute. Where the country's tourism development strategy plays an important role. A tourism strategy is the development of a general concept of development and target programs, the implementation of which requires time and significant financial resources.

In 2017, the Cabinet of Ministers of Ukraine approved a strategy for the development of tourism and resorts for the period until 2026. The creation of a strategic program for the development of tourism was facilitated by the inability of Ukraine to compete with developed tourist states, despite the resource availability and unlimited potential tourism opportunities of the country. The only way to solve systemic problems in the field of tourism and resorts is a strategically oriented state policy, the main task of which is to define tourism as one of the main priorities of the state, to implement economic and legal mechanisms for the successful conduct of tourism business, investment mechanisms for the development of tourism infrastructure, information marketing measures to form the tourist image of Ukraine (Foris et al., 2017).

The following were identified as the main conditions for the sustainable development of the area of tourism and resorts:

- ensuring the coordinating role of the state in the implementation of national tourism policy using the principles of public-private partnership, organizing scientific research, and developing human potential;
- concentrating state resources on priority tasks for the development of the tourism and resorts area;
- creating a nationwide information system in the area of tourism and resorts and its integration into the global information tourism network;
- improving legislation on issues of regulating public relations in the area of tourism and resorts;
- promoting the development of interregional and international cooperation in the area of tourism and resorts;
- continuous improvement of the business climate and development of fair competition;
- introduction of the institute of self-regulatory organizations in the area of tourism and resorts (creation of a national tourism organization);
- development of national standards in accordance with international standards;
- popularization of our state in the world and promotion of high-quality national tourism products in the global information space;
- development of tourist areas.

All these measures should contribute to the acceleration of the country's economic and social growth.

Issues of *military tourism* are being raised in Ukraine today. Military tourism is considered a promising direction of development for the tourism industry, which plays an

important role in the restoration of the affected regions of Ukraine. Despite the active development of military tourism in the world, in Ukraine it remains insufficiently researched and requires a comprehensive approach to its development. The significance of military tourism lies not only in the preservation of historical memory, but also in the creation of economic opportunities for affected communities (Karpenko & Kucharcik, 2025).

The purpose of the military tourism study is to determine the economic potential of military tourism as a tool for regional development and post-war reconstruction of Ukraine in the context of the Sustainable Development Goals. To achieve this goal, the following hypotheses have been formulated:

Hypothesis 1: Military tourism contributes to the economic growth and restoration of the affected regions of Ukraine by stimulating small businesses, creating new jobs and developing infrastructure;

Hypothesis 2: Adapting international experience in the development of military tourism will allow accelerating the process of restoration for the affected territories of Ukraine and will contribute to attracting foreign tourists and investors;

Hypothesis 3: The main obstacles to the development of military tourism in Ukraine are active hostilities, insufficient legislative and state support, lack of developed tourist infrastructure and security problems;

Hypothesis 4: The development of military tourism in Ukraine will contribute to the achievement of the Sustainable Development Goals, in particular economic growth (SDG 8), infrastructure development (SDG 9) and the formation of sustainable cities and communities (SDG 11).

5 Key research findings

In the context of deepening integration and globalization of the world economy, the service sector plays an important role in the development of the economy and welfare of the state, especially in the area of tourism. The tourism sector is considered the main source of income for many countries of the world, which contributes to the rapid development of the industry around the world. An integral part of the country's image and its importance among the world community is the development of tourism.

A particular economic mechanism for the interaction of businesses in the social, tourism, and material and non-material production sectors that make money by offering tourist services is the tourist cluster. The tourist cluster's primary function is the creation and delivery of tourism services. The tourism cluster's functional-sectoral structure is the culmination of the services rendered by multiple businesses. The development of a critical mass for competitive advantages is the primary factor behind the cluster model's success in the travel industry. Small and medium-sized businesses can never succeed and gain the advantages that clusters do if they operate alone.

Tourism clusters are types of territorial organization that promote economic growth in the region as a whole as well as in the tourism industry. When compared to independently operating businesses, which frequently fail to survive competition in both domestic and international markets from more powerful business units or foreign companies and shut down, a tourist cluster's combined competitive advantages maximize impact by minimizing expenses. Joining a tourism business cluster gives members access to a wealth of information on a variety of topics, as well as chances to enter domestic or international markets, draw in investments to boost competitive advantages and improve service quality, and get legal and marketing advice. Management staff from business units (tourism enterprises) also attend seminars to learn about the ins and outs of conducting business.

The next step of the study is considered *appropriate to consider the factors of tourist attractiveness of the destination, in particular the hotel and restaurant business*. The hotel and

restaurant business is one of the main components of the economy of Ukraine, its regions and destinations. The effective functioning of this sphere is an indicator of positive changes in the economy of the state and regions, and the creation and implementation of a tourist product is an important prerequisite for the intensification of international relations. The consumption of a tourist product is carried out in a place chosen by the tourist, which is defined territorially and can be interpreted as a tourist destination. If we consider this concept in more detail, we can conclude that in the scientific works of domestic and foreign authors the concept of a tourist destination is relatively new, and there is no single opinion on its interpretation. For example, domestic scientists define a tourist destination as “a certain place that has a real or imaginary border (city, region, district, island, etc.), which attracts tourists due to the presence of its tourist and recreational resources, attractive opportunities and necessary infrastructure, brought to the consumer in the form of a formed and prepared for sale tourist product by modern means of marketing communications in the system of levers of integrated management of business entities (Elton & Gruber, 2014).

At the same time, the World Tourism Organization (UNWTO) considers a tourist destination as the main destination of a tourist trip, an area whose visit occupies a central place in the decision to travel. In a general sense, a tourist destination can be characterized as an area that contains facilities and services to meet the needs of tourists. In order for a certain area to be considered a destination, it is necessary to full certain conditions - the presence of all infrastructure elements. One of these elements, namely, the presence of accommodation, catering, recreational and entertainment areas in this territory, is of particular importance. All this can be summarized and considered as the activities of a single system - a hotel and restaurant complex, where a full range of services for tourists is provided. The hotel and restaurant business, as an integral part of a tourist destination, is one of the stabilizing and stimulating factors in the development of the region's economy (Bozhydarnyk, 2019).

It is this component of the business that has a huge potential for investment attractiveness for both domestic and foreign investors. With the help of investment and effective management, the region can be made more attractive, thereby increasing tourist flows. It should be borne in mind that the hotel and restaurant industries are changing every year in response to new consumer expectations. The market is becoming very aggressive, there are more and more offers, and in this regard, the main problem is gaining momentum - competition. In order for a tourist destination to be competitive, it is necessary to consider the latest trends and understand what is so strongly affecting the industry. In 2020, the digital transformation of business comes to the fore, which allows you to create more targeted, personalized offers. Consumers have become more comfortable communicating using messengers than in person with staff. Choosing a hotel and restaurant complex is becoming easier with the development of virtual and augmented realities. Thanks to this, it is possible to change how and where people shop and interact with brands. Social networks and various Internet communities have an increasing influence on the choice of the consumer every year, who can primarily find reviews and transparent comments there (Kunychka, 2018).

Speaking of trends, one should take into account such a concept as the “sharing economy”, which includes the private sector, in particular the Airbnb platform, which is a serious threat to the hotel industry and makes the competitive landscape tougher than ever. However, one should remember the generation gap in demand and remember not only about the latest technologies, but also about what consumers will always value: professionalism and level of competence of employees. Based on the above, we can conclude that for the attractiveness of the hotel and restaurant business and the tourist destination of the region as a whole, it is not enough to carry out only ordinary operational activities and take into account the latest trends, but also to use them as a positive aspect to increase competitiveness and

increase investment attractiveness, which will contribute to the development of the destination infrastructure (Turnbull, 2018).

Further during our research we will consider questions regarding the new investment projects and infrastructure restoration (Pearce, 2013). Investments in tourism facilities will play an important role in the post-war revival. Thus, by 2026, Ukraine is planning to implement 45 new hotel and apartment complexes with 6670 rooms and 108 cottage towns. These initiatives will create new jobs and contribute to the country's economic recovery, increasing its attractiveness for both domestic and foreign tourists.

There is also a demand on the market for reconstruction of sanatoriums and health facilities, which can be important for the rehabilitation of both military and civilian personnel. The development of modern health resorts will be a significant advantage in attracting tourists to the Carpathians and other recreational areas. In addition to the development of new hotels and the reconstruction of the old stock, an all-season mountain resort GORO Mountain Resort will be built in the Carpathians over the next 15 years. The resort plans to build 25 hotels with 5500 rooms and invest \$1.5 billion. It will become one of the largest ski infrastructure projects in Ukraine and will contribute to attracting tourists and developing the region.

But in Ukraine on the surface there are some problems:

1. Continuation of full-scale war. The most important challenge remains the war, which leads to the destruction of infrastructure, loss of human resources and a decrease in investor interest due to increased risk.

2. Corruption and institutional weakness. Corruption problems remain one of the biggest barriers for foreign investors. An ineffective judicial system, bureaucratic obstacles and lack of transparency in decision-making reduce the level of business trust in the state.

3. Tax burden. Despite the reform of the tax system, investors often face instability of tax legislation. Unforeseen changes in the rules of the game complicate long-term planning for business.

4. Energy crisis. The issue of ensuring energy independence remains key for Ukraine. The development of "green" energy is facing difficulties due to limited financing, delayed payments and changing conditions for investors.

5. Access to financing. High lending rates, low bank confidence in small and medium-sized businesses, and limited financial instruments to support investments hinder the growth of the national economy (Casidy, 2014).

The main priority areas of state policy in the area of tourism in Ukraine are:

1. Improving the legal framework for regulating relations in the area of tourism.
2. Ensuring the emergence of tourism as a highly profitable sector of the Ukrainian economy, encouraging national and foreign investments in the development of the tourism industry, and creating jobs.

3. Ensuring the accessibility of tourism and sightseeing tours for children, youth, the elderly, people with disabilities, and low-income citizens by introducing benefits for these categories of people.

4. Expanding international cooperation, establishing Ukraine in the world market.

5. Creating favourable conditions for the development of tourism by simplifying and harmonizing tax, currency, customs, border, and other types of regulation.

6. Developing inbound and domestic tourism, rural, and ecological (green) tourism (Karpenko, 2019, pp. 349-354).

State regulation of tourism is necessary due to the following factors:

- the complex nature of the industry: it consists of hotels, restaurants, entertainment venues and tourist organizations; in addition, tourism interacts with other sectors of the economy, such as transport, trade and agriculture, which requires external regulation;
- the need to preserve and rationally use resources;

– the effect of the travel and tourism sector on the nation's overall economy, which is based on a number of criteria, including the multiplier effect and direct cash revenues from both domestic and foreign travel;

– the great impact of tourism on the upbringing for patriotism, especially within one's own country; dissemination of national tourist values, which is one of the ways to promote the state model of the country, including its culture, politics and way of life of the population.

To sum up, the macroeconomic factors of investment activity include (Yurkevych, 2016, pp. 402-407):

- intensity of processes for formation of savings in the economy in the country;
- the level of use of society's savings in the investment process;
- interest rate and its dynamics;
- technological process;
- inflation rate;
- cyclicity of economic dynamics;
- the level of investment market development;
- the country's investment climate.

The practical section of the article involves analysing several problems with the tourism infrastructure in the Odesa region and identifying opportunities for the industry's expansion considering current concerns.

The Odesa region is one of Ukraine's most promising travel and leisure destinations. Examining the unique demand structure in the tourism sector specifically, the state of inbound or foreign travel is illustrated by the Odesa region. Foreign tourism is the most beneficial economic activity for the region and the country as a whole since it allows foreign tourists to spend the money they have saved back home while on vacation in Ukraine. For the host country, foreign tourism generates both foreign exchange earnings and service exports.

Let's examine the challenge of formulating the strategic goals and objectives of investment policy. The two main types of investments that are essential to economic expansion are financial and real investments. Building or developing production facilities that increase physical capital is the aim of real investments. This could include employing staff, renovating existing facilities, and constructing new ones.

However, instead of physically producing new assets, financial investment makes use of financial instruments such as stocks, bonds, and funds. Instead of participating in the management of real assets in this scenario, investors usually rely on skilled managers.

Furthermore, the phrase "consumer investment" refers to the money that buyers spend on long-term products and real estate. These expenses could be considered a kind of savings because they are investments rather than revenue streams or capital gains (Karpenko & Pashko, 2019, pp. 1-8).

Continuous change, which can be conditionally divided into several stages, including capital accumulation, spending, financial resource accumulation, profit-making, and cycle repetition, is the basis of investment activity. Given the potential for the area to become a tourist cluster, it is imperative to assess the potential of tourism and how it is implemented. Examining the development of clusters in any business requires taking into account a number of pertinent factors, including geographic location, the availability of trained labour, the degree of innovation, customer demand, market competitiveness, investment level, and government support.

Examining how tourist and recreational clusters function using a range of methods promotes growth, profitability, and positive outcomes for the management decision-making region. Since the cluster model of economic development is not yet widely accepted in Ukraine as a business organization form, all the conditions necessary for its implementation are present,

even though statistical data on cluster functioning results allow us to practically agree that there are some obstacles in Ukraine.

The Department of Ecology and Natural Resources of the Odesa Regional State Administration has recently conducted a comprehensive analysis of the ecological challenges in the Odesa Region, which affect population health and are linked to the region's 2023 socioeconomic and cultural development plan. There has been a considerable increase in emissions from stationary sources of pollution. About three-quarters of all pollution emissions in the Odesa region (70.4%) come from industries that produce gas, electricity, steam, and air conditioning, while 15.9% come from businesses in the processing industry (Font X, 2018).

"Odesa Cultural Development Strategy 2025-2035" is a strategic document that defines the development of culture in the city for the next 10 years, aimed at supporting the sustainable development of cultural infrastructure, creative industries, heritage preservation and strengthening international cooperation. The strategy was officially presented at the Odesa Economic Revival Forum and was expected to be adopted by the Odessa City Council in the fall of 2024 (World Economic Forum, 2018).

The Table 1 shows the passport of Municipal city program for tourism development in Odessa in 2021-2025 years. And in continuation the Table 2 shows the resource provision of the municipal target program for tourism development in Odessa for the next period 2025-2027 years.

Table 1: PASSPORT Municipal city program for tourism development in Odessa, 2021-2025

Initiator of the Program development	Department of Culture and Tourism of the Odessa City Council
Program Developer	Department of Culture and Tourism of the Odessa City Council
Responsible Executor Budget funds of the Odessa Urban Territorial Community	Department of Culture and Tourism of the Odessa City Council (2021 – 2022 years), Department of Culture, International Cooperation and European Integration of the Odessa City Council (2023-2025 years)
Program Implementation Period	2021 – 2025 years
Total amount of financial resources required for the implementation of the Program, total, including:	22 945.4 thousand UAH
Budget funds of the Odessa Urban Territorial Community	22 945.4 thousand UAH

Source: processed by author according to Ukrstat (2025)

Table 2: Resource provision of the Municipal Target Program for Tourism Development in Odessa for 2025-2027

Sources of funding proposed for the implementation of the Program	Years of Program Implementation			Total costs for the implementation of the Program (thousands UAH)
	2025	2026	2027	
Total, including:				
Budget of the Odessa urban territorial community, total,	116343.8	11685.8	11689.0	35 018.6

including the main budget administrators:				
Department of Culture and Tourism of the Odessa City Council	11497.0	11533.0	11533.0	34563.0
Executive Committee of the Odessa City Council	146.8	152.8	156.0	455.6

Source: processed by author according to processed by author according to Ukrstat (2025)

There are some points of program activities and measures. The Program will be implemented in the following areas:

- creation of a comfortable environment for tourists in Odessa;
- marketing and promotion of the tourist attractiveness of Odessa;
- development of various types of tourism, creation of "tourist magnets";
- development of the film industry of Odessa.

The Table 3 shows economic and statistical data in Ukraine.

Table 3: Reality vs Expectations in Ukraine, 2025

Current state of the tourism industry in Ukraine, 2025	Expected without war
700 million dollars in revenue	1.75 billion dollars in revenue
600 thousands jobs	1.31 million jobs

Source: processed by author according to Global Economy Company (2023).

The main components of the tourist infrastructure are:

1. Transport system: provides transportation of tourists to their destination and movement around the region (buses, railways, air transport, water transport).
2. Accommodation facilities: hotels, hostels, boarding houses, campsites and other places for tourists to stay. Catering establishments: restaurants, cafes, bars that provide food services.
3. Cultural and entertainment facilities: museums, monuments, exhibitions, parks, theaters and other cultural and entertainment facilities.
4. Communication and household services: communications (telephone, Internet), household services (post office, household services), as well as financial and insurance services.
5. Trade enterprises: shops, markets that provide tourists with goods.
6. Tourist attractions: natural monuments, historical sites, architectural objects and other resources that attract tourists (Karpenko & Shevchenko, 2025).

Conclusions

The investment attractiveness of Ukraine today is one of the main indicators accordingly how effectively the state's economy works, since investments are of great importance for the sustainable economic development and stability of the country.

They are a source not only of capital, but also of new technologies, management experience, etc. In addition, foreign investments also affect any business entity, since this determines the prospects for its development, financial stability and competitiveness in the market. So in 2026, Ukraine has every chance of becoming attractive to investors thanks to comprehensive reforms, integration into the European market and the development of the economy key sectors. However, success will depend on overcoming key challenges. And only with the coordinated work of the state, business and civil society, the investment climate of Ukraine will be able to reach a qualitatively new level.

So, the main results of authors investigations are:

1. Tourists consider Odessa primarily as a resort city (more than 55% of respondents). Given Odessa's exceptional position in the domestic sea vacation market, the city has the potential to increase domestic tourist flows. Other cultural vacation offers in Odessa are either poorly promoted externally or of little interest to potential tourists. In the minds of Ukrainian residents, the city has an image of expensive and "luxury" vacations, which does not correspond to reality. As a result of the influence of Russian military aggression, the profitability of the tourism business in the regions has been reformatted, and flows have been redirected to safer, albeit more expensive locations.

2. The number of rooms in Odessa has tended to decrease in recent years due to a long period of low occupancy. The tourist tax in the city is not collected in full. Since the introduction of the visa-free regime with EU countries, Odessa has been competing with beach destinations in Eastern Europe as the closest and most accessible to residents of Western regions. Given the powerful potential of the cultural and recreational components of the Odessa region, the city has advantages in mastering the direction of providing services for the physical and psychological rehabilitation of Ukrainians affected by Russian aggression.

3. The city's cultural institutions, individual entrepreneurs and representatives of culture and the arts can be involved in the rehabilitation process and in cooperation with temporary accommodation facilities on a permanent basis.

4. The city has the capabilities and specialists to create attractive package offers, interesting tourist routes and services, the target audiences of which are women with children (given the gender imbalance), domestic tourists with high incomes and foreign guests.

5. There are all prerequisites for strengthening the use of Odessa's unique niche in the areas of cultural and recreational tourism through active communication about the city's tourist advantages, disciplinary development of the tourism sector and stimulation of cross-sectoral cooperation between the city authorities, temporary accommodation facilities, enterprises, cultural and tourism figures. Note: there is one tourist information centre in the city (TIC Odessa), which is located in a non-touristy place, far from the centre. A guest of the city has no chance of coming across an info centre on the central streets of Odessa.

6. The centre has a website where you can find a lot of useful information, but it is not indexed even when entering queries containing the word "tourist". There is no link to the TIC website on the welcome page of the Odessa City Council website. Given today's challenges, a proactive position of the city authorities is necessary in promoting the tourist advantages of Odessa, since the well-known thesis "We have everything, they will come to us anyway" no longer works as it used to.

References:

- Bouton, L. (2020). *Trends in private investments in developing countries: Statistics for 1970–1998*. International Finance Corporation. <https://openknowledge.worldbank.org/bitstream/handle/10986/13986/multi0page.pdf>
- Bozhydarnyk, T. (2019). *International tourism* (Study guide). Center for Educational Literature.
- Casidy, R. (2014). Linking brand orientation with service quality, satisfaction, and positive word-of-mouth: Evidence from the higher education sector. *Journal of Nonprofit & Public Sector Marketing*, 26(2), 142-161. <https://doi.org/10.1080/10495142.2014.901004>
- Elton, E. J., & Gruber, M. J. (2014). *Modern portfolio theory and investment analysis* (7th ed.). Wiley.
- Fabozzi, F. J. (2008). *Investment management*. Prentice Hall.
- Font, X. (2016). *Critical review of certification and accreditation in sustainable tourism*

- governance*. http://www.crrconference.org/Previous_conferences/downloads/font.pdf
- Foris, D., Popescu, M., & Foris, T. (2017). A comprehensive review of the quality approach in tourism. In *Mobilities, tourism and travel behavior: Contexts and boundaries*. IntechOpen. <https://www.intechopen.com/chapters/56858>
- Global Economy Company. (2023). *Investment freedom – Classification of countries*. https://ru.theglobaleconomy.com/rankings/herit_investment_freedom/
- Karpenko, L. (2018). Base alternatives and the paradigm of impact investing development in the coordinates of globalization changes and Euro integration. In *Proceedings of the 4th International Conference on European Integration 2018* (pp. 659–668). VSB – Technical University of Ostrava.
- Karpenko, L. (2019). Innovative trends in the process modelling of international strategies: Systematic of fundamental factor models. In *Proceedings of the 6th International Conference on Strategies, Models and Technologies of Economic Systems Management* (Vol. 95, pp. 349–354).
- Karpenko, L., & Kucharčík, R. (2025). The impact of international grants and EU programs on the development of the tourism industry in Ukraine. *OIDA International Journal of Sustainable Development*, 18(7), 81–92. <https://oidaijsd.com/wp-content/uploads/2025/05/18-07-07-15-3-UR-IJSD-25.pdf>
- Karpenko, L., & Pashko, P. (2019). Formation of the system of fair business practice of the \ company under conditions of corporate responsibility. *Academy of Strategic Management Journal*, 18(2), 1–8.
- Karpenko, L., & Shevchenko, I. (2025). Development of the regulatory framework for market integration in the context of economic globalisation. *Pakistan Journal of Life and Social Sciences*, 22(2), 9825–9836. https://www.pjlss.edu.pk/pdf_files/2024_2/9825-9836.pdf
- Kunychka, M. (2018). *Hospodárska diplomacia: Efektivita hospodárskej diplomacie Ukrajiny* [Economic diplomacy: Effectiveness of Ukraine's economic diplomacy]. ORIPA NAPA.
- Melnychenko, O. A., & Shvedun, V. O. (2017). *Features of the development of the tourism industry in Ukraine*. NUCSU Publishing House.
- Pearce, J. A. (2013). *Strategic management: Formulation, implementation, and control* (8th ed.). McGraw-Hill.
- Turnbull, S. M. (2018). Capital allocation in decentralized businesses. *Journal of Risk and Financial Management*, 11(4), Article 82. <https://doi.org/10.3390/jrfm11040082>
- Ukrstat. (2025). *Statistics*. http://www.ukrstat.gov.ua/operativ/operativ2012/energ/en_bal/arh_2012.htm
- World Economic Forum. (2018). *The global competitiveness report 2018*. <https://www.weforum.org/reports/the-global-competitiveness-report-2018>
- Yurkevych, O. M. (2012). Assessment of the level of investment security in Ukraine. *International Economic Policy*, 2, 402–407

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FDI DETERMINANTS AND THEIR RELEVANCE IN CENTRAL AND EASTERN EUROPEAN COUNTRIES¹

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Abstract: This contribution analyses the determinants of Foreign Direct Investment (FDI) inflows into the Central and Eastern European countries (CEEC). While economic literature has extensively focused on economic factors driving FDI, the role of non-economic determinants remains contested and underexplored. Existing studies on the CEEC region are often limited to specific countries, lacking a comprehensive regional analysis. This study aims to fill this gap by investigating the relevance of various FDI determinants through statistical analysis. The methodology involves identifying the region, analysing the development of FDI inflows, and testing potential determinants using an analysis of extreme tertiles. The results identify key factors influencing FDI inflows to the studied region, contributing a broader, statistically grounded perspective to the existing literature.

Keywords: foreign direct investment, economic determinants, institutions, extreme tertiles analysis, Central and Eastern Europe

JEL: F21, P33

Introduction

The prominent role of foreign direct investment in less developed countries and economies in transition has led to intensive research in the economic literature on factors that are associated with encouraging capital inflows. This issue often tries to explain the distribution of capital flows around the world. Most research focuses on economic factors, or what is called in the scientific literature the economic determinants of foreign direct investment (FDI) flows, while other categories of factors are often ignored or their role is reduced. In the case of non-economic determinants, the studies in question often show so different results that there are doubts about their relevance and the credibility of the results (Tocar, 2018, p. 166). This naturally explains the focus of most contributions on the economic category of determinants, especially the investigation of economic factors is necessary due to the clear connection of foreign direct investment with economic phenomena and processes. However, some studies point to a low proportion of the variation in international capital flows explained by purely economic determinants (Sparks et al., 2014). In the economic literature, we distinguish between many categories of determinants that are assumed to influence FDI flows, including not only economic factors, but also infrastructure, technology, institutional and political factors, security, human factor, legal integration, spatial factor or culture. An extensive categorization of FDI determinants is offered by Tocar (2018).

This paper analyses the determinants of FDI inflows to the Central and Eastern European region. In the scientific articles published so far, there is empirical as well as analytical evidence on this issue, although focused exclusively on specific parts or countries of the studied region (Ginevicius & Tvaronavičienė, 2003; Seric, 2011; Bellak, Leibrecht & Reidl, 2008; Dudáš & Grančay, 2019; Darmono et al., 2020; Pečarić, Kusanović & Jakovac, 2021). The contribution of this paper is therefore to investigate the relevance of the FDI

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determinants identified in the literature in the CEEC as a whole solely on the basis of statistical analysis. First, we identify the studied CEEC region, second, briefly analyse the development of FDI inflows in the region, and then test the FDI determinants using an analysis of extreme tertiles of the sorted data set. The results point to relevant determinants of FDI inflows to the studied CEEC region.

1 Defining the CEEC region

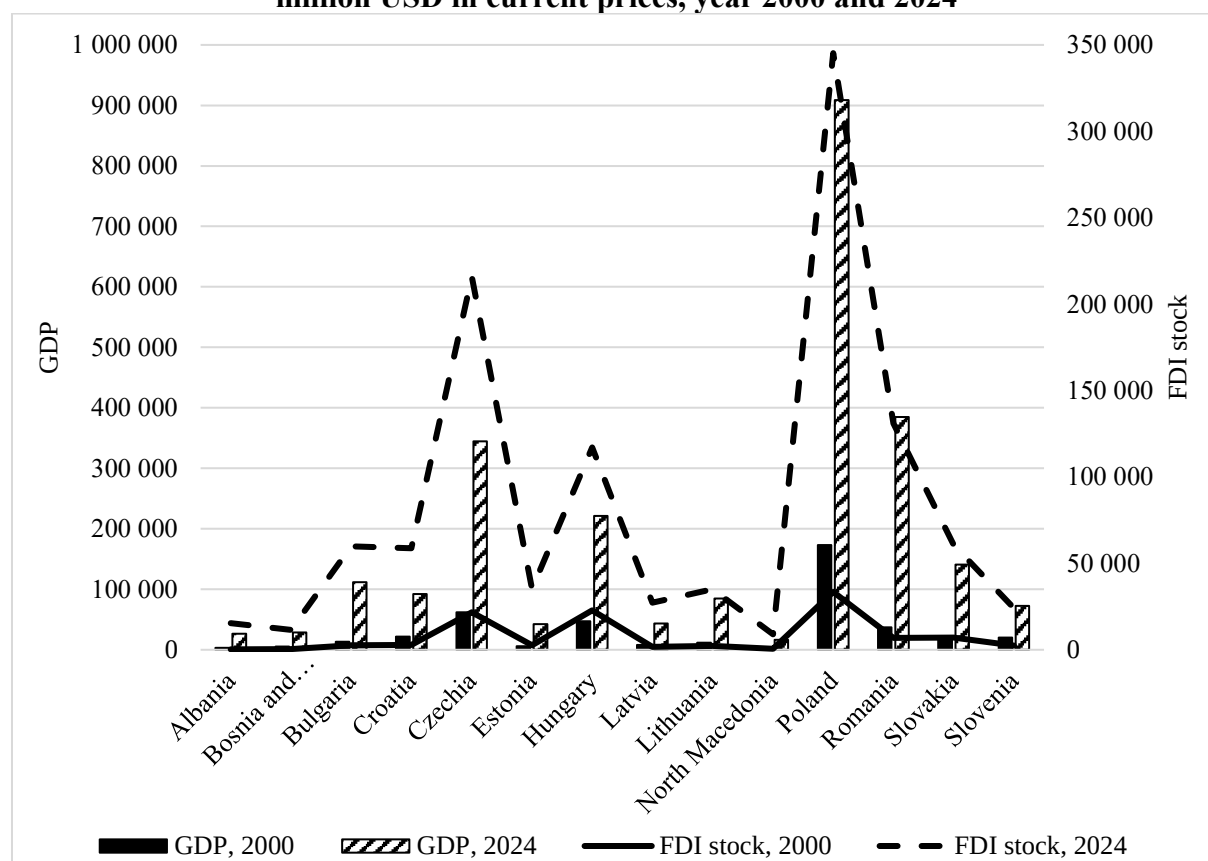
From a geographical point of view, the Central and Eastern Europe includes not only the countries of the Eastern wing of the European Union but also the Eastern Partnership countries and Belarus. The geographical approach even includes Germany, which certainly does not belong to the region from the point of view of current political and institutional processes. This approach is often considered outdated and not very suitable for current economic or political analysis, because it groups together, in addition to the former post-socialist transitional economies of the EU, Germany, which has a very different history and level of development. Probably the most current definition of the region in the field of international economic relations is provided by the socio-economic and institutional perspective, which defines the Central and Eastern European countries on the basis of common experiences and goals in the period after the collapse of the Soviet Union and their transition from a planned to a market economy or integration into Western institutions such as NATO or the EU (Hlavacek & Bal-Domanska, 2016, p. 294). According to this approach, the region includes post-communist European countries that have undergone or are still undergoing the accession process. This approach is also applied by international organizations such as the OECD, the IMF and the World Bank. The OECD (2020) definition, for example, includes the Balkan states, the Visegrad Group countries or the Baltic states, namely Albania, Bulgaria, Croatia, the Czech Republic, Hungary, Poland, Romania, Slovakia, Slovenia, Estonia, Latvia and Lithuania. The name Central and Eastern European countries (CEEC) entered the active academic discussion through creation of China's initiative in 2012 aimed at strengthening the cooperation with 16 post-communist countries of Central, Eastern, and Southeastern Europe. At that time the term „16+1 cooperation“ appeared in the literature and began to be associated with CEEC (Cibuľa, 2021, p. 158). It should be noted that the definition of CEEC is not firmly established and is approached from several different, often overlapping perspectives. There is no single correct list of countries, as the definition changes depending on the context. In current academic, economic, and political debate, the term most often refers to the post-communist member states of the European Union or its candidate countries, reflecting a common trajectory of transformation and integration rather than a strict geographical or historical bloc. This contribution applies the definition of 16+1 initiative, assuming that the political and economic development of the CEECs has led to the creation of open economies, where FDI are crucial to the process of transformation and integration into the EU. Based on this approach we assume that CEEC include Albania, Bosnia and Herzegovina, Bulgaria, Croatia, the Czech Republic, Estonia, Hungary, Latvia, Lithuania, Montenegro, North Macedonia, Poland, Romania, Serbia, Slovakia, and Slovenia.

2 Overview of FDI inflow to Central and Eastern European countries

The FDI inflow into the CEEC is a remarkable phenomenon of economic transformation and integration. After the fall of communism in the late 1980s and early 1990s, these countries embarked on a radical transformation from planned to market economies. The economies of the region were characterized by state-owned, inefficient and often obsolete heavy industries. The immediate move away from planning led to a decline in economic activity in the early 1990s, accompanied by high inflation, a sharp decline in GDP and rising unemployment. This created both a need and an opportunity for external capital with experienced managerial skills.

FDI played a key role in this period, acting as a catalyst for modernization, restructuring and integration into global value chains. The key role in the penetration of new markets was played by large multinational companies (MNEs) prepared for the high risk of entering previously unknown markets. Natural monopolies in the field of telecommunications and energy (Ginevicius & Tvaronavičienė, 2003, p. 978), as well as markets with huge pent-up demand for consumer goods, became magnets for the transfer of capital. The first countries among CEEC that began to create favorable legislative conditions for capital inflows were mainly the Visegrad Group countries and the Baltic states although the pace of development of the institutional and legislative environment of individual countries in the region has differed significantly (Dudáš & Grančay, 2019, p. 814). Their FDI stocks grew most significantly in the 1990s, during the process of intensive privatization. For example, between 1993 and 2000, FDI stocks in Slovakia increased tenfold, in the Czech Republic sixfold, and in Hungary fourfold. Poland managed to increase its FDI stocks fourteenfold in the same period. Much lower growth rates of FDI stocks were demonstrated by the Balkan states, where Albania, for example, increased its stocks by less than threefold (UNCTAD, 2025).

Figure 1: GDP and FDI stock in selected Central and Eastern European countries, million USD in current prices, year 2000 and 2024



Note: Montenegro and Serbia are excluded due to lack of data.

Source: UNCTAD, 2025.

Since the beginning of the millennium, the countries of Central and Eastern Europe have entered another phase of FDI inflow, which was characterized by a boom in greenfield investments and the entry of most of the countries of the region into the EU (Makhavikova, 2018). The main sectors of foreign capital allocation have become the automotive industry, mechanical engineering and electrical engineering. It should be emphasized here that the process of accession to the EU was one of the most important determinants, which forced the

countries of the region to adopt the EU legal framework, thereby ensuring stability, predictability and investor protection. No less important factors have become the low price of relatively qualified labor. As recent studies show, high labour costs are negatively associated with FDI inflow (Darmo et al., 2020). Over the past two decades, the region has undergone a period of investment consolidation. Capital flows have been directed mainly towards the expansion of existing operations and the integration of local subsidiaries into complex regional and global value chains. Foreign direct investment is becoming increasingly differentiated, with a growing divergence between the more advanced countries of Central and Eastern Europe and the rest.

3 Data and methodology

Given the stated goal, the necessary data were collected from various statistical databases of renowned international organizations. We obtained data for inflow of FDI stock from the UNCTAD database, which are given in millions of US dollars. For the completeness of the analysis, we used data from 1990 to 2024. To apply the selected method of analysis data for 16 countries of the CEEC for the year 2022 were applied. We drew individual data for the other examined indicators from the latest available sources of the World Bank, OECD, and ILO as well. Doing business rankings were obtained from World Bank and reflect the 2019 data. Applied indicators and data sources are listed in table 1.

Table 1: Data sources and unit of measurement

<i>Indicator</i>	<i>Abbreviation</i>	<i>Unit</i>	<i>Source</i>
FDI inflow, stock	FDI	Million USD, current prices	UNCTAD, 2025
GDP	GDP	Million USD, current prices	UNCTAD, 2025
GDP per capita	GDP p.c.	USD, current prices	UNCTAD, 2025
Export	Export	Million USD, current prices	UNCTAD, 2025
Trade openness	Openness	% (trade share to GDP)	UNCTAD, 2025
Average monthly earnings	Wage	USD, current prices	ILO, 2025
Road density	Road	Km per one hundred sq. km	OECD, 2025
Net secondary school enrollment	School	% net	World Bank, 2025
Doing business	DB	Rank	World Bank, 2019
Rule of law	RoL	Percentile rank	World Bank, 2025
Control of corruption	CoC	Percentile rank	World Bank, 2025

Source: processed by author.

To examine the determinants of FDI in the countries of the studied region, we use the analysis of extreme tertiles of the sorted dataset. In other words, we divide the studied dataset into three parts, where the dividing lines are the value of FDI stock of fifth and eleventh observation of the descendingly sorted dataset. Within it, we will rank the countries of Central and Eastern Europe in descending order according to the volume of FDI stocks received as of 2022. Since we have data available for 16 countries in the region, we will include 5 countries to the upper tertile, 5 countries to the bottom tertiles and 6 countries to the middle tertile. We proceed in the same way when ranking the countries according to the other indicators. For the indicators for which we assumed that they positively affect FDI stocks, we will further examine whether the extreme sets contain mainly those countries that should be there according

to the volume of FDI stocks, i.e. whether the best values of the given indicator are in the countries that are the largest recipients of FDI, and conversely, whether the worst values of these indicators are in the countries where the least FDI flows. As an additional test, we also ran a correlation analysis. The results are available in table 2.

By dividing the set into three groups, we obtained two extreme groups – the upper tertile with the 5 economies with the highest value of FDI stocks and the lower tertile with the lowest values of FDI stocks. Similar adjustments were made for other indicators, including GDP, GDP per capita, export, trade openness, average monthly earnings, school enrollment, road density, doing business rank, rule of law, and control of corruption. The lightest cells in table 2 represent the 5 highest (best) values of the given indicator among the CEEC 16. Their number for each indicator is denoted N_H . Conversely, the darkest cells represent the 5 lowest (worst) values within all the countries studied. Their number for each indicator is denoted N_L . In order for the studied indicator to be designated as a relevant determinant of FDI inflows, the following should hold for the upper tertile of CEEC: $N_H > N_L$. On the other hand, for the bottom tertile of countries by FDI inflow stocks, $N_H < N_L$ will hold. For example, in order to consider GDP as a relevant determinant influencing FDI inflows, the 5 countries of the studied region with the largest FDI stocks must preferably be among the 5 countries with the highest GDP, and conversely, there should not be more countries from the bottom tertile than from the top tertile.

3 Empirical results

The aim of performing an analysis of the extreme tertiles of the sorted statistical set was to create a preliminary idea of the relevance of the impact of the investigated determinants on the stock of FDI inflows to the CEEC region, which we defined on the basis of 16+1 initiative. We sorted and ranked the countries into three groups according to the size of the stock of FDI inflows. The first group consists of 5 countries that have the largest stock of FDI for 2022 (Table 2), the middle group consists of 6 countries in the region, and the last one consists of 5 countries with the smallest stocks of investments.

Table 2: Results of extreme tertiles analysis

<i>Upper tertile of CEEC sorted by FDI inflow stocks</i>											
	<i>FDI stock</i>	<i>GDP</i>	<i>GDP p.c.</i>	<i>Export</i>	<i>RoL</i>	<i>CoC</i>	<i>Openness</i>	<i>Wage</i>	<i>Road</i>	<i>School</i>	<i>DB</i>
Poland	281 293	695 607	18 122	360 542	64,2	68,4	123,5	1 347,4	140,6	94,1	40
Czechia	206 338	301 831	28 279	242 015	83,5	74,5	144,3	2 245,8	72,2	90,5	41
Romania	115 133	296 354	15 462	96 699	62,3	55,7	93,5	1 069,6	37,7	82,8	55
Hungary	104 252	177 580	18 337	151 672	63,2	51,4	183,8	1 039,8	236,2	89,3	52
Slovakia	59 906	115 929	21 181	108 386	69,8	78,3	203,5	1 349,8	120,2	84,8	45
$N_H > N_L$		+	–	+	–	–	–	–	+	–	–
<i>Bottom tertile of CEECs sorted by FDI inflow stocks</i>											
	<i>FDI stock</i>	<i>GDP</i>	<i>GDP p.c.</i>	<i>Export</i>	<i>RoL</i>	<i>CoC</i>	<i>Openness</i>	<i>Wage</i>	<i>Road</i>	<i>School</i>	<i>DB</i>
Slovenia	21 597	59 928	28 332	69 716	82,5	60,4	186,2	2 773,2	108,6	95,7	37
Albania	11 104	18 916	6 690	4 309	47,2	38,7	85,1	547,6	13,4	86,7	82
B. a H.	9 702	24 535	7 656	9 674	41,5	26,4	110,0	730,0	17,8	84,3	90
N. Maced.	7 480	13 932	7 571	8 727	50,5	44,3	165,2	655,0	58,7	80,0	17
Mont.	5 581	6 238	10 149	742	48,6	50,5	125,0	928,6	72,3	89,3	50
$N_H < N_L$		+	+	+	+	+	–	+	–	+	–
<i>Output of correlation analysis</i>											
Correl.		0,961	0,297	0,969	0,220	0,288	-0,122	0,187	0,298	0,138	-0,036

Note: N_H – the number of the best values of the given indicator among the CEEC 16, N_L – the number of the worst values of the given indicator among the CEEC 16.

Source: processed by author.

The results of the initial analysis of the extreme tertiles of the sorted statistical set confirm that the relevant determinants of FDI inflows to the countries of the studied region are the total GDP of the countries, the volume of exports, and the density of roads, although the last of these indicators was not confirmed in the lower tertile (Table 2). We can also confirm these results using a correlation analysis, which showed a strong positive relationship between FDI inflows and GDP or export volume. Considering the different results between the upper and lower tertiles, we can state that the results on the relevance of the determinants of FDI inflows are to some extent mixed. While the lower tertile confirms 7 out of 10 indicators, the upper tertile confirms only 3 determinants. For this reason, we can say that low values of FDI inflows to the CEEC region are associated with low values of the selected determinants. On the other hand, the connection between FDI inflows and their determinants is limited in the case of the highest, i.e. best values of the explanatory factors. From the results of the analysis, we can conclude that the economic openness and Doing business are not relevant in the area of FDI inflows – this is indicated by the data from both the upper and lower tertiles.

Conclusion

This contribution aimed to examine the determinants of FDI inflows to CEEC, a region defined by a common post-communist economic transformation. While the economic literature has long emphasized economic factors, this analysis adopted a broader perspective and tested a range of potential determinants through statistical analysis of extreme tertiles. The empirical results provide a comprehensive picture. The analysis confirms that traditional economic factors, namely the total size of the economy (GDP) and the volume of exports, are strong determinants of FDI inflows in the region. These findings were supported by a strong positive correlation. In addition, infrastructure, as measured by road density, also appears to be a significant factor, highlighting the importance of a developed physical network for attracting foreign capital.

However, the study reveals a critical divergence between the best and worst performing countries in terms of attracting FDI. The determinants were much more pronounced in the lower tertiles of countries (those with the lowest FDI inflows), where low levels of most economic, institutional and human factors were strongly associated with low FDI. In contrast, for the upper tertile (the largest FDI recipients), the relationship was less clear-cut, with only three factors – GDP, export volume and road density – being confirmed. This suggests that while overcoming shortcomings in these areas is key to attracting larger volumes of investment, achieving the highest FDI status may depend on a more complex or differentiated set of factors. The analysis found that indicators of institutional quality (rule of law and control of corruption) and factors such as trade openness and doing business were not statistically validated as relevant determinants in this specific regional and methodological context. This suggests that within CEEC, investment variability is not primarily explained by these factors or that their impact is obscured by underlying economic and infrastructure determinants.

This paper contributes to the literature by providing a regional, statistically based analysis of the factors influencing FDI in Central and Eastern European countries. It confirms the primary role of market size, export capacity and infrastructure, while highlighting the asymmetric effect where these determinants are most important in distinguishing the lowest performing economies. Future research could build on these findings by using longitudinal data and multivariate models to further uncover the complex interaction of factors driving foreign investment in the region.

References:

Bellak, Ch., Leibrecht, M. & Reidl, A. (2008). Labour Costs and FDI Flows into Central and

- Eastern European Countries: A Survey of the Literature and Empirical Evidence. *Structural Change and Economic Dynamics*, 1(19), 17–37.
- Cibuľa, A. (2021). Analysis of China's foreign direct investment in Europe under the 17+ 1 platform. *Slovak Journal of International Relations*, 19(2), 157–173.
- Darmo, Ľ. at al. (2020). Determinants of the FDI Inflow into the Visegrad Countries. *Economic Journal*, 10(68), 1057–1080. <https://doi.org/10.31577/ekoncas.2020.10.05>
- Dudas, T. & Grančay, M. (2019). Regional structure of foreign direct investment in Slovakia: a district-level gravity-type model 2009 - 2016. In: *Economic Journal*, 67(8), 811–836.
- Ginevicius, R. & Tvaronavičienė, M. (2003). What drives foreign direct investments into Baltic countries? The case of Lithuania, Latvia and Estonia. *Economic Journal*, 8(51), 963–981.
- Hlavacek, P., & Bal-Domanska, B. (2016). Impact of foreign direct investment on economic growth in Central and Eastern European countries. *Engineering Economics*, 27(3), 294–303. <http://dx.doi.org/10.5755/j01.ee.27.3.3914>
- ILO (2025). ILO data explorer. https://rshiny.ilo.org/dataexplorer64/?lang=en&segment=indicator&id=SDG_0851_SEX_OCU_NB_A
- Makhavikova, H. (2018). *Determinants of FDI in Central and Eastern Europe*. Springer. <https://doi.org/10.1007/978-3-319-91878-5>
- OECD (2020). *Education in the Western Balkans: Findings from PISA*. <https://doi.org/10.1787/764847ff-en>
- Pečarić, M., Kusanović, T., & Jakovac, P. (2021). The Determinants of FDI Sectoral Structure in the Central and East European EU Countries. *Economies*, 9(2), 66. <https://doi.org/10.3390/economies9020066>
- Seric, A. (2011). Determinants of FDI location in Central and Eastern Europe (CEE). *OECD Journal*, 2010(2), 77.
- Tocar, S. (2018). Determinants of foreign direct investment: A review. *Review of Economic and Business Studies*, 1(11), 165–196. <https://doi.org/10.1515/rebs-2018-0069>
- UNCTAD (2025). UNCTADstat data center. <https://unctadstat.unctad.org/datacentre/>
- World Bank (2025). *World development indicators*. <https://data.worldbank.org>

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UKRAINE AND TRADE IN SERVICES - LITERATURE OVERVIEW

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Abstract: This paper provides a literature overview of recent studies on Ukraine's foreign trade in services, serving as a basis for further empirical research. The analysis focuses on the country's performance, the impact of the EU-Ukraine Deep and Comprehensive Free Trade Area (DCFTA), and the consequences of the ongoing war. The literature consistently highlights the profound structural reorientation of trade towards the EU and the dramatic rise of the resilient Information and Communication Technology (ICT) sector as the leading service export. While the DCFTA has driven significant legislative reforms, its effectiveness is hampered by internal issues such as corruption and institutional capacity constraints. The paper synthesizes these findings to inform a focused future study on the structural and regional dynamics of Ukrainian service exports, particularly within the context of EU integration and post-war reconstruction.

Keywords: Ukraine, services, exports, imports, international trade

JEL: L80, O53

Introduction

The growing role of services in the global economy makes a detailed analysis of their exports a critical factor in the development of modern countries, especially for Ukraine amidst its profound economic and geopolitical transformation. The last decade has been defined by a decisive and structural reorientation of Ukraine's foreign trade away from the Commonwealth of Independent States (CIS) towards the European Union (EU), a process institutionalized by the Deep and Comprehensive Free Trade Area (DCFTA). The DCFTA, which commenced in 2016, aimed not only at tariff liberalization but also at extensive regulatory approximation, effectively creating a "legal gateway" for Ukraine's deeper integration into the EU Single Market. The consensus in the literature is that the DCFTA has functioned as a powerful engine for trade-related reforms (e.g., in public procurement and technical barriers to trade). However, its overall effectiveness has been assessed as medium due to persistent internal challenges, including a weak rule of law, strong oligarchic influence, and pervasive corruption. Despite these governance issues, the services sector has maintained a consistently positive trade balance with the EU, often offsetting the negative balance in goods trade.

Crucially, the structure of service exports has undergone a radical shift. Traditional services, particularly transport, have contracted due to geopolitical and wartime constraints, forcing a dramatic logistical reorientation from seaports to land transport routes. Conversely, the information and communication technology (ICT) sector has witnessed a skyrocketing growth, emerging as the largest services export sector and a clear leader in comparative advantage. The ICT sector's success, driven largely by domestic companies, highlights its

resilience and critical importance for the “build back better”² principle of post-war reconstruction, as its services can often be delivered remotely. Yet, Ukraine remains classified in the moderate level group for service export development, with barriers related to limited market access, infrastructure deficits, and deficits in human capital like English language skills. Improving sector regulation is seen as key to realizing the country’s full EU integration potential.

The objective of this paper is to review recent literature focusing on Ukraine’s foreign trade in services to build an informed foundation for future, focused empirical research. This overview analyzes published works dealing with the country’s performance, structural composition, and the intertwined impact of the DCFTA and the ongoing conflict. The applied method is a comprehensive literature overview and synthesis, drawing upon studies that employ methods such as taxonomic analysis, trade balance indices, and assessments of institutional effectiveness (e.g., Malyarets et al., 2024; Rabinovych, 2022; Wyszowska-Kuna, 2024).

Based on the evidence of structural shifts, institutional constraints, and the authors’ previous work (Grešš & Peternel, 2025), this review leads to the following research question for the future empirical study: To what extent have the EU-Ukraine DCFTA and the ongoing conflict structurally reoriented Ukraine’s trade in services, and what specific policy measures are critical for realizing its future competitiveness, particularly in high-value-added sectors like ICT, amidst the EU integration process?

1 Literature overview

We base our article on the previous article published by Grešš and Peternel (2025), where we discussed relatively scarce literature on the subject of Ukrainian trade in services with the V4 countries. However, the situation is better when looking at the trade in services in general or with a focus on mutual trade relations between the EU and Ukraine in the last decade. In recent years some articles were published focusing on Ukraine’s trade in services dealing with the country’s performance, structural shifts, and the impact of the DCFTA and the ongoing war.

Comparative study by Malyarets et al. (2024) analyzes the export of services in the EU countries and Ukraine from 2019 to 2023 using a taxonomic approach to classify countries by the level of development of services exports. The methodology groups countries into high, medium, and moderate levels of services export development. Ukraine is classified within the moderate level group, alongside 15 other countries. Key factors contributing to Ukraine’s position include limited access to new markets, inadequate infrastructure, political instability, and a lack of high growth rates in certain sectors. Despite these challenges, Ukraine is identified as having competitive advantages and potential in the IT and outsourcing sectors. The authors recommend that Ukraine focus on attracting international investment and implementing key measures such as rebuilding the economy, developing infrastructure, and stimulating innovation in high-tech sectors to improve its global market position and facilitate further EU integration.

Radziyevska (2023) examines the specifics of Ukraine’s trade in services with EU countries under the DCFTA during the 2016–2021 period, highlighting the importance of the services sector for Ukraine’s economic growth and EU integration potential. The analysis reveals that Ukraine has maintained a consistently positive balance of trade in services with the EU throughout this period, offsetting the consistently negative balance of trade in goods. Although the EU is Ukraine’s main trading partner in services, the overall share of services exports to the EU in Ukraine’s total exports has been trending downward, reaching 11% in 2021. The study notes a decline in traditional transport services (air, rail, sea) but an increasing trend in modern services like automobile transport and post/courier services exports to the EU.

² A post-disaster recovery strategy that aims to not just rebuild damaged areas, but to make them stronger and more resilient to future shocks by integrating disaster risk reduction measures into reconstruction.

The author concludes that improving the regulation of the services sector is necessary for the successful fulfillment of Ukraine's integration potential as an EU candidate country.

Movchan and Pindyuk (2024) investigate the structural shifts in Ukraine's foreign trade and investment patterns, focusing on the period before (2013-2021) and during the full-scale war. The pre-war period was marked by a dramatic reorientation of trade away from the Commonwealth of Independent States (CIS) countries, notably Russia, toward the EU, Asia, and Turkey. In services trade, the most significant shift was the skyrocketing growth of the Information and Communication Technology (ICT) sector, which became the largest services export sector by 2021, driven by technical skills, favorable taxation, and strong links with the US market. Conversely, transport services exports contracted due to geopolitical constraints. The ongoing war amplified these trends and highlighted the need for post-war reconstruction to adhere to the principle of "build back better" and a green transition to foster technologically advanced, higher value-added sectors. The report identifies the IT sector as one of six key industries with significant post-war growth potential.

Rabinovych (2022) assesses the performance of the EU-Ukraine "deep" trade agenda, which includes the DCFTA, from the non-economic perspectives of effectiveness and impact, complementing traditional trade volume assessments. The study finds the DCFTA to have had medium effectiveness in achieving its goals, primarily due to internal challenges within Ukraine, notably corruption, weak rule of law, and strong oligarchic influence. Despite these domestic issues, the DCFTA proved to be a powerful engine for trade-related reforms from 2014 to 2019, successfully addressing areas like technical barriers to trade and public procurement. The agreement's most considerable impact was its structural effect on Ukraine's external economic relations, leading to a profound re-orientation of trade away from Russia/CIS to the EU market. Weaknesses noted are the continued low levels of Ukraine's services exports to the EU and weak EU-Ukraine investment cooperation. The legislative approximation driven by the DCFTA also created a crucial "legal gateway" for Ukraine's future deeper integration into the EU Single Market.

Wyszkowska-Kuna (2024) assesses the competitiveness and specialization of Ukraine's service exports from 2005 to 2022, specifically examining the impact of the DCFTA and the role of global value chains (GVC). The study found that the DCFTA had a neutral impact on the overall GVC participation and export competitiveness of Ukrainian services, with no significant increase in the services sector's share in total exports over the period. The stark exception is computer services, which is identified as the clear leading exported service with a remarkable comparative advantage and substantial growth in its share of total services exports. The success of computer services is attributed primarily to the efforts of Ukrainian domestic companies, rather than foreign transnational corporations. The paper also argues that the services sector is crucial for post-war reconstruction because most services can be delivered remotely, requiring less resource-intensive infrastructure rebuilding compared to damaged industrial or transport facilities. Factors positively influencing competitiveness include external demand, market openness, government policies, exchange rate conditions, employment, and earnings growth. Conversely, key limitations include deficits in human capital, particularly English language skills, and communication infrastructure, which pose barriers to further export growth.

Wolczuk and Zeruolis (2023) evaluate the effectiveness of the EU-Ukraine "deep" trade agenda, including provisions aimed at liberalizing trade in goods and services, improving the legislative framework, and promoting regulatory approximation with the EU Single Market. The analysis highlights medium effectiveness of these initiatives, acknowledging significant challenges linked to corruption, weak rule of law, and institutional capacity constraints in Ukraine. The trade agenda incorporates detailed measures for liberalizing cross-border services trade and establishing firm operational conditions, including legislative approximations aligned

with EU standards. The introduction of electronic public procurement platforms and competition law reforms have contributed positively to trade facilitation and transparency. Additionally, the agenda supports small and medium enterprises and civil society engagement to bolster the business climate. Despite progress, Ukraine remains “lost in transition” in some respects, with reforms often hampered by political and structural obstacles. Nevertheless, this comprehensive trade framework has propelled key institutional advances critical for market economy transition, such as competition policy improvements and state aid regulation. The research underscores the agenda’s role as a flexible, multidimensional policy tool that drives incremental but vital improvements in Ukraine’s service trade landscape, offering a foundation for more effective integration into EU markets.

Bandura et al. (2024) explore how Ukraine’s trade in services and related logistics have adapted following the Russian invasion, focusing on the transition from reliance on seaports to increased use of land transport (road and rail). Historically, seaports accounted for approximately 60% of Ukraine’s trade volume, with the remainder via land modes. Post-invasion, the balance shifted dramatically, with road and rail infrastructure handling about 75% of trade flows by 2023. This shift has critical implications for transportation services, customs, and infrastructure maintenance. The study also highlights ongoing reforms aimed at improving transparency and efficiency within Ukraine’s trade infrastructure sector. Key reforms include the public e-procurement system, decentralization of the state roads agency, and legislation to professionalize highway project tendering by incorporating international engineering standards. The country is also working to enhance regulator independence and public-private partnerships to attract investment critical for infrastructure modernization. The study also stresses the importance of sustaining and expanding these reforms to support Ukraine’s trade potential amid ongoing conflict, with particular emphasis on developing road networks toward key border crossings with Moldova and Romania. Effective transport and logistics services are positioned as vital for maintaining export capacity, including services linked to trade facilitation, customs clearance, and multimodal transport coordination.

Boyko et al. (2023) analyze how Ukraine’s pursuit of self-determination, especially through the DCFTA, shapes Ukraine’s international trade, with a particular eye on services trade within the EU framework. The authors discuss how regulatory convergence, standards alignment, and non-tariff measures under the DCFTA can lower transaction costs and open EU markets for Ukrainian service providers. The wartime context is acknowledged as a macroeconomic constraint, but the article emphasizes policy levers (institutional reforms, trade facilitation, and alignment with EU regulatory practices) that could enhance Ukraine’s integration into EU value chains and diversify services exports. The article contributes to the literature by linking political objectives (self-determination and integration) to concrete trade-policy outcomes in services, highlighting both opportunities and risks for Ukrainian service sectors under ongoing conflict.

European Commission (2025) outlines the DCFTA framework governing goods and services trade between the EU and Ukraine, emphasizing gradual tariff liberalization, alignment of regulatory standards, and predictable rules for service providers. It notes ongoing adaptations, including a 2024-2025 renewal of autonomous trade measures and a Priority Action Plan (PAP) for enhanced DCFTA implementation in 2025-2026. The document also situates Ukraine’s trade in services within its broader deep integration with the EU Single Market and identifies mechanisms for monitoring and expanding access for Ukrainian service exporters. It provides a policy roadmap for maintaining openness to trade and for addressing new trade barriers in a post-crisis environment.

World Trade Organization (2023) briefing assesses the global trade and development implications of the first year of the Russia-Ukraine conflict, including effects on Ukraine’s services and broader trade flows. It emphasizes resilience in the multilateral trading system

despite supply-chain disruptions and elevated freight costs, while noting significant negative consequences for Ukraine's export potential and for its service sectors integrated into global value chains. The briefing frames the conflict as a shock to global trade architecture and analyzes policy responses by trading partners, with implications for Ukraine's future service trade diversification and regional integration.

Bocharova et al. (2021) review Ukraine-EU trade in services during 2015-2019, examining structural changes, regulatory drivers, and policy measures affecting Ukrainian service exporters. They discuss sectoral composition (IT, professional, and business services) and the role of regulatory alignment under EU trade arrangements in facilitating cross-border service provision. The piece highlights barriers faced by Ukrainian services, including nontariff measures and administrative hurdles, and suggests policy directions to strengthen Ukraine's services exports within the EU market.

From a regional perspective and level, Lupak et al. (2025) identified several features of the development of foreign trade in services at the regional level, covering raw material and resource supply, spatial and territorial distribution, competitive potential, infrastructure provision, and other aspects. They conclude that regions that demonstrated positive dynamics of exports of services were able to ensure growth or maintain stability of this indicator, despite difficult economic, political, and other conditions. The results of the structural and functional analysis clearly demonstrated the negative impact of the war and occupation on foreign economic activity and the stability of economic processes in regions located on the front line or in areas of active hostilities. They note that in order to boost foreign trade in services in Ukraine's regions, the guidelines should include development of local infrastructure for trade in services, improvement of the regulatory framework in the regions, training and development of a local highly skilled workforce, strengthening support for innovation and digitalization, supporting local small and medium-sized businesses, expanding international interregional cooperation and partnerships, and strengthening the promotion of services in international markets.

Results and Conclusion

The body of literature confirms that Ukraine's trade in services is defined by the twin forces of institutional alignment via the DCFTA and rapid structural change, notably the dominant rise of the ICT sector (Movchan & Pindyuk, 2024; Wyszowska-Kuna, 2024).

In answering the research question, we ascertain that the DCFTA and the ongoing conflict have produced a profound and decisive structural reorientation of Ukraine's trade in services. The DCFTA has served as the primary engine for a geographic reorientation of trade away from the CIS/Russia towards the EU market, establishing a crucial "legal gateway" via legislative approximation that underpins Ukraine's integration trajectory (Rabinovych, 2022; Wolczuk & Zeruolis, 2023). Sectorally, this reorientation is characterized by the dramatic ascension of the ICT and specifically computer services subsector, which has established a clear and resilient comparative advantage and is now the leading service export (Movchan & Pindyuk, 2024; Wyszowska-Kuna, 2024). Conversely, the full-scale war has amplified these trends by further integrating Ukraine with European logistical routes while simultaneously forcing a severe contraction and functional reorientation of traditional transport services from seaports to land-based corridors (Bandura et al., 2024).

The literature stresses that the primary lever is improving institutional capacity by addressing deep-seated challenges like corruption and weak rule of law, which currently limit the DCFTA's overall effectiveness (Rabinovych, 2022; Wolczuk & Zeruolis, 2023). Furthermore, future competitiveness hinges on sustaining and expanding trade-related reforms, specifically in competition policy and public procurement (Wolczuk & Zeruolis, 2023), and making targeted investments in infrastructure modernization, particularly digital

and critical land-based transport networks (Bandura et al., 2024; Lupak et al., 2025). Finally, cultivating human capital through training and skill development, especially in English language proficiency, is essential for supporting the high-value-added ICT sector and helping Ukraine move beyond its classification in the moderate level of services export development (Malyarets et al., 2024; Lupak et al., 2025).

The primary limitation of this article is its scope as a literature overview; it provides a synthesis of existing knowledge but is preparatory and lacks new empirical data or primary analysis. Furthermore, the field of study is constrained by the scarcity of dedicated literature detailing the trade in services relationship specifically between Ukraine and the Visegrad Group (V4) countries (Grešš & Peternel, 2025). The dynamically evolving nature of the full-scale war also means that analyses of impacts and adaptive trade measures require constant updating, which is a structural limitation of any work not based on the most immediate, real-time data (World Trade Organization, 2023).

Based on these limitations and knowledge gaps, future research should pursue several objectives. The most logical continuation is an empirical study into the detailed dynamics, competitiveness, and specialization of services trade between Ukraine and the V4 countries (Grešš & Peternel, 2025). A further objective is a quantitative assessment of the effectiveness of new land-based logistics corridors and their contribution to regional services exports during and immediately following the active war conflict (Bandura et al., 2024; Lupak et al., 2025). Finally, research should focus on a deeper analysis of the specific non-tariff measures and administrative hurdles that continue to limit Ukrainian service exporters' access to the EU market, evaluating their consistency with DCFTA liberalization objectives (Bocharova et al., 2021).

References:

- Bandura, R., Timtchenko, I., & Robb, B. (2024). Ships, Trains, and Trucks: Unlocking Ukraine's Vital Trade Potential. Center for Strategic and International Studies (CSIS). <https://www.csis.org/analysis/ships-trains-and-trucks-unlocking-ukraines-vital-trade-potential>
- Boyko, N., Nes, K., & Schaefer, K. A. (2024). International trade and Ukraine's pursuit of self-determination. *The World Economy*. Wiley Online Library. <https://onlinelibrary.wiley.com/doi/10.1111/twec.13493>
- Bocharova, Y. H., Gorina, G. O., & Kozhuhova, T. V. (2021). Foreign trade in services in Ukraine and EU. *Visnyk DonNUET*. <https://visniknew.donnuet.edu.ua/index.php/visnik/article/view/43>
- European Commission. (2025). EU trade relations with Ukraine. https://policy.trade.ec.europa.eu/eu-trade-relationships-country-and-region/countries-and-regions/ukraine_en
- Grešš, M., & Peternel, I. (2025). Ukraine-V4 Trade Relations. *Ekonomické, politické a právne otázky medzinárodných vzťahov 2025: zborník z medzinárodnej vedeckej konferencie konanej 29. - 30. mája 2025*. Bratislava: Vydavateľstvo EKONÓM, 2025, 67-74. ISBN 978-80-225-5233-2. ISSN 2585-9404.
- Lupak, R., Stiskun, A., & Sysun, O. (2025). Rehional'ni osoblyvosti zovnishn'oyi torhivli posluhamy v Ukrayini: strukturno-funktsional'nyy analiz. *Pidpryyemnytstvo i torhivlya*, (44), 122-129. <https://doi.org/10.32782/2522-1256-2025-44-15>
- Malyarets, L. M., Norik, L. O., Denysiuk, O. V., & Skliar, T. P. (2024). A comparative analysis of exports of services in the EU countries and Ukraine. *Svitova ekonomika ta mizhnarodni vidnosyny (World Economy and International Relations)*, (3), 48-57. <https://doi.org/10.32983/2222-0712-2024-3-48-57>
- Movchan, V., & Pindyuk, O. (2024). *Ukraine's future competitiveness: Directions for*

- structural shifts in foreign trade and investment*. Bertelsmann Stiftung. <https://doi.org/10.11586/2024052>
- Rabinovych, M. (2022). EU-Ukraine “deep” trade agenda: The effectiveness and impact perspectives. *International Politics*, 1078–1096 (2024). <https://doi.org/10.1057/s41311-022-00384-x>
- Radziyevska, S. (2023). Ukraine-EU trade in services under the Deep and Comprehensive Free Trade Agreement. *Управління змінами та інновації (Change Management and Innovations)*, (7), 33–38. <https://doi.org/10.32782/CMI/2023-7-5>
- Wolczuk, K., & Zeruolis, M. (2023). EU-Ukraine “deep” trade agenda: The effectiveness and impact on trade in services. *European Integration Studies*, 17(2), 45-68. <https://pmc.ncbi.nlm.nih.gov/articles/PMC8883013/>
- World Trade Organization. (2023). One year of war in Ukraine: Assessing the impact on global trade and development. https://www.wto.org/english/res_e/publications_e/oneyukr_e.htm
- Wyszkowska-Kuna, J. (2024). The competitiveness of Ukrainian service exports in the context of Ukraine's integration with the European Union and the war in Ukraine. *Torun International Studies*, 1(20), 69–89. <https://doi.org/10.12775/TIS.2024.011>

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FDI CONCENTRATION AND STRUCTURAL VULNERABILITIES IN SMALL EU ECONOMIES: A COMPARATIVE PERSPECTIVE ON BULGARIA AND SLOVAKIA¹

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Abstract: This paper compares the structure of inward foreign direct investment (FDI) in Bulgaria and Slovakia over 2014–2024, focusing on differences in sectoral and geographical diversification. Using harmonised stock data from the wiiw FDI Database and standard concentration measures, the analysis shows that Bulgaria’s FDI portfolio is broadly distributed across activities and partner countries, whereas Slovakia exhibits persistently high concentration centred on a narrow set of manufacturing subsectors and EU investors. A parallel comparison of real consumption per capita reveals substantial convergence by Bulgaria during the period in which these structural gaps widened. While the analysis does not imply causality, the results suggest that diversified FDI configurations support more adaptive adjustment in small open economies, whereas concentrated patterns heighten vulnerability to sector-specific and regional shocks. These findings highlight the potential importance of the qualitative composition of inward FDI for resilience and long-term convergence within the European Union.

Keywords: FDI structure, economic dependence, diversification, EU periphery, competitiveness, resilience

JEL: F21, F23, O52

Introduction

Foreign direct investment (FDI) has played a central role in the economic transformation of Central and Eastern European (CEE) countries since the 1990s. By providing capital, technology and access to global production networks, foreign firms accelerated structural modernisation and supported integration into the European Union’s single market. At the same time, the prominence of FDI has reinforced structural asymmetries in small open economies, where growth often hinges on a narrow set of sectors, subsectors or investor countries. Such concentration may heighten exposure to external shocks and constrain long-term resilience. These dynamics align with broader assessments of the FDI-dependent development model in CEE, which emphasise limited domestic embeddedness and persistent vulnerability to external disturbances (Gál & Lux, 2022), and with political-economy analyses that characterise the region’s export-led growth regimes as heavily shaped by foreign investment and evolving domestic institutions (Augustín & Daubner, 2024; Szabó, 2024).

Bulgaria and Slovakia illustrate two distinct configurations of FDI-driven development within the EU’s eastern periphery. Slovakia’s rapid industrial expansion has been strongly anchored in foreign-owned manufacturing, especially transport equipment and related value-chain activities. Bulgaria, by contrast, exhibits a more balanced distribution of inward

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FDI across services and industry, with real estate, manufacturing and financial services consistently absorbing the largest shares. Despite these structural differences, both economies rely heavily on foreign-owned capital, raising the question of whether their respective FDI profiles support diversification or reinforce patterns of structural dependence.

The objective of this study is to assess the degree and evolution of FDI concentration in Slovakia and Bulgaria – both across economic activities and by partner country – and to identify potential vulnerabilities associated with such concentration. Specifically, the analysis asks (1) whether inward FDI is dominated by a limited set of sectors or investor countries and (2) how these patterns have evolved over the past decade.

Methodologically, the study uses harmonised inward FDI stock data from the Vienna Institute for International Economic Studies (wiiw) FDI Database, based on the most recent data available. Sectoral and geographical concentration are measured using the Herfindahl-Hirschman Index (HHI) and standard concentration ratios (CR₁, CR₃). The results are compared across countries and over time to identify common features and structural differences.

The findings contribute to the broader debate on FDI-driven development in small EU member states by highlighting how structural concentration can emerge even amid sustained FDI inflows. The analysis underscores the importance of the composition of inward FDI – not only its volume – and argues that diversification across both sectors and partner countries is critical for enhancing resilience and supporting long-term convergence within the European Union.

1 Methodology and Indicators

This study uses harmonised inward FDI stock data from the wiiw FDI Database, which reports positions by economic activity (NACE Rev. 2) and by partner country for CESEE economies. The analysis covers the period 2014–2024 for Bulgaria and 2014–2022 for Slovakia, reflecting the availability and comparability of sectoral and partner-level breakdowns. All indicators are constructed using FDI inward stocks (equity, reinvested earnings and intercompany debt), following the database’s standard definitions and metadata.

1.1 Indicators of concentration

To quantify the degree of concentration in the sectoral and partner-country distributions, we apply standard measures widely used in industrial organisation and competition analysis and increasingly employed in applied FDI research:

- Concentration Ratios (CR₁, CR₃). Let s_i denote the share in % of component i (sector or partner) in total inward FDI during year t . The one-component and three-component concentration ratios are:

$$CR_1 = S_1 \quad (1)$$

$$CR_3 = S_1 + S_2 + S_3 \quad (2)$$

with components ranked in descending order by share. These ratios provide transparent, policy-friendly gauges of dominance by the largest recipients/sources. Their use alongside HHI is recommended in recent methodological summaries and competition policy work (Brezina et al., 2016).

- Herfindahl-Hirschman Index (HHI). Overall concentration is measured as:

$$HHI = \sum_{i=1}^n s_i^2 \quad (3)$$

where shares (s_i) are expressed as fractions; hence $HHI \in [0,1]$ (0 = complete diversification; 1 = complete concentration). Recent work cautions that traditional HHI can lack value-validity when aggregation or market definition differs, and recommends corrected/adjusted formulations or careful transparency in reporting (Kvålseth, 2022). Using CR ratios together with HHI allows us to capture both the dominance of the largest components and the tightness of the entire distribution (Brezina et al., 2016).

1.2 Data treatment

FDI stock data occasionally contain missing or negative entries – for example, reflecting debt repayment, restructuring or revaluations. In line with standard empirical practice, negative values are set to zero for share calculations to avoid mechanical distortions, while missing entries are excluded. For each country-year pair, concentration indicators are computed using the full available distribution of activities and partner countries.

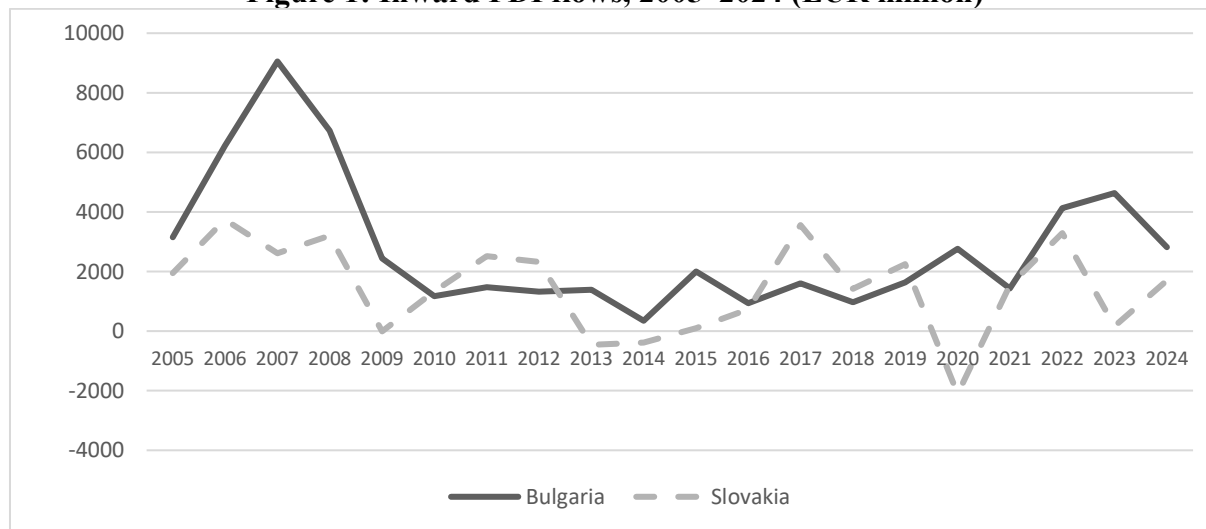
1.3 Comparative design

We compute CR_1 , CR_3 and HHI annually for Bulgaria and Slovakia over the available period for two dimensions: (i) by activity (NACE Rev. 2, one-letter level) and (ii) by partner country. The CESEE focus of the wiiw database ensures comparability within a region of small open economies embedded in similar institutional and market environments, consistent with recent research on how FDI structures and diversification shape economic resilience in Europe (Jaklič & Sass, 2024).

2 Results and Discussion

2.1 Dynamics of inward FDI inflows in Bulgaria and Slovakia

Figure 1: Inward FDI flows, 2005–2024 (EUR million)



Source: wiiw FDI Database (2025).

The dynamics of FDI inflows in the two economies show two distinct patterns. Bulgaria experienced exceptionally high inflows prior to the global financial crisis, peaking in 2007 in the context of EU accession, followed by a sharp contraction in 2009 and a prolonged period of volatility (Fig.1). After 2014, flows stabilised at moderate levels, with several upward episodes—including 2021–2023—before easing again in 2024.

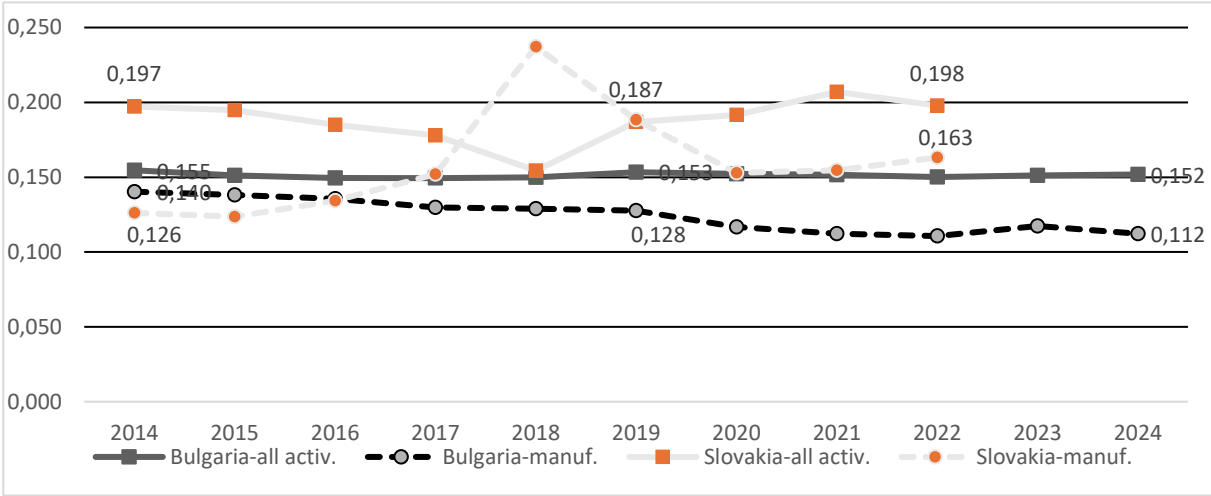
Slovakia's pre-crisis inflows are lower than Bulgaria's but more stable, reflecting the country's position as a mature destination for manufacturing FDI within Central European value chains. Post-2010 inflows fluctuate within a narrower band but exhibit occasional sharp

drops – such as in 2009 and again in 2020 – typically associated with disruptions in global automotive production. These inflow patterns provide the backdrop for the structural concentration analysis that follows.

2.2 Sectoral concentration of inward FDI stocks in Bulgaria and Slovakia

The sectoral HHI trends point to differences in the degree of concentration between the two economies, though neither economy can be regarded as fully diversified. Bulgaria’s sectoral concentration remains relatively low and very stable over time, with the HHI for all activities fluctuating in a narrow range around 0.15 between 2014 and 2024 (Fig.2). This stability suggests that inward FDI is allocated across several sizeable activities, with no single sector becoming overwhelmingly dominant. The manufacturing-specific index broadly confirms this pattern, declining gradually from around 0.14 in 2014 to approximately 0.11-0.12 in recent years, indicating a somewhat broader distribution of investment within industry.

Figure 2: Sectoral FDI Concentration (HHI) in Bulgaria and Slovakia, 2014–2024



Source: wiiw FDI Database (2025). Note: Slovakia data available until 2022

Slovakia, by comparison, records higher but more variable sectoral concentration. The HHI for all activities generally lies above Bulgaria’s values, typically falling between 0.18 and 0.20, although with a noticeable dip to 0.15 in 2018. Manufacturing concentration fluctuates even more visibly: the index rises from roughly 0.12-0.13 in the mid-2010s to a peak of 0.24 in 2018, before settling into a moderately elevated range of 0.15-0.16 thereafter. These movements reflect Slovakia’s strong orientation toward production-based activities, especially the automotive and machinery sectors, which continue to shape the structure of inward FDI. This pattern is consistent with broader assessments that identify Slovakia’s comparative advantages as predominantly FDI-driven and positioned in lower value-added segments of global production networks (Jancovič, 2024).

For Bulgaria, the CR₁ and CR₃ indicators reveal a moderate but stable concentration profile, with the top sector accounting for around 20-26% of total FDI and the top three sectors jointly absorbing around 58-60% (Table 1). Real estate, Manufacturing, and Financial & insurance activities consistently represent the largest destinations of foreign investment. Within manufacturing, Bulgaria’s FDI is internally diversified, with subsectors such as Coke and refined petroleum, Basic and fabricated metals, and Rubber and plastics typically sharing leadership. No single manufacturing subsector dominates, which aligns with the country’s low manufacturing-level HHI.

Slovakia exhibits a different pattern. Sectoral CR₁ values ranging from 25–34% and CR₃ values above 58–67% confirm a more concentrated structure, driven primarily

by Manufacturing, Financial & insurance activities, and Wholesale & retail trade. The manufacturing subsector distribution further reinforces this picture: Transport equipment and Basic metals frequently account for between 40% and 60% of manufacturing FDI, underscoring Slovakia's deep dependence on automotive-related production networks.

Table 1: Sectoral FDI Concentration Indicators and Dominant Activities for Bulgaria and Slovakia (selected years: 2014, 2018, 2022, 2024)

Country	Year	CR1 (%)	CR3 (%)	Top 3 sectors (%)	Top 3 manufacturing subsectors (% of manuf. FDI)
BG	2014	26.2	60.1	Real estate (26.2); Manufacturing (17.6); Financial & insurance (16.3)	Coke & refined petroleum (25.1); Rubber, plastics & non-metal minerals (14.7); Food, beverages & tobacco (13.4)
BG	2018	23.5	59.1	Real estate (23.5); Manufacturing (18.3); Financial & insurance; (17.3)	Coke & refined petroleum (22.3); Basic & fabricated metals (17.2); Rubber, plastics & non-metal minerals (13.4)
BG	2022	22.2	58.1	Real estate (22.2); Manufacturing (19.0); Financial & insurance (16.9)	Basic & fabricated metals (16.7); Coke & refined petroleum (15.5); Rubber, plastics & non-metal minerals (15.1)
BG	2024	19.9	59.1	Financial & insurance (19.9); Real estate (19.8) Manufacturing (19.4)	Basic & fabricated metals (18.5); Rubber, plastics & non-metal minerals (15.4); Coke & refined petroleum (14.2)
SK	2014	33.4	67.0	Manufacturing (33.4); Financial & insurance (24.5) Wholesale & retail trade (9.1)	Transport equipment (21.1); Basic & fabricated metals (18.1); Rubber, plastics & non-metal minerals (14.1)
SK	2018	25.4	58.9	Manufacturing (25.4); Professional, sci/tech services (21.5); Wholesale & retail trade (12.0)	Basic & fabricated metals (42.8) Other manufacturing & repair (11.5) Chemicals (10.1)
SK	2022	34.0	66.3	Manufacturing (34.0); Financial & insurance (23.6); Wholesale & retail trade (8.7)	Transport equipment (28.7) Basic & fabricated metals (19.8) Other manufacturing & repair (13.5)

Source: wiiw FDI Database (2025)

Taken together, the indicators from Fig. 2 and Table 1 point to a modest but meaningful difference in the sectoral profiles of the two economies. Bulgaria's inward FDI structure appears comparatively broad and stable, whereas Slovakia's shows a more pronounced degree of sectoral specialisation. These distinctions help explain why the two countries may face different sensitivities to sector-specific developments, particularly those affecting integrated manufacturing value chains.

2.3 Partner-country concentration of inward FDI stocks in Bulgaria and Slovakia

The results show a notable divergence in the geographical structure of inward FDI between the two economies. For Bulgaria, partner-country concentration is moderate and declining over time. CR₁ falls from 16.6% in 2014 to 13.1% in 2024, while CR₃ declines from 36.6% to 29.9%. The HHI also decreases slightly (from 0.07 to 0.06), reflecting a broader and increasingly diversified investor base. Although the Netherlands remains the largest individual partner, its share gradually diminishes, and the composition of the top three partners becomes more balanced. It is also important to note that part of Bulgaria's inward FDI is channelled

through conduit jurisdictions such as the Netherlands, Luxembourg and Cyprus, which often function as financial intermediaries rather than ultimate investor economies. While this can raise the reported shares of these partners, it does not alter the overall trend toward a steadily broadening geographical structure and reduced dependence on any single source country.

Table 2: Partner-Country Concentration Indicators for Bulgaria and Slovakia
(selected years: 2014, 2018, 2022, 2024)

Country	Year	CR1 (%)	CR3 (%)	Top 3 partners (%)	HHI
BG	2014	16.6	36.6	Netherlands (16.6); Austria (13.4); Greece (6.7)	0.07
BG	2018	18.6	34.7	Netherlands (18.6); Austria (9.2); Germany (6.9)	0.07
BG	2022	14.6	31.3	Netherlands (14.6); Germany (8.4); Austria (8.2)	0.06
BG	2024	13.1	29.9	Netherlands (13.1); Austria (9.2); Greece (7.6)	0.06
SK	2014	19.7	45.7	Netherlands (19.7); Austria (15.7); Czechia (10.3)	0.10
SK	2018	25.3	51.8	Netherlands (25.3); Czechia (13.6); Austria (12.9)	0.12
SK	2022	23.4	50.8	Netherlands (23.4); Czechia (14.3); Austria (13.2)	0.11
SK	2023	23.6	51.3	Netherlands (23.6); Czechia (14.4); Austria (13.4)	0.11

Source: wiiw FDI Database (2025)

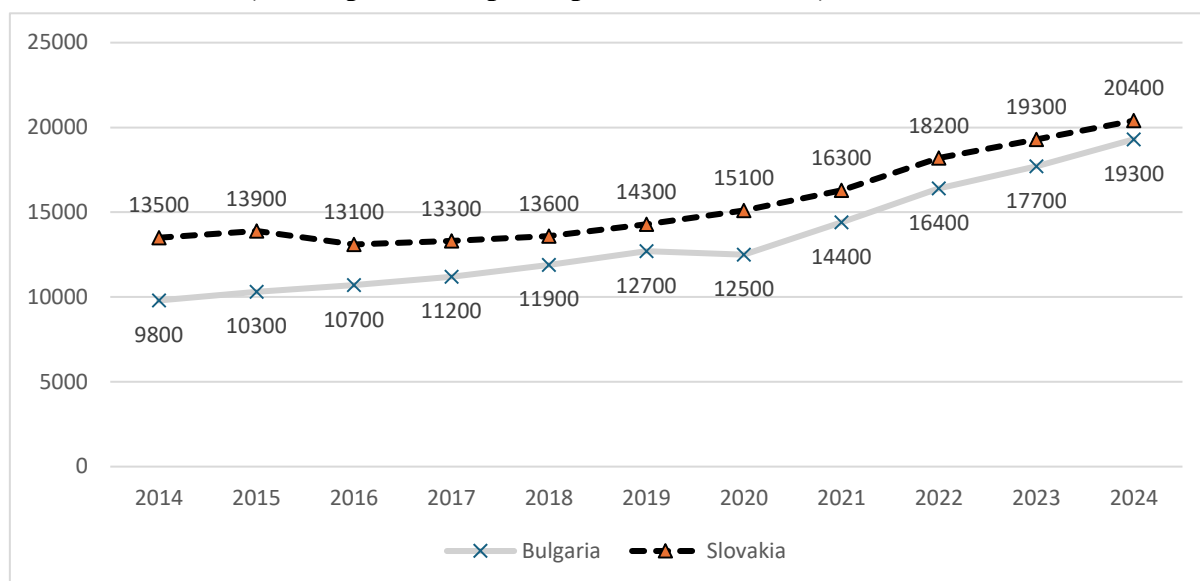
Slovakia exhibits a consistently more concentrated partner structure. CR₁ ranges from 19.7% to 25.3%, and CR₃ remains persistently above 50% in all years. The corresponding HHI values (0.10-0.12) are notably higher than those for Bulgaria, indicating tighter clustering of inward FDI among a few key partners. The top three investor countries – the Netherlands, Czechia and Austria – form a stable triad accounting for roughly half of all inward FDI stock throughout the period. Although the Netherlands also acts as a conduit jurisdiction, Slovakia’s concentration primarily reflects its deep integration into Central European production networks, where investment flows originate primarily from closely connected EU neighbours engaged in automotive and machinery value chains. While conduit effects may influence the reported share of the Netherlands, both Slovakia and Bulgaria use the same immediate-investor reporting framework, and the resulting structural contrast remains robust even when considering ultimate-investor patterns.

Overall, the results underscore a structural asymmetry: Bulgaria has moved toward relatively greater partner diversification, while Slovakia remains highly dependent on a narrow set of EU investors. This geographical concentration, when combined with Slovakia’s sectoral and subsectoral patterns, suggests greater potential vulnerability to shocks originating within a small subset of partner economies, whereas Bulgaria’s relatively broader investor distribution suggests relatively higher resilience to country-specific or regional disturbances.

2.4 Structural divergence and macroeconomic implications

The macroeconomic trajectories reinforce the concentration patterns. Bulgaria records steady and uninterrupted growth in real consumption per capita, rising from EUR 9,800 in 2014 to EUR 19,300 in 2024. Slovakia remains at a higher level, yet its path is flatter and more volatile. Consequently, the gap between the two countries narrows markedly – from roughly EUR 3,700 in 2014 to around EUR 1,100 in 2024 – indicating meaningful convergence in living standards.

**Figure 3: Actual individual consumption of Bulgaria and Slovakia
(real expenditure per capita in PPS EU-27), 2014-2024**



Source: Eurostat (2025)

Although the analysis cannot establish causality, the timing of Bulgaria's convergence coincides with the period during which its inward FDI base became more diversified, both sectorally and geographically. Slovakia's concentrated FDI model – anchored in a limited set of automotive-related manufacturing subsectors and a narrow triad of partner countries – implies higher exposure to sector-specific and regional shocks. This pattern is consistent with evidence that diversified FDI structures generate broader spillovers and help sustain more adaptive and resilient growth paths in small open economies (Crespo & Fontoura, 2007; Sarker & Serieux, 2023).

3 Policy Implications

The comparison between Bulgaria and Slovakia indicates that the structure of inward FDI plays an important role in shaping economic resilience. Several policy lessons follow from this divergence.

First, the evidence highlights the importance of diversification as a resilience strategy. Slovakia's reliance on a narrow group of manufacturing activities, particularly transport equipment, increases its exposure to technological shifts, electrification, supply-chain disruptions and evolving EU regulatory frameworks. While Bulgaria also exhibits structural dependence in certain sectors and investor origins (Zhelev, 2025), its inward FDI base is comparatively more diversified, helping to buffer against such concentrated vulnerabilities. As shown in comparative analyses of Central and Eastern Europe, automotive-centred FDI structures create systemic risks due to their tight coupling with external production networks (Pavlínek, 2016; Zdanowska, 2017). Policies should therefore support broadening the industrial base, including higher-value manufacturing (e.g. batteries, electronics, automation) and complementary services.

Second, partner-country concentration reinforces these risks. Slovakia's dependence on a small cluster of EU investors suggests a need to expand the geographical scope of investment partnerships, especially toward non-EU economies in technologically intensive industries. Bulgaria's experience shows that a broader investor base can buffer against region-specific disturbances. Targeted investment promotion strategies can attract underrepresented investors while maintaining alignment with EU priorities.

Third, the ability to benefit from more diversified FDI depends critically on domestic absorptive capacity (Rao et al., 2024). Strengthening vocational education, improving innovation infrastructure and promoting SME integration into multinational supply chains can enhance technology diffusion and reduce the risks of over-specialisation.

Fourth, the green and digital transitions create opportunities to reshape FDI structures. EU initiatives such as the Green Deal Industrial Plan, the Net-Zero Industry Act and IPCEIs can support investment in renewable energy, digital infrastructure and circular-economy activities, helping both economies attract future-oriented FDI.

Finally, while the findings are robust, the analysis underscores the importance of greater statistical transparency in FDI reporting. Negative entries, missing partners and discrepancies between partner sums and total stocks can affect the precision of concentration measures. Improved reporting – particularly of reinvested earnings, intercompany lending and conduit jurisdictions – would enable policymakers to identify emerging vulnerabilities more accurately.

Overall, these results suggest that more resilient FDI structures tend to be more diversified. Bulgaria's broader FDI base appears consistent with more robust income dynamics, while Slovakia's more concentrated model – more successful in earlier phases of re-industrialization – now exposes the economy to greater structural risk. Policies should therefore emphasise not only attracting FDI but shaping its composition to support long-term resilience and convergence within the EU.

Conclusion

This paper examined the concentration of inward FDI in Bulgaria and Slovakia across sectors, manufacturing subsectors, and partner countries, using harmonised stock data from the wiiw FDI Database. The results reveal a consistent structural divergence between the two economies. Bulgaria's inward FDI exhibits low and stable sectoral concentration, high internal diversification within manufacturing, and a gradually broadening partner-country structure. In contrast, Slovakia's FDI profile is narrowly concentrated, dominated by a limited set of manufacturing subsectors – particularly transport equipment and basic metals – and a stable triad of EU investor economies.

Although causality cannot be established within the scope of this analysis, the timing of Bulgaria's recent convergence in real consumption per capita aligns with the period in which its FDI base remained broad and, in some dimensions, became more diversified. Slovakia's more concentrated structure appears increasingly susceptible to sector-specific and regional shocks, particularly those affecting the European automotive industry. These findings suggest that the composition and diversification of inward FDI matter for economic resilience in small open economies. As both countries seek to navigate the green and digital transformations, policies should therefore emphasise not only the attraction of foreign investment but also its structural quality, supporting diversification, technological upgrading, and domestic absorptive capacity.

References:

- Augustín, M., & Daubner, P. (2024). Slovak Experience With Capitalism: The Myth of the Tatra Tiger. In M. Augustín, P. Jančovič, and B. S. Sergi (eds.), *Modeling economic growth in contemporary Slovakia*, Emerald Publishing Limited, pp. 25-48. <https://doi.org/10.1108/9781835494547>
- Brezina, I., Pekár, J., Čičková, Z., & Reiff, M. (2016). Herfindahl–Hirschman index level of concentration values: modification and analysis of their change. *Central European Journal of Operations Research*, 24(1), 49–72.
- Crespo, N., & Fontoura, M. P. (2007). Determinants of FDI spillovers: What do we really know? *World Development*, 35(3), 410–425.

- Gál, Z., & Lux, G. (2022). FDI-based regional development in Central and Eastern Europe: A review and an agenda. *Tér és Társadalom*, 36 (3), 68–98. <https://doi.org/10.17649/TET.36.3.3439>
- Jaklič, A., & Sass, M. (2024). Foreign Direct Investment in Central and Eastern Europe After Two Decades of EU Enlargement: Slovenian and Hungarian Perspectives. *ACTA HISTRIAE*, 32(3), 321–340. <https://doi.org/10.19233/AH.2024.13>
- Jančovič, P. (2024). External economic relations of the Slovak Republic: Trade, investment, and related policies. In M. Augustín, P. Jančovič, and B. S. Sergi (eds.), *Modeling economic growth in contemporary Slovakia*, Emerald Publishing Limited, pp. 121–143. <https://doi.org/10.1108/9781835494547>
- Kvålseth, T. O. (2022). Cautionary note about the Herfindahl–Hirschman Index of market (industry) concentration. *Contemporary Economics*, 16(3), 221–230.
- Pavlínek, P. (2016). Whose embeddedness? The European automotive industry, supplier networks and the politics of advantage. *Journal of Economic Geography*, 16(3), 683–706.
- Rao A, Ali M, Smith JM (2024) Foreign direct investment and domestic innovation: Roles of absorptive capacity, quality of regulations and property rights. *PLoS ONE* 19(3): e0298913. <https://doi.org/10.1371/journal.pone.0298913>
- Sarker, B., & Serieux, J. (2023). Multilevel determinants of FDI: A regional comparative analysis. *Economic Systems*, 47(4), 101190.
- Szabó, J. (2024). The Political-Economic Foundations of Slovakia's Dependent Growth Model. In M. Augustín, P. Jančovič, and B. S. Sergi (eds.), *Modeling economic growth in contemporary Slovakia*, Emerald Publishing Limited, pp. 161–177. <https://doi.org/10.1108/9781835494547>
- Vienna Institute for International Economic Studies (wiiw). (2025). *wiiw FDI Database*. Vienna: wiiw.
- Zdanowska, N. (2017). Distribution of foreign direct investment across the national urban systems in countries of Central and Eastern Europe in 2013. *Geographia Polonica*, 90(2), 45–60.
- Zhelev, P. (2025). Foreign Direct Investment in Bulgaria. In: Bulgaria in the Global Economy: Dynamics, Challenges, and Opportunities. *Societies and Political Orders in Transition*. Springer, Cham. https://doi.org/10.1007/978-3-031-87923-4_10

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GEOPOLITICS OF GOLD: MONETARY POWER, SANCTIONS, AND THE FUTURE OF INTERNATIONAL RESERVES

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Abstract: Gold has re-emerged as a strategic asset in an era of intensifying geopolitical rivalry, expanding sanctions regimes, and growing fragmentation of the international monetary system. While the U.S. dollar continues to dominate global finance, gold is increasingly valued as a politically neutral reserve instrument that enhances monetary sovereignty and reduces vulnerability to weaponised financial infrastructures. This paper examines the geopolitics of gold through the lenses of monetary power, sanctions, and reserve-policy diversification. It argues that gold does not replace the dollar but complements it as a form of sovereign insurance in a multipolar order. Drawing on historical experience and recent central bank behaviour, the analysis highlights the renewed relevance of gold in shaping the future architecture of international reserves.

Keywords: gold reserves; geopolitics of finance; monetary power; sanctions; international reserves; de-dollarization; monetary sovereignty

JEL: E42, F33, F55

Introduction

Gold has historically occupied a central place in international finance, functioning as a universal store of value, a medium of exchange, and a symbol of economic stability. Although its role was diminished after the collapse of the Bretton Woods system in 1971, recent geopolitical and economic shifts have brought gold back to the forefront of global financial debates. Central banks are once again increasing their gold holdings, investors seek it as a safe haven in times of crisis, and governments use it as a tool of economic sovereignty. The resurgence of gold is not only an economic phenomenon but also a geopolitical one. In an era marked by U.S. dollar dominance, sanctions as instruments of foreign policy, and rising multipolarity, gold is increasingly seen as both a hedge against financial vulnerabilities and an alternative anchor of trust in the international monetary system.

This paper examines the geopolitics of gold in three dimensions: (1) as a reserve asset that strengthens financial stability, (2) as a symbol of sovereignty in the strategies of states seeking greater autonomy, and (3) as a hedge against the U.S. dollar in the context of de-dollarization and global financial fragmentation. By linking historical experience with current trends, the paper seeks to clarify the evolving role of gold in international financial relations.

The renewed strategic importance of gold is also linked to broader transformations in the international monetary system. The combination of financial fragmentation, the growing use of sanctions, and the emergence of competing geopolitical blocs has revived debates about the political neutrality of reserve assets. In this context, gold has re-entered strategic thinking not only for emerging economies, but also for advanced economies seeking to strengthen resilience against global shocks. Its interaction with new trends—such as digitization of payments, the expansion of central bank digital currencies (CBDCs), and the search for safe assets in an increasingly uncertain world—underscores that gold's contemporary relevance

extends far beyond its traditional role as a commodity or crisis hedge. Rather, it forms part of a broader reconfiguration of power, trust, and autonomy in international finance.

1 Historical Perspective: From the Gold Standard to Fiat Dominance

Throughout history, the international monetary system has shifted through several major phases, and gold has consistently been at the center of these changes. It has a unique, enduring presence: people see it as a safe anchor, both emotionally and materially. Even mentioning gold can trigger strong, almost instinctive reactions. This is why, in times of economic stress, ideas about strengthening the role of gold tend to resonate far beyond the circle of traditional “gold enthusiasts,” who have long viewed the abandonment of the gold standard as a symbolic decline of Western monetary order.

As noted by Eichengreen (2019), calls for a return to a gold-based monetary system are largely rooted in nostalgia rather than economic reality. Historical experience demonstrates that rigid gold-backed regimes constrain monetary policy, amplify domestic shocks, and are unsuited for today’s complex and deeply integrated financial environment.

During the late 19th and early 20th centuries, gold served as the backbone of the international monetary order. Under the gold standard, currencies were directly convertible into fixed amounts of gold, ensuring exchange rate stability and fostering international trade. Trust in the system stemmed from the tangible backing of money by a scarce and universally accepted asset. While it promoted stability, the system was also rigid and vulnerable to global shocks, as evidenced during World War I.

In the aftermath of World War II, the Bretton Woods system sought to restore monetary order by pegging currencies to the U.S. dollar, which in turn was convertible to gold at a fixed rate of \$35 per ounce. This arrangement effectively cemented the dollar’s role as the world’s reserve currency, while maintaining gold as the ultimate anchor of trust. The system supported rapid post-war recovery and the expansion of global trade, but it also placed enormous pressure on the U.S. to maintain convertibility. By the late 1960s, growing fiscal deficits, inflation, and external imbalances made the arrangement unsustainable.

In 1971, President Richard Nixon suspended the dollar’s convertibility into gold, marking the end of Bretton Woods and the dawn of a fiat currency era. Gold was relegated from its role as the cornerstone of the system to that of a commodity traded in global markets. The U.S. dollar, decoupled from gold, consolidated its dominance through deep and liquid financial markets, network effects, and U.S. geopolitical power. While gold lost its formal monetary function, it remained embedded in central bank reserves and retained symbolic significance as a safeguard against systemic risk.

In the decades that followed, gold’s share in global reserves declined as confidence in the dollar and euro grew. Many central banks reduced their gold holdings, viewing it as a non-interest-bearing asset in an era of financial liberalisation. Yet, gold never disappeared from reserve strategies; it persisted as a store of value during times of inflation, crisis, or currency volatility.

2 Gold as a Reserve Asset and a Symbol of Sovereignty

Gold’s enduring role in international finance is most clearly visible in its function as a reserve asset. Despite the dominance of fiat currencies, especially the U.S. dollar, central banks continue to hold significant amounts of gold to diversify risks and safeguard stability.

Since 2010, central banks have shifted from being net sellers of gold to net buyers, reversing a decades-long trend (World Gold Council, 2023). The period 2022–2023 recorded the highest levels of central bank gold purchases in modern history, led by emerging economies such as China, India, and Turkey (International Monetary Fund, 2022; Bank for International Settlements, 2022). These acquisitions reflect not only economic calculations but also strategic

concerns regarding financial sovereignty and exposure to geopolitical risks. Gold's appeal lies in its unique properties: it is no one's liability, has no default risk, and provides liquidity in global markets (Aizenman & Inoue, 2013; Baur & McDermott, 2010). In contrast to fiat reserves, which depend on the creditworthiness and policies of issuing states, gold offers a form of "apolitical" value that is difficult to undermine through sanctions or monetary instability.

The role of gold in reserves differs significantly between advanced and emerging economies. In advanced economies such as the United States, Germany, France, and Italy, gold continues to represent a substantial share of reserves—often above 60%—but in relative terms, its importance has declined as financial markets deepened (Eichengreen, 2019; International Monetary Fund, 2022). By contrast, many emerging economies, including China, Russia, India, and Turkey, have markedly increased their gold holdings over the past decade (World Gold Council, 2023). These countries use gold both as a hedge against dollar-denominated assets and as an instrument to bolster credibility in international markets. For example, Russia's aggressive accumulation of gold reserves prior to 2022 reflected a strategy to mitigate vulnerability to Western sanctions (Subacchi, 2020).

Gold also functions as a stabiliser in periods of crisis. During the global financial crisis of 2008, gold prices rose sharply, reaffirming its role as a "safe haven" asset (Baur & McDermott, 2010). Similarly, during the COVID-19 pandemic and the geopolitical shocks of 2022, investors and central banks turned to gold as insurance against uncertainty (OECD, 2020; Bank for International Settlements, 2022). While gold does not generate interest, its stability and counter-cyclical performance make it a valuable complement to fiat reserves. It provides diversification benefits that reduce the overall volatility of reserve portfolios (Aizenman & Inoue, 2013).

Beyond its financial function, gold has acquired a powerful political and symbolic role in the international monetary system. For many states, especially those seeking to assert independence from Western-dominated financial infrastructures, gold represents a tangible expression of sovereignty. Unlike fiat reserves, which are subject to the policies and jurisdiction of issuing states, gold can be stored domestically and controlled entirely by national authorities. This autonomy makes gold attractive for governments wary of political conditionality or exposure to sanctions (Prasad, 2014; Subacchi, 2020). Central banks highlight the role of gold in bolstering confidence both domestically and internationally, as it demonstrates a government's capacity to maintain independent reserves (Aizenman & Inoue, 2013).

The accumulation of gold by Russia and China illustrates the geopolitical use of gold as a sovereignty tool. Russia doubled its gold reserves between 2010 and 2020, anticipating possible Western sanctions (World Gold Council, 2023; International Monetary Fund, 2022). Following the invasion of Ukraine in 2022, these reserves became crucial in cushioning the impact of restrictions on Russia's access to dollar- and euro-denominated assets (Tooze, 2018; Subacchi, 2020).

Similarly, China has consistently increased its gold holdings as part of a broader strategy to internationalize the renminbi and reduce reliance on the U.S. dollar (Bank for International Settlements, 2022; Eichengreen, 2019). Gold accumulation supports Beijing's ambition to position the RMB as an alternative global currency, particularly in the context of BRICS cooperation (BRICS, 2023).

Gold also functions as a rhetorical and symbolic resource. Leaders often invoke gold as evidence of national strength and independence. In countries with fragile currencies or histories of monetary instability, gold reserves serve as a reassurance to domestic populations, reinforcing political legitimacy (Cheung & Qian, 2009; OECD, 2020). The symbolic dimension of gold extends to its role in reinforcing state narratives of resilience. In this sense, gold acts not only as a financial stabilizer but also as a cultural and political emblem of sovereignty and credibility.

3 Gold as a Hedge Against the Dollar

The global dominance of the U.S. dollar has long underpinned the international monetary system. Around 60 percent of global foreign exchange reserves and nearly 90 percent of foreign exchange transactions involve the dollar (International Monetary Fund, 2022; Bank for International Settlements, 2022). While this provides stability, it also exposes states to the risks of dollar dependency—ranging from U.S. monetary policy spillovers to the use of the dollar system as a tool of geopolitical power. In this context, gold is increasingly perceived as a hedge against dollar dominance.

The U.S. dollar's role as the backbone of the global financial system grants Washington unparalleled leverage. The use of the dollar in sanctions regimes—blocking access to SWIFT, freezing foreign assets, and restricting dollar transactions—has been described as the “weaponization of the dollar” (Prasad, 2014; Tooze, 2018; Subacchi, 2020). For targeted states, reliance on the dollar becomes a vulnerability. Gold, unlike fiat currencies, cannot be blocked by U.S. authorities, making it an attractive asset for countries anticipating sanctions.

Efforts to reduce reliance on the U.S. dollar—often termed “de-dollarization”—have accelerated since the 2008 financial crisis and especially after the imposition of sanctions on Russia in 2014 and 2022 (BRICS, 2023; Subacchi, 2020). Countries such as Russia, China, Iran, and Turkey have sought to diversify reserves away from the dollar, increase gold holdings, and develop alternative payment systems. The BRICS group has also discussed creating a new settlement currency backed in part by gold, underscoring the metal's symbolic and stabilizing appeal (BRICS, 2023). While such initiatives face significant practical barriers, they reflect a broader trend of hedging against dollar-centric vulnerabilities.

Gold provides a unique advantage as a parallel anchor of value. Its price often moves counter-cyclically to the dollar: when the dollar weakens, gold tends to strengthen, and vice versa (Baur & McDermott, 2010; Aizenman & Inoue, 2013). This inverse relationship enhances its utility as a portfolio hedge. Moreover, unlike fiat currencies, gold is not tied to the fiscal or monetary policies of a single state. It is, in essence, a “stateless” asset—a property that makes it particularly attractive in a fragmented and multipolar order (Eichengreen, 2019; Subacchi, 2020).

Despite these advantages, gold cannot fully replace the dollar. Its liquidity, while significant, is far lower than that of the dollar, which remains unrivalled in trade invoicing, settlement, and debt markets (Prasad, 2014; Bank for International Settlements, 2022). Gold lacks the institutional frameworks that support fiat currencies, such as bond markets, clearing systems, and lender-of-last-resort functions. Thus, while gold is a powerful hedge and political signal, it remains complementary rather than substitutive to the dollar.

4 Comparative Insights: Gold vs. Dollar in a Fragmented Order

The contemporary international monetary system is characterised by a paradox: the U.S. dollar remains unrivalled in its dominance, yet confidence in its long-term stability is increasingly questioned. Gold has re-emerged as a complementary asset precisely because it offers qualities the dollar cannot replicate. Despite ongoing debates about de-dollarization, the dollar retains structural advantages:

- It accounts for about 60 percent of global reserves and nearly 90 percent of foreign exchange transactions (International Monetary Fund, 2022; Bank for International Settlements, 2022).
- It dominates trade invoicing and international debt markets (Prasad, 2014).
- U.S. Treasury securities provide unparalleled liquidity and safety.

These factors create strong “network effects” that reinforce dollar centrality. No alternative currency—including the euro or renminbi—has yet matched the scale and trust embedded in the dollar system (Eichengreen, 2019).

Gold's attraction stems not from its capacity to replace the dollar, but from its ability to supplement it. It functions as a hedge against dollar fluctuations, a shield against sanctions, and a political symbol of independence (Baur & McDermott, 2010; Subacchi, 2020). The post-2014 sanctions regime against Russia demonstrated this dynamic: while Russia could not avoid the global reach of the dollar entirely, its gold holdings provided a crucial buffer against isolation (Tooze, 2018). Similarly, China's accumulation of gold strengthens confidence in the renminbi as it slowly expands its global role (BRICS, 2023; Bank for International Settlements, 2022).

A multipolar order is emerging where states use a “hybrid” approach: maintaining substantial dollar reserves while simultaneously increasing gold holdings. This dual strategy reflects both pragmatism and precaution. For many countries, gold represents a form of sovereign insurance—an anchor of trust outside the reach of any single political authority (OECD, 2020; Cheung & Qian, 2009). Thus, the future of the system is unlikely to be defined by the replacement of the dollar, but rather by its coexistence with alternative stores of value, of which gold remains the most significant.

Growing geopolitical tensions and the gradual erosion of U.S. dominance in global trade, technology, and finance have accelerated a shift toward a more fragmented monetary landscape. The emergence of competing geopolitical blocs—centered around the United States, China, and to a lesser extent the EU—has increased demand for assets that retain value across political divides. In this environment, gold serves as a politically neutral reserve asset that remains acceptable irrespective of alliance structures (McCauley, 2023; Ocampo, 2017). Unlike foreign exchange reserves, which are deeply embedded in jurisdiction-specific payment, settlement, and regulatory infrastructures, gold is internationally mobile and beyond the reach of foreign policy leverage.

The weaponization of interdependence—an expression used by Farrell and Newman (2019) to describe the use of financial infrastructures as instruments of coercion—has reinforced incentives for countries to hold assets outside the dollar and euro systems. Restrictions on access to SWIFT or on the use of correspondent banking channels can significantly limit a state's capacity to transact internationally. Gold provides insulation from these vulnerabilities because its value does not depend on access to payment infrastructures controlled by major powers. The expansion of sanctions regimes after 2014, and especially after 2022, has therefore strengthened the political appeal of gold for both sanctioned and sanction-prone states (Tooze, 2018; Subacchi, 2020).

A key characteristic of the current global system is the coexistence of financial globalisation with geopolitical fragmentation. Even as global capital markets remain highly integrated, trust in the stability and neutrality of the dominant financial infrastructure has weakened. Gold thus functions as a stabilising asset in a world where political shocks increasingly spill into financial domains. This is particularly visible in central bank behaviour: according to the World Gold Council (2024), more than 20 central banks cited “geopolitical risk” as the primary driver for increasing their gold holdings in the 2022–2023 period—the highest level since such surveys began. The search for assets that are immune to foreign jurisdiction has become a structural feature of reserve management in emerging economies.

A further dimension shaping the modern role of gold is the rapid development of central bank digital currencies. CBDCs are often presented as the next evolutionary step in the international monetary system, with potential implications for cross-border payments, exchange rate dynamics, and monetary sovereignty (Bank for International Settlements, 2023). While CBDCs and gold appear unrelated at first glance, they are connected through the broader debate about trust and the political neutrality of reserves. Digital currencies issued by major central banks—especially the digital dollar, euro, or renminbi—may reinforce existing

hierarchies in the monetary order. Their adoption would further integrate states into infrastructures controlled by major currency-issuing jurisdictions (Auer et al., 2021).

For many emerging economies, this reinforces the need to retain assets that remain outside digital jurisdictions. Gold therefore acts as a counterweight to the increasing digitization and “platformisation” of money. Unlike CBDCs, which can theoretically be frozen, monitored, or restricted across borders, gold remains a tangible store of value. The acceleration of CBDC pilot programs in China, Russia, India, and the Gulf states has paradoxically increased—not decreased—the strategic role of gold as a safeguard against the vulnerabilities associated with digital financial architectures (Bank for International Settlements, 2023).

In addition, several analysts have noted that gold could play a role in hybrid settlement systems that combine commodity-based collateral with digital payment instruments (McCauley, 2023). Proposals within the BRICS framework for a gold-linked settlement mechanism illustrate how states may seek to leverage gold to support the credibility of digital or regional currencies. Although such initiatives remain in early stages, they signal a broader trend: gold is increasingly viewed not as a relic of the past, but as a foundational asset that can coexist with and reinforce new technological forms of money.

Another factor driving renewed interest in gold is the broader structural shift away from overreliance on U.S. Treasury securities. For decades, Treasuries have served as the quintessential safe asset, combining liquidity, depth, and institutional credibility (Prasad, 2014). However, concerns about fiscal sustainability in the United States, high public debt levels, and geopolitical use of financial sanctions have encouraged states to diversify their reserve portfolios (Eichengreen, 2019). While no asset matches Treasuries in scale, gold provides an alternative that does not rely on the fiscal discipline or political stability of any single country.

Furthermore, global demand for safe assets increasingly exceeds supply. As Caballero, Farhi, and Gourinchas (2017) argue, the shortage of safe assets is a defining feature of the post-crisis world. Gold helps mitigate this structural imbalance because its supply is relatively inelastic and independent of national fiscal policies. This reinforces its function as a long-term store of value, especially for large reserve-holding countries such as China, India, and members of the Gulf Cooperation Council.

Taken together, these developments suggest that gold will remain a critical component of the international financial architecture, even as the system evolves toward digitization and multipolarity. The likely future is not a return to the gold standard nor a full dethronement of the dollar, but a more complex hybrid system combining:

- dominance of the U.S. dollar in global finance and trade,
- increasing regionalisation of payments (RMB-based systems, rupee settlements, Gulf digital platforms),
- growing strategic importance of gold as a politically independent reserve asset,
- development of CBDCs that may reinforce or fragment existing monetary hierarchies.

Gold’s unique combination of neutrality, liquidity, and historical credibility ensures that it will continue to function as an anchor of trust. In a world where economic interdependence is increasingly politicised, gold provides something rare: a store of value that does not belong to anyone—and therefore remains acceptable to everyone.

5 Policy Implications and Future Scenarios for the Monetary System

Building on the growing strategic relevance of gold, several policy implications emerge that will shape the evolution of the international monetary system in the coming decade. First, central banks are likely to continue diversifying their reserves not only across currencies but also across asset classes. This trend supports a more pluralistic reserve structure in which gold, the U.S. dollar, and regional currencies coexist (Eichengreen, 2019; Prasad, 2014). For emerging economies, policies that strengthen domestic gold markets—such as improving

transparency, developing gold-backed financial instruments, or enhancing the security of storage facilities—may further support monetary resilience (World Gold Council, 2023). Second, the shift toward regionalisation of payments will require closer coordination among states seeking to reduce their exposure to dollar-based infrastructures. While complete substitution of the dollar remains unlikely, the development of regional clearing mechanisms, alternative messaging systems, and currency swap networks may incrementally decrease reliance on U.S.-centric systems (Ocampo, 2017; Tooze, 2018). In this evolving environment, gold may serve as neutral collateral for regional settlement arrangements or as a reserve asset supporting new digital or commodity-linked platforms (BRICS, 2023). Third, the rise of central bank digital currencies introduces both opportunities and risks. Policymakers designing CBDC frameworks must consider how digital infrastructures interact with reserve diversification and whether CBDCs enhance or constrain monetary sovereignty (Auer et al., 2021; Bank for International Settlements, 2023). For many emerging and middle-income countries, complementing CBDCs with increased gold holdings could offer a balanced strategy that supports autonomy while mitigating vulnerabilities linked to global digital ecosystems and cross-border data governance (McCauley, 2023).

Finally, geopolitical fragmentation may push the international monetary system toward a more decentralised and hybrid architecture. Instead of transitioning to a single new dominant currency, the future is more likely to involve parallel systems composed of traditional fiat currencies, CBDCs, and commodity-based assets (Farrell & Newman, 2019; Subacchi, 2020). In such an environment, gold will remain central not only as a store of value but also as a strategic instrument enabling states to navigate uncertainty. Its neutrality, universality, and historical credibility position it as a key stabilising force in an increasingly complex and contested monetary landscape (World Gold Council, 2024; Eichengreen, 2019).

Conclusion

Gold's resurgence highlights the inseparable link between finance and geopolitics. Once the cornerstone of the global monetary order, gold has re-emerged as a reserve asset, a symbol of sovereignty, and a hedge against dollar dominance. Central banks' renewed appetite for gold underscores its continued relevance as a store of value and as protection against systemic shocks. Yet, gold's importance today extends beyond economics. For states such as Russia, China, and other emerging powers, it is a political instrument that signals independence and resilience in a dollar-dominated system. For advanced economies, it remains an essential—though often overlooked—component of financial stability.

The evolving geopolitical landscape suggests that the importance of gold will continue to grow as states navigate the tensions between financial globalisation and political fragmentation. While no realistic scenario points to a full restoration of a gold-based monetary system, the steady accumulation of gold by central banks indicates that countries increasingly value assets that lie outside the control of major currency-issuing powers. At the same time, the development of CBDCs, regional settlement systems, and commodity-linked instruments may strengthen the hybrid nature of the future monetary order. In this environment, gold's neutrality and universal acceptance reinforce its position as a strategic complement to fiat currencies—a form of sovereign insurance that underpins resilience in a world characterised by uncertainty and competing economic blocs.

The dollar continues to dominate the global financial architecture, supported by deep markets, strong institutions, and entrenched network effects. Gold, however, functions as a silent counterweight: it cannot displace the dollar, but it constrains its power and offers alternatives to states wary of overdependence. In this fragmented and multipolar world, the geopolitics of gold will remain central. It is not a relic of the past but a strategic asset of the

future—an anchor of trust that reflects the enduring tension between economic interdependence and the pursuit of sovereignty.

References:

- Aizenman, J., & Inoue, K. (2013). Central banks and gold puzzles. *Journal of the Japanese and International Economies*, 28, 69–90.
- Auer, R., Frost, J., Lamers, M., & Rice, T. (2021). *Central bank digital currencies: Motives, economic implications and the research frontier* (BIS Working Paper No. 976). Bank for International Settlements.
- Bank for International Settlements. (2022). *Annual Economic Report*. Bank for International Settlements.
- Bank for International Settlements. (2023). *Blueprint for the future monetary system: Improving the old, enabling the new*. Bank for International Settlements.
- Baur, D. G., & McDermott, T. K. (2010). Is gold a safe haven? International evidence. *Journal of Banking & Finance*, 34(8), 1886–1898.
- Bordo, M. D. (1993). The Bretton Woods international monetary system: An historical overview. In M. D. Bordo & B. Eichengreen (Eds.), *A retrospective on the Bretton Woods system* (pp. 3–108). University of Chicago Press.
- BRICS. (2023). *Joint statement on de-dollarization and alternative payment systems*. BRICS Summit.
- Caballero, R. J., Farhi, E., & Gourinchas, P.-O. (2017). The safe assets shortage conundrum. *Journal of Economic Perspectives*, 31(3), 29–46.
- Cheung, Y.-W., & Qian, X. (2009). Hoarding of international reserves: Mrs. Machlup's wardrobe and the Joneses. *Review of International Economics*, 17(4), 777–801.
- Eichengreen, B. (2019). *Globalizing capital: A history of the international monetary system* (3rd ed.). Princeton University Press.
- Farrell, H., & Newman, A. L. (2019). Weaponized interdependence: How global economic networks shape state coercion. *International Security*, 44(1), 42–79.
- Gallarotti, G. M. (1995). *The anatomy of an international monetary regime: The classical gold standard, 1880–1914*. Oxford University Press.
- International Monetary Fund. (2022). *Composition of official foreign exchange reserves (COFER)*.
- McCauley, R. N. (2023). Reserve currencies, gold, and the search for safety. *Global Policy*, 14(1), 85–98.
- Ocampo, J. A. (2017). *Resetting the international monetary (non)system*. Oxford University Press.
- OECD. (2020). *Safe havens and international financial stability*. OECD Publishing.
- Prasad, E. (2014). *The dollar trap: How the U.S. dollar tightened its grip on global finance*. Princeton University Press.
- Subacchi, P. (2020). *The currency cold war: Cash and cryptos, gold and geopolitics*. Yale University Press.
- Tooze, A. (2018). *Crashed: How a decade of financial crises changed the world*. Viking.
- World Gold Council. (2023). *Gold demand trends 2023*.
- World Gold Council. (2024). *Central bank gold reserves survey 2024*.

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Section 5 CURRENT ISSUES OF EUROPEAN UNION

DEMOCRATIC BACKSLIDING IN HUNGARY

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Abstract: This paper analyses the process of democratic backsliding in Hungary under the leadership of Viktor Orbán and the Fidesz party since 2010. Using a qualitative analytical approach based on secondary sources and empirical research, the study examines the political, economic and social mechanisms that have facilitated the consolidation of power. Particular attention is paid to the restructuring of the judiciary, the adoption of the Fundamental Law, and the centralisation of the media and higher education system. The findings reveal that Hungary has undergone a transformation from a liberal democracy to a hybrid regime that formally maintains democratic institutions while undermining their substance through systemic manipulation and control. The paper contributes to the broader literature on illiberalism and autocratisation in Central Europe and offers insights into how institutional capture can be achieved within the framework of EU membership.

Keywords: Hungary, Viktor Orbán, Fidesz

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Introduction

The authoritarian tendencies observed in recent years in some Central and Eastern European countries pose a serious challenge to Western-style constitutional democracies. The principles of the rule of law have attracted considerable international attention. As a result, in September 2018, the European Parliament activated the procedure under Article 7 of the Treaty on European Union against Hungary in defence of the principles of the rule of law (Jasny, 2023).

In 2010, the Fidesz party won a constitutional majority in Hungary and replaced the old system with a new, autocratic one. This regime has become difficult to control and virtually irrevocable. It found favour thanks to weak democratic education, anti-Western sentiments and the division of society into strongly polarised voters and a large group of passive and alienated citizens (Paris, 2022). The Fidesz party's term in office led to significant changes in the dynamics of accountability in Hungary. Since Fidesz's victory in the 2010 general election, the government has attacked accountability measures by developing a derogatory legitimisation rhetoric, followed by extensive reforms of the legal system and coercive measures against the opposition (Ordanoski & Angiolillo, 2024). The party renewed its dominant position in the 2014, 2018 and 2022 elections (Paris, 2022).

1 Viktor Orbán's rise to power

At the end of the communist era in 1988, Viktor Orbán and other liberal students founded the Fidesz party, originally conceived as a young and independent political organisation (Bernhard, 2021). Hungary's transition to democracy, which began in 1989,

opened space for pluralistic political life, but at the same time triggered long-term internal processes that weakened the stability of the democratic system (Arató & Fleck, 2022).

After 1989, Hungarian politics was dominated by a technocratic and elitist style of governance. Although focused on modernisation and economic transformation, this approach gradually alienated citizens from political life and paved the way for later populist and illiberal tendencies (Arató & Fleck, 2022). At the same time, Hungary continued its long tradition of social policy. Health insurance, old-age and disability pensions and other social services were retained after 1989, setting the country apart from some other post-socialist states. (Szikra, 2018)

Orbán entered the National Assembly in 1990 and served as president of Fidesz from 1993. He served as prime minister from 1998 to 2002 (Paris, 2002). This period is often described as relatively stable, with Hungary's accession to NATO and the start of accession negotiations for EU membership among its main achievements. (Éltető & Szemlér, 2023) Orbán presented himself at the time as a centrist, pro-European and democratic leader (Rupnik, 2023).

After returning to the opposition, his political orientation gradually changed. Fidesz transformed into a strongly personalistic and conservative-oriented party, while the polarisation of society also increased. The turning point came in 2006, when government cuts and reforms sparked widespread discontent and fuelled political tension (Arató & Fleck, 2022).

The global economic recession after 2008 contributed to a further deepening of the crisis, fundamentally weakening the Hungarian economy and creating an impression of lasting social uncertainty. By 2010, the social policy system was still functioning, but its sustainability required fundamental reforms. (Szikra, 2018) It was in this context that Orbán and Fidesz used the concept of crisis management – a political strategy through which the government legitimises the strengthening of power justified by the need to address external or internal threats (Szente, 2023).

After its election victory in 2010, Orbán's government presented itself as the necessary response to the economic recession and the need for systemic reforms. However, the crisis did not just become the subject of a solution but was instrumentalised – used as a means of promoting ideological goals, centralising power and gradually weakening democratic institutions. This process enabled Hungary's transformation from a post-socialist democracy into an illiberal regime with significant autocratic elements (Szente, 2023).

After 2010, Orbán's government introduced a flat tax of 16%, which applied to all income groups, including the wealthiest. This move meant a significant reduction in the tax rate for high-income households from the original 38% to 16%, which greatly benefited the net wages of the wealthier and middle-income groups (Szikra, 2018). To ensure the European Union's macroeconomic goals and reduce foreign debt, Orbán's government also redirected financial resources from private pension funds (introduced in 1997) to the state budget. The reforms also included a tightening of social policy. Unemployment benefits were reduced from nine to three months, disabled pensioners were excluded from the original system, and part of the population was redirected to public service work. Early retirement for women was also restricted (Bartha & Boda & Szikra, 2020).

At the same time, a policy of supporting fertility was developed, which mainly favoured large families and women who remained in domestic care. This model favoured middle- and higher-income groups, which formed the core electorate of Fidesz, while smaller families with one or two children received significantly fewer benefits. Although the reforms contributed to economic recovery, increased incomes and supported employment, they also deepened social inequalities. Resources were shifted from the poorest to the wealthier. Marginalised groups, especially the Roma community, were stigmatised as "unemployed", which reinforced class tensions. These measures were later labelled as unorthodox because, although they were presented as economic reforms, they actually served to redistribute power and resources

in favour of the loyal electorate and formed a fundamental part of the concept of so-called illiberal democracy (Hoffmann & Gárdos-Orosz, 2022).

2 Economic, political and social consolidation of power by the Fidesz party

The third wave of autocratisation is largely driven by the electoral victories of undemocratic leaders who, once in power, expand their authority and limit mechanisms of accountability. Research on how anti-democratic elites erode accountability generally follows four main directions (Ordanoski & Angiolillo, 2024).

First, anti-democratic incumbents exploit weaknesses in political institutions to attack horizontal accountability (i.e., the ability of state institutions to oversee the government). This typically occurs when anti-pluralist forces control an absolute majority in parliament, which is key to implementing institutional changes to limit judicial and legislative checks on executive power (Ordanoski & Angiolillo, 2024).

Second, the anti-democratic rhetoric of elites plays a key role in normalising attacks on democratic institutions. Recent findings point to toxic discourse and polarisation among elites as drivers of autocratisation. Another growing trend is that anti-democratic incumbents systematically manipulate information by spreading disinformation, misinformation and promoting post-truth rhetoric to their advantage (Ordanoski & Angiolillo, 2024).

Third, anti-democratic incumbents often attempt to weaken vertical (i.e. citizens' power to hold the government accountable) and horizontal accountability by targeting the quality of elections and the rule of law. Among the most common steps are attempts by incumbents to limit the autonomy of electoral bodies, interfere in electoral processes using domestic or foreign allies, and restrict the independence of the judiciary (Ordanoski & Angiolillo, 2024).

Fourth, anti-democratic incumbents attack diagonal accountability (i.e., the power of civil society organisations and independent media to hold the government accountable) in order to control dissent, including through the use of state resources for intimidation, surveillance, bans, imprisonment and, in extreme cases, even torture and killing (Ordanoski & Angiolillo, 2024).

In addition to formal changes, autocratisation is also maintained and reinforced by informal structures that circumvent accountability, such as selective law enforcement and elite-controlled media. Officials can rely on non-state actors (e.g. paramilitary groups, criminal organisations, patronage networks) to suppress dissent, as well as on informal elites to undermine democratic institutions from within (Ordanoski & Angiolillo, 2024).

Orbán's victory in Hungary in 2010 and his subsequent consolidation of power were the result of a combination of mutually reinforcing economic, political and social factors. Economically, Hungary was severely affected by domestic fiscal deficits and the 2008 financial crisis in the US prior to the elections. High public debt, foreign ownership of banks and foreign currency-denominated debts caused the public to lose confidence in liberal economic policies and sparked a debate about so-called "debt slavery" and the need for domestic control over key sectors of the economy. Orbán exploited these concerns to his advantage by pushing through policies of nationalising banks and pension funds, which gave him greater discretionary power over capital allocation and economic independence from foreign institutions (Camba & Epstein, 2023).

The economic base of Orbán's power was also supported by various incentives and subsidies for businesses. After 2010, Fidesz systematically used government subsidies and EU funds to support domestic and foreign companies that supported the regime. Subsidies were directed primarily to the automotive industry and other strategic sectors, providing a basis for political loyalty and economic stabilisation. At the same time, the government also used EU

funds for public procurement and infrastructure projects, thereby strengthening its support among domestic voters and politicising economic decision-making (Camba & Epstein, 2023).²

3 The course of Fidesz's consolidation of power

The first step is usually the use of legitimising rhetoric. After coming to power, the scope for direct action against the opposition is limited by the legal framework, so those in office focus on weakening democratic discourse through polarisation and populist narratives. Society is presented as divided into "the people" and "the enemies", with the opposition portrayed as a threat to the stability of the state. Such rhetoric normalises anti-pluralistic attitudes, justifies illiberal changes and paves the way for interventions in the legal system (Ordanoski & Angiolillo, 2024).

The previous Hungarian socialist-liberal coalition was weakened by scandals and a loss of public trust, creating an opportunity for an alternative that promised economic and national self-sufficiency. Orbán used nationalist and conservative rhetoric, appealing to traditional family values, Christian civilisation, anti-communism and greater independence from foreign influences, thereby appealing to a broad section of the electorate. He also strategically built international alliances, particularly with Poland, and established relations with Russia and China, which allowed him to maximise his political bargaining power within the EU and minimise the threat of sanctions for autocratic actions (Camba & Epstein, 2023).

Hungary, which had served as a model of democratic transformation after joining the EU in 2004, became an example of the systematic weakening of judicial independence after Viktor Orbán came to power. The Fidesz government fundamentally changed the institutional structure of the state and subjugated the judiciary through organisational, personnel and legislative interventions. The Constitutional Court was gradually taken over – its powers were restricted, the method of electing judges was changed, and after it was subjugated, the government expanded its powers to serve as an instrument of control over the judiciary. The Supreme Court was renamed the Curia, its leadership was replaced, and in 2019 the powers of the president, whose selection was tailored to the government, were strengthened. In 2012, the National Judicial Office (NJO) was established, centralising the administration of the judiciary, and its president, Tünde Handó, who is close to Fidesz, gained extensive power over the appointment, promotion and disciplinary proceedings of judges. The forced retirement of older judges freed up key positions. Although the EU has described several measures as violations of the principles of the rule of law, their effects have not been reversed, allowing the government to consolidate its control over the entire judicial system (Hanelt & Vincze, 2024).

² Starting with foreign companies, Hungarian subsidies took at least two forms. The first is government subsidies directly to companies that invest, but the second is the use of EU funds. On the first point, Hungary passed a law in 2003 allowing discretionary government grants to companies, both foreign and domestic, in exchange for a promise to create jobs. While governments before Orbán used Hungarian taxpayers' money for this purpose, these expenditures increased under Fidesz after 2010, and especially in 2014 and 2015. On average, between 2010 and 2016, Hungary spent HUF 6 million (USD 25,000 at the 2014 exchange rate, USD 16,500 in 2022) per job created, with some companies receiving significantly more for specific projects. Eight of the ten largest recipients were foreign car manufacturers; Germany was the largest recipient of such subsidies, with Mercedes and Audi among the companies receiving the most aid. Hungary spent approximately 1.63% of its GDP on such subsidies in 2014, while the EU average was 0.72%. Hungarian companies received less than a quarter of the subsidies between 2010 and 2016.

Hungary also used EU funds to indirectly subsidise multinational companies, with a large part of the support going towards infrastructure development that complemented foreign direct investment. Orbán also used EU funding, which in some years amounted to the equivalent of 3-5% of Hungary's GDP, to strengthen domestic political support by offering public contracts on a non-competitive basis. Inadequate enforcement of EU public procurement law allowed for some exposure of contracts without public tendering, which were mainly directed to family members or other supporters of the regime, but did not lead to repressive measures.

In the following tables (Figure 1, Figure 2), we present the legal steps taken by the ruling Fidesz party in Hungary in connection with the rewriting of the constitution, or rather the adoption of the so-called Fundamental Law of Hungary:

Figure 1: Adoption of the Fundamental Law of Hungary

Amendment rule (1995)	This allowed any provision of the national constitution to be amended by a simple two-thirds majority in parliament. The two-thirds majority of the Fidesz-KDNP party in parliament thus secured legal permission to add amendments that served as a means of changing the entire constitution. ³ (Bárd & Pech, 2019)
Constitutional Court	The ruling party changed the rules for nominating constitutional judges. Under the old constitution, this nomination required consensus among the majority of parliamentary parties and then a two-thirds majority in parliament to elect judges to the court. The government retained the second condition but changed the first. It assigned the nomination of candidates to the ruling party. As a result, Fidesz had sufficient power to select judges without needing the consent of other parties during the process. (Bánkuti & Halmai & Scheppele, 2012)
Laws relating to fiscal matters	The Constitutional Court could no longer review constitutional, budgetary or tax laws unless these laws interfered with the rights to life, dignity, data privacy, thought, conscience, religion and citizenship. Meanwhile, the power to review fiscal measures that interfere with other rights, such as the right to property, equality before the law, the prohibition of retroactive legislation, or the guarantee of a fair trial, was removed from the Constitutional Court's jurisdiction. This has allowed the government to launch a "series of unconventional economic policies," such as the nationalisation of private pensions. In addition, the government has introduced an amendment that increases the number of judges and gives Fidesz the power to elect seven of the court's fifteen judges during its first year and a half in office. (Bánkuti & Halmai & Scheppele, 2012)
The electoral commission responsible for monitoring elections and reviewing referendum proposals	The government prematurely terminated the mandates of members who had been elected until 2014. The previous system required that five seats on the commission be allocated to one delegate from each parliamentary party and that the other five be decided by consensus between the ruling party and the opposition. However, instead of respecting the consensus on the selection of half of the members, Orbán's party decided to fill these seats with its own members, thereby consolidating its dominant majority in the commission. (Bánkuti & Halmai & Scheppele, 2012)

Source: Own processing

Although there was a parliamentary committee that defined the basic principles to be respected in the drafting of the new constitution, there was no formal adoption of these principles (Chronowski, 2019). The new Hungarian constitution – called the Fundamental Law of Hungary – was approved by parliament on 18 April 2011, but all votes in favour came from the Fidesz parliamentary bloc. The constitution was signed by President Pál Schmitt on 25 April 2011 and came into force on 1 January 2012 (Bánkuti & Halmai & Scheppele, 2012).

³Although Fidesz's two-thirds parliamentary majority was not formally sufficient to adopt a new constitution, it was legally sufficient to gradually change the entire constitution through several amendments, and the 1989 constitution was indeed amended twelve times in the first year after the elections. The subsequent abolition of the four-fifths rule for agreement on the form of the constitution-making process removed a key self-imposed limitation on the powers of two-thirds governments.

Unlike the previous constitution, the Fundamental Law of Hungary also brought about other changes:

Figure 2: Other changes adopted in the Fundamental Law of Hungary

Referendum on constitutional issues	The new constitution excludes referendums on constitutional issues and thus the direct participation of voters in constitutional decisions. (Chronowski, 2019)
Exclusion of the president from political veto during the drafting and amendment of the constitution	In 2013, the fourth amendment excluded the president from political veto during the phase of drafting and amending the constitution. If the president finds any irregularity, the final decision rests with the Constitutional Court. (Chronowski, 2019)
Restriction of individuals' access to the courts	An individual may request a review of a law only if it personally affects him or her. In addition, under the new constitution, only a "narrow list of officials" can effectively file a review petition with the court. The constitution also requires that 25 per cent of MPs challenge the law. (Bánkuti & Halmai & Scheppele, 2012)
Fourth Constitutional Amendment (2013) – a tool to circumvent Constitutional Court decisions	It allowed the government to circumvent Constitutional Court decisions and introduce provisions into the constitution that the court had previously struck down as unconstitutional, such as the definition of family limited to heterosexual couples and their children; the role of the parliamentary majority in officially recognising any religious group as a church; the fact that graduates of state-sponsored universities must seek employment in Hungary for a limited period after graduation; the punishment of homeless people who occupy public space through administrative fines; and the introduction of restrictions on political advertising during election campaigns. (Bárd & Pech, 2019)
Restriction of the powers of the Constitutional Court and annulment of its previous decisions	The amendment also repealed previous decisions of the Constitutional Court (CC) prior to the adoption of the Constitution (Article 19) and prohibited the CC from reviewing the substantive constitutionality of proposed amendments to the Constitution. (Bárd & Pech, 2019)
Weakening of the independence of the judiciary and concentration of power in the hands of the President of the National Judicial Office	At the same time, the Fidesz party engaged in a process of replacing the system of judicial self-government in order to control judges through a new institution called the National Judicial Office (NSO). Its president, elected by a two-thirds majority of parliament, has been given extensive powers to hire, promote, sanction judges and also assign cases to judges. (Bárd & Pech, 2019)
Lowering the retirement age for judges (from 70 to 62)	Judges who expected to work until the age of 70 (the retirement age for judges since 1869) were forced to retire at the age of 62 with immediate effect. This led to the dismissal and replacement of approximately 8% of the total number of 2,900 judges, 27% of Supreme Court judges and more than 50% of appeal court presidents. ⁴ (Bárd & Pech, 2019)
Adjustment of the powers of the State Audit Office and the General Prosecutor	Under the new constitutional order, the State Audit Office, once a bastion of independent expertise, has been given additional powers to launch serious investigations into the misuse of public funds. However, the new head of the State Audit Office, a former Fidesz MP elected by a two-thirds majority of parliament for a 12-year term, has no professional experience in auditing. The Attorney General, elected by a two-thirds majority in parliament for a nine-year term, also has increased powers – for example, to assign any criminal case to any court

⁴ Only after their release did the government pass new laws that would protect all new judges.

	of his choice. Unsurprisingly, the person in this office has also long been closely associated with Fidesz. The long terms of office of the current head of the state audit office and the current Attorney General mean that both will survive several parliamentary election cycles, giving them a key veto power should any other party come to power in the meantime. (Bánkuti & Halmai & Scheppele, 2012)

Source: Own processing

The transition to Hungary's illiberal electoral system occurred in several phases, starting with the original 1989 system which was already heavily disproportionate but still allowed for the rotation of power. The fundamental turning point came in 2010 when, leveraging this flawed system, Fidesz won a two-thirds constitutional majority (53% of the vote translated to 68% of seats), granting them unlimited power to amend the constitution. Orbán's government subsequently used this power to engineer the electoral framework: it abolished the second round of voting in constituencies (aiding plurality winners), secretly redrew electoral districts (known as gerrymandering) in Fidesz's favour, increased the thresholds for opposition coalitions, and introduced "winner compensation" (transferring winners' surplus constituency votes to the party list), which alone repeatedly secured Fidesz's constitutional majority. The system was further undermined by manipulating the voter base, specifically by granting votes to Hungarian citizens living abroad (who overwhelmingly vote for Fidesz) and legalizing "voter tourism." These measures effectively cemented Fidesz's power by guaranteeing a disproportionately high number of mandates even with a lower percentage of the popular vote (Scheppele, 2022).

Orbán's first cabinet (1998–2002) already showed signs of populist autocratisation. (Rupnik, 2023) In Hungary, public radio and television came under the supervision of a multi-party media council, in which, according to the 1997 media law, government and opposition delegates were represented in equal numbers. However, the ruling Fidesz party established close cooperation with MIÉP, a far-right opposition party, in order to gain a majority in the media council (Rupnik, 2023).

Since 2010, Orbán's government has systematically taken control of the media and restricted freedom of expression and pluralism to a level unprecedented in the EU. The main tool for this has been the so-called "media package" of laws, adopted without consultation with the opposition or experts. This package abolished parliamentary control over mechanisms preventing media monopolies and created a centralised pyramid of media governance – the National Media and Infocommunications Authority together with the Media Council. The bodies were filled with Fidesz nominees, who gained the power to appoint management and determine the funding of all public media (Haraszti, 2011).

The MTVA (Media Support and Asset Management) organisation was also created, merging the previously autonomous public media and bringing content, organisational and financial control under one roof. The media authorities were given the power to impose heavy fines for vaguely defined offences, to request any information from the media and to decide on licences. These powers were used primarily to weaken or eliminate independent radio and print titles (Haraszti, 2011).

After the 2018 elections, Orbán completed the centralisation and homogenisation of public radio and television, as well as newspapers in rural areas. concentration of media ownership. In 2018, the KESMA (Central European Foundation for Press and Media) conglomerate was created, bringing together more than 400 media outlets – regional daily newspapers, magazines, television stations, radio stations and websites – under one management. Assets were "voluntarily" contributed to KESMA by businessmen affiliated with the government, including Orbán's friend Lőrinc Mészáros. It is headed by a board made up of representatives of Fidesz and pro-government organisations (Feikes de Groot, 2024).

The public media and the KESMA network thus function as the government's propaganda apparatus. Independent journalists are systematically marginalised. Their access to official events, public information and political representatives is restricted. State advertising is directed almost exclusively to pro-government media, forcing private companies to avoid advertising in independent titles. At the same time, paid political broadcasting on national commercial television has been banned, making it even more difficult for the opposition to reach voters (Bozóki & Benedek, 2024).

By 2020, it had become clear that state media were operating under strict censorship – leaked emails showed that journalists had to request permission to cover topics such as migration, the EU, the church, elections abroad and climate activism. Reporting on the activities of non-governmental organisations such as Amnesty International or Human Rights Watch was banned (Biró & Kovács, 2020).

The result is a government-controlled media system in which plurality is severely restricted. Independent media survive mainly online and in Budapest, while the rest of the country is informed mainly through pro-government television, radio and print media. The OSCE and international organisations assess this situation as a "free but unfair" media environment that undermines fair political competition and weakens democracy (Bozóki & Benedek, 2024).

In the field of higher education, in March 2017, the Hungarian government introduced a bill imposing new conditions on foreign universities operating in Hungary. The new regulation – known as “Lex CEU” – required every foreign-accredited university to have an international agreement between the Hungarian government and the government of its home country. Without such an agreement, the university would lose its licence to operate. In practice, this law targeted only one institution – the Central European University (CEU), founded by George Soros, a long-time political opponent of Prime Minister Viktor Orbán. As the Orbán government refused to sign the agreement negotiated by CEU, the university had no choice but to relocate its activities outside Hungary – an event described as the first forced expulsion of a higher education institution in Europe since the Nazi era. Legal proceedings were initiated before the Hungarian Constitutional Court (HCC) and later by the European Commission, which brought the case before the Court of Justice of the European Union (CJEU). However, the HCC repeatedly avoided ruling on the constitutionality of Lex CEU, creating working groups and using procedural delays until the case effectively became irrelevant after CEU left the country. When criticised for its inaction, the HCC justified the suspension of proceedings by invoking the need to maintain a “European constitutional dialogue” with the CJEU – a claim widely viewed as a pretext to delay the decision and protect government interests. At the same time, the European Court of Human Rights (ECHR) continues to regard the HCC as an effective legal remedy, allowing the government to block cases from reaching Strasbourg by ensuring they remain unresolved domestically (Bárd & Pech, 2019).

The structural bias of the Hungarian electoral system, facilitated by Fidesz's two-thirds constitutional majority since 2010, ensures that the ruling party holds a structurally generated majority even in the face of a unified opposition. Although the opposition coalition, United for Hungary, appeared to pose a serious threat before the 2022 elections, the final result was Orbán's largest triumph to date: he achieved a 20-point lead (54% of the party list vote) and secured 83% of single-mandate constituencies, comfortably retaining a two-thirds majority (68% of seats). This success was driven by a 2022 campaign predicated on massive social benefit disbursements (e.g., the 13th-month pension, tax relief, price freezes), the strategic use of precarious public sector jobs to ensure support, and, crucially, near-absolute control over the media. Fidesz's media dominance ensured that voters heard almost exclusively the government's message and misinformation about the opposition (e.g., claims of wanting to drag the country into the war in Ukraine), while Orbán presented himself as the candidate of "peace

and security." The OSCE/ODIHR mission subsequently assessed the 2022 elections as not fair, citing the unfair media advantage and the extensive misuse of state resources in Fidesz's favour (Scheppelle, 2022).

Conclusion

The analysis demonstrates that Hungary's democratic backsliding results from the interplay of political, economic and social factors that have mutually reinforced Fidesz's dominance. Orbán's government has systematically centralised power through constitutional engineering, media monopolisation and the politicisation of independent institutions. The process of autocratisation has been legitimised by populist rhetoric, economic incentives and appeals to national sovereignty. Hungary thus represents a consolidated model of "electoral autocracy" in which formal democratic institutions coexist with authoritarian practices.

The paper contributes to the academic debate on the resilience of democratic institutions in post-transitional states and highlights the vulnerability of liberal democracies to internal erosion. At the same time, it underscores the limited effectiveness of the European Union's mechanisms in countering illiberal developments among its member states. While the study offers a comprehensive overview of Hungary's transformation, its main limitation lies in the reliance on secondary sources and the absence of primary empirical data. Future research could therefore focus on comparative analysis of similar processes in other Central and Eastern European countries.

References:

- Arató, K. – Fleck, Z. (2022). The theory and practice of populist electoral autocracy: Hungary from the perspective of Central and Eastern Europe., pp. 2-19. [Cited 1. 10. 2025] Available online: https://www.ajk.elte.hu/dstore/document/3172/Theses_Benedek%20Istv%C3%A1n_2022.pdf.
- Bánkuti, M., Halmai, G. – Scheppelle, K. L. (2012). Hungary's illiberal turn: disabling the constitution. In: *Journal of Democracy*, 23(3), 138-146. [Cited 1. 10. 2025.] Available online: https://www.researchgate.net/profile/Jon-Van-Til/publication/290454553_The_hungarian_patient_Social_opposition_to_an_illiberal_democracy/links/5e3885ce92851c7f7f1a3adc/The-hungarian-patient-Social-opposition-to-an-illiberal-democracy.pdf#page=57.
- Bárd, P. – Pech, L. (2019). How to build and consolidate a partly free pseudo democracy by constitutional means in three steps: The 'Hungarian model'. pp. 1-29. [Cited 1. 10. 2025.] Available online: <https://ssrn.com/abstract=3608784>
- Bartha, A. – Boda, Z. – Szikra, D. (2020). When Populist Leaders Govern: Conceptualising Populism in Policy Making., pp. 71-81. [Cited 1. 10. 2025.] Available online: https://www.ssoar.info/ssoar/bitstream/handle/document/71710/ssoarpoliticsgovernance-2020-3-bartha_et_alWhen_populist_leaders_govern_conceptualising.pdf?sequence=1.
- Bernhard, M. (2021). Democratic backsliding in Poland and Hungary. In: *Slavic Review*, 80(3), pp. 586-607. [Cited 1. 10. 2025.] Available online: <https://www.cambridge.org/core/services/aop-cambridge-core/content/view/8B1C30919DC33C0BC2A66A26BFEE9553/S0037677921001455a.pdf/div-class-title-democratic-backsliding-in-poland-and-hungary-div.pdf>.
- Biró, M. – Kovács, Z. (2020). The decade of illiberalism – the 2010s in Hungary. In: *Index.hu*. [Cited 1. 10. 2025.] Available online: https://index.hu/english/2020/01/03/hungary_politics_2010s_top_ten_illiberalism/
- Bozóki, A. – Benedek, I. (2024). Politics in Hungary: Two critical junctures. In *Civic and Uncivic Values in Hungary*. Routledge., 17-42. [Cited 1. 10. 2025.] Available online:

- https://real.mtak.hu/209350/1/Bozoki_Benedek_2024_Politics_in_Hungary_Two_Critical_Junctures.pdf.
- Camba, A. – Epstein, R. A. (2023). From Duterte to Orbán: The political economy of autocratic hedging., In: *Journal of International Relations and Development*, 26(2), pp. 347-372. [Cited 1. 10. 2025.] Available online: https://scholar.google.com/scholar?output=instlink&q=info:Q_6DYtyE11gJ:scholar.google.com/&hl=sk&as_sdt=0,5&scilfp=15322797325529848127&oi=lle.
- Éltető, A. – Szemlér, T. (2023). Hungary in the European Union–cooperation, peacock dance and autocracy. In: *Comparative Southeast European Studies*, 71(3), p. 275. pp. 272-299. [Cited 1. 10. 2025.] Available online: <https://www.degruyterbrill.com/document/doi/10.1515/soeu-2022-0051/html>.
- Feikes de Groot, C. (2024). Declining Democracy, a Case of Democratic Backsliding or Careening?, 1-34. [Cited 1. 10. 2025.] Available online: <https://lup.lub.lu.se/luur/download?func=downloadFile&recordId=9143704&fileId=9143792>.
- Hanelt, E. – Vincze, A. (2024). Managing courts in competitive authoritarian regimes: co-optation, repression and resistance in Hungary. In: *Zeitschrift für Vergleichende Politikwissenschaft*, 18(3), pp. 381-400. [Cited 1. 10. 2025.] Available online: <https://link.springer.com/content/pdf/10.1007/s12286-024-00621-y.pdf>.
- Haraszi, M. (2011). Notes on Hungary's media law package. In: *Eurozine*. [Cited 1. 10. 2025.] Available online: <https://www.eurozine.com/notes-on-hungarys-media-law-package/?pdf>
- Hoffmann, T. – Gárdos-Orosz, F. (2022). Populism and law in Hungary–Introduction to the Special Issue. In: *Review of Central and East European Law*, 47(1), pp. 1-11. [Cited 1. 10. 2025.] Available online: https://brill.com/view/journals/rela/47/1/article-p1_001.pdf.
- Chronowski, N. (2019). Carved in granite? Variable constitutional architecture in Hungary (2010-2018)., [Cited 1. 10. 2025.] Available online: <http://www.dpceonline.it/index.php/dpceonline/article/download/781/722>.
- Jasny, E. (2023). Democratic backsliding in the European Union, In: *Harvard Model Congress Europe 2023*. pp. 2-12., [Cited 1. 10. 2025.] Available online: https://www.hmceurope.org/s/R3_INT_EU_Jasny_Backsliding_HMCE2023.pdf.
- Ordanoski, G. – Angiolillo, F. (2024). Incumbents' Strategies of Repression during Autocratisation: Evidence from Hungary and North Macedonia. pp. 1-30., [Cited 1. 10. 2025.] Available online: <https://papers.ssrn.com/sol3/Delivery.cfm?abstractid=4877032>.
- Paris, R. (2022). European populism and the return of 'illiberal sovereignty': a case study of Hungary. In: *International Affairs*, 98(2), pp. 529-547. [Cited 1. 10. 2025.] Available online: <https://drive.google.com/file/d/1AYKf8UhBTiEapRfXUhTSu2nHTvwZLKrT/view>.
- Rupnik, J. (2023). Illiberal democracy and hybrid regimes in East-Central Europe. "Illiberal Democracies" in Europe: An Authoritarian Response to the Crisis of Illiberalism, pp. 9-16. [Cited 1. 10. 2025.] Available online: <https://sciencespo.hal.science/hal-03980745/document>.
- Scheppele, L. K. (2022). How Viktor Orbán wins. In: *Journal of Democracy*, 33(3), pp. 50-58. pp. 45-61. [Cited 1. 10. 2025.] Available online: https://scholar.google.com/scholar?output=instlink&q=info:WXxoplO0wBkJ:scholar.google.com/&hl=sk&as_sdt=0,5&scilfp=2781952529767274282&oi=lle.
- Szente, Z. (2023). The myth of populist constitutionalism in Hungary and Poland: Populist or authoritarian constitutionalism? In: *International Journal of Constitutional Law*, 21(1),

pp. 127-155. [Cited 1. 10. 2025.] Available online: <https://academic.oup.com/icon/article/21/1/127/7079679>.

Szikra, D. (2018). Welfare for the Wealthy. The Social Policy of the Orbán Regime. Friedrich Ebert Stiftung Budapest Analysis. Budapest., pp. 1-12. [Cited 1. 10. 2025.] Available online: https://www.researchgate.net/profile/Dorottya-Szikra/publication/323880087_Welfare_for_the_Wealthy_The_Social_Policy_of_the_Orban-regime_2010-2017/links/5ab113690f7e9b4897c2cd40/Welfare-for-the-Wealthy-The-Social-Policy-of-the-Orban-regime-2010-2017.pdf

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SLOVAKIA'S CURRENT FOREIGN POLITICAL RELATIONS

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Abstract: Twenty-one years after joining the European Union, Slovakia finds itself at a crossroads. While membership has brought economic growth, billions in investment and a sense of security in uncertain times, national leaders and political parties remain deeply divided on how the country should shape its future in Europe. For twenty-one years, Slovakia has been part of Europe, built on freedom, democracy, peaceful coexistence and respect for human dignity. The EU has helped deliver stability and prosperity but warned that unity and cooperation should not be taken for granted. Today, while PM Robert Fico acknowledges the European Union's importance to Slovakia, he criticizes it for promoting what he calls a "one correct opinion" policy. He also rails against liberal ideologies, aiming to appeal to ultraconservative and far-right voters. Whether Robert Fico's current policies represent a true ideological shift or a strategic political move remains an open question. However, one thing is clear: Slovakia's foreign policy under his leadership (especially the country's mostly Russia orientation) has once again become a subject of intense debate, both at home and abroad. The recent meeting between PM Robert Fico and President Volodymyr Zelenskyy was a chance to keep Slovakia engaged despite Robert Fico's pro-Moscow leanings. For PM Fico, it was an opportunity to play regional powerbroker and perhaps take another swing at Brussels. However, the result of this meeting did not bring anything new or surprising

Keywords: Slovakia, European Union, Russian Federation, Ukraine, political parties, politics

JEL: Z18

Introduction

We are currently witnessing global changes of a scale not seen in decades, making the Slovak membership in the European Union more meaningful, valuable, and forward-looking than ever. We are living in times when the rules that took decades to establish are changing overnight in the global order. The law of the strongest is re-emerging, and international law is being pushed into the background. In these difficult times, small countries such as Slovakia, which are economically and in terms of security vulnerable, must rely on their partners and allies. Without them, we would be left at the mercy of those who recognize no rules. From this perspective, Slovakia's EU membership is of enormous importance.

Since 2004, Slovakia has received more than €38 billion in EU funding, supporting hundreds of projects, ranging from schools and hospitals to roads, railways and science parks. According to the Commission, Slovakia's gross national income has grown by an average of 7 percent annually, with GDP per capita rising from 59 percent of the EU average in 2004 to 71 percent by 2022.

Besides, for Slovakia, the EU's Readiness 2030 presents both obligations and opportunities, because Slovakia has a chance to become one of Europe's leaders in artillery systems and munitions. In addition to the armed forces, it is an important signal to the European

defense industry, which can now expect a more stable stream of orders, something that could also motivate investment in new production capacities.

However, one of the risks associated with Readiness 2030 in Slovakia is the "policy in all four directions" pursued by the government of PM Robert Fico. In practice, this means Slovakia is perceived as a pro-Russian country, its relations with allies – including its closest ones – are deteriorating, and Slovak officials, led by the prime minister, are cultivating close ties with Moscow. Slovakia's perceived unreliability as an ally could also manifest in another aspect of Readiness 2030. The potential of regional alliances within NATO. European countries could deepen their cooperation, improve its quality, and strengthen joint planning and command structures, but without Slovakia.

1 The Position of Slovakia in the European Union

According to President Peter Pellegrini we are witnessing global changes at a pace unseen for decades. The world is shifting, and the rules of the past are being rewritten. For vulnerable nations like Slovakia, EU membership offers essential protection. Yet Pellegrini also criticized the bloc's shortcomings, including "excessive bureaucracy" and bold but impractical initiatives. Despite this, he called the EU "our civilizational anchor and security space", urging Slovaks to embrace their place at the table while advocating for reforms (Lintnerová, 2025).

According to a Eurobarometer survey conducted in December 2024, 53 percent of Slovaks said they trust the European Union, while two-thirds described themselves as feeling connected to it (Eurobarometer survey, 2024). The debate over Slovakia's role in the EU is, however, far from settled. The ruling Smer-SD party took a sharper stance, calling for a return to sovereign cooperation between member states and rejecting what it sees as centralized decision-making and unrealistic green policies. It warned that scrapping the national veto could marginalize smaller countries, turning them into mere statisticians in the European project.

In a fact, without the veto, Slovakia and similar states would become irrelevant. Smer-SD, which refers to European leaders supporting Ukraine militarily as warmongers, also called on the EU to prioritize peace and diplomacy in foreign affairs, warning that the bloc risks losing its identity as a force for peace. The Smer-SD-led government also backs Ukraine militarily, though through commercial contracts rather than donations from its own armed forces.

Progressive Slovakia, by contrast, adopted an overtly pro-European position. They believe that the EU must become a true global power, ready for enlargement towards Ukraine and the Western Balkans, and strengthen its defense. The party urged institutional reform, including reducing the use of vetoes in foreign policy, and argued for a more robust EU budget. Basically, we need an EU ready to defend itself and protect democracy, but due to the current foreign orientation of the country, there is a risk that Slovakia will be sidelined in common defense plans. Michal Šimečka, leader of Progressive Slovakia, has warned that the country's place in the European Union is no longer guaranteed, as leading political figures continue to question its value. He argued that the nation should act as a strong and constructive partner in Brussels, a role he believes it is failing to fulfil. According to him twenty-one years after joining the European Union, Slovakia finds itself in perhaps its weakest position yet, because it is isolated, because the country's only ally is Hungary's Prime Minister Viktor Orbán. It means that Slovakia together with Hungary are seen as problem members of the EU. The truth is, Prime Minister Fico rarely travels to meet European partners, and few of them come to Slovakia.

The Slovensko movement voiced a more cautious, pragmatic view. According to the party the veto is key to equality between large and small countries, but it should not paralyze the EU. In matters of defense and security, decisions must be made quickly. Besides,

Slovakia must strengthen its defense industry and deepen ties within Europe as US security guarantees become less certain. Hlas-SD, a key coalition party, firmly rejected any notion of leaving the EU. The party believes that the EU is the country's living space and leaving the EU is a red line for Hlas-SD. Additionally, Slovakia should not be subservient, it must remain a constructive and responsible member. In recent months, Slovakia has seen protests under the banner "Slovakia is Europe", sparked by remarks in January from Deputy Speaker of Parliament Tibor Gašpar (Smer-SD), who suggested the country might one day leave the European Union. For the Christian Democrats (KDH), EU membership remains vital despite its flaws. Slovakia is financed by EU funds, and Europe stands for human dignity and freedom. The party criticizes Slovakia's lack of leadership on key EU issues and rejects anti-EU rhetoric, saying those advocating departure are harming the country.

It is clear that Slovakia needs the European Union, and all the advantages the EU can offer. Nevertheless, the country has had a serious problem to complete some opportunities. For example, by next summer, Slovakia must complete its recovery plan, which is part of the European Union's Recovery and Resilience Facility established in response to the Covid-19 pandemic. The plan is intended to support economic recovery through investments and reforms in areas such as green energy, digital transformation, healthcare, and education. However, it is already clear that Slovakia will not be able to complete some of the planned investments on time, which could threaten the country's ability to draw down the full amount of allocated funding (Vančo, 2025).

For now, this means U.S. Steel will continue to pollute the air, psychologists will rely on outdated tests, and firefighters will go without new stations. It does not mean these projects will never be completed. But Slovakia has missed the chance to use European funding for their implementation, and at best, their completion will be delayed by several years.

Of the total €6.3 billion, Slovakia has so far received a little more than half. The European Commission is disbursing the funds in instalments, having recently approved the fifth out of nine. The positive news is that, at least for now, Slovakia will not lose funding for targets it will not be able to meet. The Office of Deputy Prime Minister Peter Kmec, who is responsible for the recovery plan, submitted a proposal to the European Commission in January for a revision worth €414 million (MZV, 2025).

Under the proposal, the sums allocated for unused investments would be redirected to other projects. The funding would mainly support the construction and reconstruction of schools, dormitories, hospitals and social service homes. The only new investments proposed are the purchase of a high-capacity train and the planting of trees.

At the same time, Slovakia will still complete dozens of reforms and investments, although some may amount to little more than formal exercises. There is a list of projects that Slovakia will definitely not complete. For example, it should have been the largest investment in the recovery plan. U. S. Steel was to receive a subsidy of almost €300 million as part of the process to decarbonize the industry. The money was intended to purchase electric arc furnaces, which were to replace the current coke-based blast furnaces. Although the company joined a call, it did not sign a contract with the Environment Ministry. The reason is that U. S. Steel is currently changing ownership. The potential buyer is the Japanese steel giant Nippon Steel. However, the sale is being delayed due to resistance on the part of the US government and the company unable to commit to such a large investment in such a short time, as it would have to pay at least €1 billion from its own resources.

The European Commission has issued a pointed warning over democratic backsliding in Slovakia, raising concerns about judicial independence, anti-corruption efforts and the growing pressure on media and civil society. In its 2025 Rule of Law report, published in summer, the Commission concluded that Slovakia has made "limited progress" in addressing serious governance concerns identified in previous years (Dowell, 2025). Of seven reform

recommendations issued to Bratislava last year, six remain entirely unimplemented. The only partial improvement cited was a modest tightening of conflict-of-interest legislation.

Concerns over judicial independence dominate the Commission's findings. A set of legal changes introduced by Slovakia's government – led since 2023 by Prime Minister Robert Fico's left-populist Smer-SD party – have sparked fears of political encroachment on the courts. These include the introduction of performance-based bonuses for judges and a shift in disciplinary powers to the Judicial Council, a body already under scrutiny for lacking safeguards against undue political influence. Brussels also took issue with the removal of several Judicial Council members before the end of their terms, warning that such moves fall short of European standards and risk politicizing the judiciary.

Slovakia's anti-corruption efforts (once considered a bright spot in the region) have also been undermined. The dismantling of two key institutions, the National Crime Agency and the Special Prosecutor's Office, has disrupted investigations and, in some instances, led to the downgrading of serious corruption cases to lesser offences. Of particular concern is Section 363 of Slovakia's Criminal Procedure Code, which grants the general prosecutor broad discretion to cancel prosecutorial decisions. Critics argue this provision has been used to shield politically sensitive cases from prosecution. The Commission echoed these concerns, noting that recent high-profile investigations have been halted under "controversial circumstances". While Bratislava has announced a new anti-corruption strategy, key elements such as improved lobbying transparency and stronger asset declaration rules remain absent.

Despite the severity of the findings, the European Commission has not moved to suspend EU funds or initiate infringement proceedings via the European Court of Justice – measures it has taken in the past against Hungary and Poland. Instead, it has pursued quiet diplomacy, including informal warnings to the Slovak government over questionable reforms. A recent audit examined whether Slovakia's legal changes breached conditions tied to its allocation of EU recovery funds. Ultimately, the Commission did not suspend payments, citing confidence in the European Public Prosecutor's Office (EPPO), which continues to operate independently within Slovakia and investigate potential misuse of EU money.

The government also sought to deflect criticism onto its predecessors. For instance, the controversial offence of "bending the law", which allows judges to be prosecuted for misapplying legislation, was introduced by a previous administration. While the current government cannot repeal it due to conditions tied to EU funding, it has added procedural safeguards that the Commission acknowledged as a partial improvement. Justice officials also defended Section 363, calling it a vital tool for protecting legality, and pointed out that prosecutors may be held criminally liable for misuse.

Bratislava also rejected the EU's portrayal of backsliding on corruption, citing national data showing that 240 individuals were prosecuted for corruption in 2024, up from 160 the previous year. Besides, unless Brussels offered concrete guarantees for Slovakia's energy security beyond 2028, PM Robert Fico would not support the EU's latest sanctions package targeting Moscow for its ongoing invasion of Ukraine and its sabotage activities within Europe. Despite receiving proposed safeguards from the European Commission, PM Fico continued to stall the bloc's 18th sanctions package into mid-July, insisting it be tied to binding commitments on future gas supplies (Liboreiro, 2025). His stance frustrated Brussels and left Slovakia increasingly isolated within the EU (Nienaber, 2025). Finally, the Slovak government stepped aside and supported the package. The way how the government works recently.

2 Slovakia – Russia Relations

Nearly three decades after former PM Vladimír Mečiar maintained warm relations with Russia, Slovakia's current prime minister, Robert Fico, now in his fourth term, appears to be taking a similar approach, albeit in a vastly changed geopolitical landscape.

Unlike in Mečiar's era, Slovakia has been a member of both NATO and the European Union since 2004.

When PM Fico first assumed office in 2006, he met Russian President Vladimir Putin at an informal EU summit in Finland. At the time, he reflected on Slovakia's post-Cold War foreign policy, saying relations with Russia had not been particularly strong over the previous eight years. Not that there were any specific problems, but Slovakia's foreign policy had been quite one-sidedly oriented towards the West. Robert Fico emphasized Slovakia's economic ties with Russia, noting that the country was entirely dependent on Russian oil and gas. Slovakia has long faced and continues to face a trade deficit with Russia. Its dependence on Russian gas is slowly decreasing. Each EU member state has its own interests, but when it comes to Russia, the EU needs to formulate common positions. At the time, Fico's approach was framed as pragmatic economic diplomacy. However, the geopolitical landscape has since changed dramatically.

Today, Russia is waging an unprovoked war against Ukraine, Slovakia's eastern neighbor. Yet PM Fico and his government have refrained from calling Russia the aggressor. Instead, he has repeatedly accused the West of exploiting the war to weaken Russia economically and politically. According to him there is a military conflict in Ukraine where Slavs are killing each other, and Europe is significantly supporting this killing. PM Fico has repeatedly claimed, insisting that the war has no military solution. He also asserts that Ukraine will lose a third of its territory to Russia and remain occupied by foreign forces.

Robert Fico's relationship with Ukraine has been strained since a gas crisis in 2009, when a pricing dispute between Russia and Ukraine led to a 11-day halt in Russian gas supplies transiting Ukraine to Europe. Slovakia, one of the hardest-hit countries in the region, faced severe economic consequences. But rather than blaming Russia, Fico pointed the finger at Ukraine, accusing Kyiv of being responsible for the crisis.

Similarly, in 2008, following Russia's invasion of Georgia during a conflict in South Ossetia, Fico refused to condemn Russia's actions outright, because he did not see the situation that serious. He was talking about a provocation and then there was a reaction, and it was a very strong one. His coalition partner at the time, the Slovak National Party (SNS), echoed Russian narratives, with SNS deputy chair Anna Belousová even accusing Georgia of attempted "genocide" in South Ossetia. Fast forward to today, Robert Fico has once again allied with the SNS, whose party leader Andrej Danko has emerged as one of the most vocal pro-Kremlin figures in the Slovak governing coalition.

When Russia annexed Crimea in 2014, Slovakia, which was still heavily reliant on Russian energy, formally backed EU sanctions against Moscow. PM Fico acknowledged that Russia had violated international law, yet he remained critical of the sanctions, describing them as "harmful" to Slovakia. A year later, in 2015, he travelled to Moscow for celebrations to mark the end of the Second World War, an event boycotted by most other European leaders in protest at Russia's annexation of Crimea. PM Fico visited Moscow again this year, on the 80th anniversary of the end of World War II (Giordano, 2025).

Robert Fico's stance on sanctions hardened after his return to power in late 2023. He has also adopted a more overtly anti-Ukrainian position, opposing Ukraine's NATO membership on the grounds that it would lead to a third world war. During his 2023 election campaign, he vowed if his political party wins, he will not send a single bullet to Ukraine. After taking office, PM Fico halted military aid from Slovakia's armed forces, though he has not ended commercial contracts for weapons exports to Ukraine, which are a profitable source of income for Slovak arms manufacturers. Despite this, he maintains that he opposes the war. While acknowledging that Russia violated international law by invading Ukraine, he argues that Russia had a reason to do so.

Then, in December 2024, shortly before a Ukrainian decision not to renew an agreement that had allowed Russian gas to transit to Europe came into effect, PM Fico secretly flew to Russia to meet with President Putin. The exact purpose of his visit remains unclear; Russian gas now no longer flows through Ukraine to Slovakia, and Robert Fico, who met President Putin alone, has not explained in detail what was discussed. In the months since, Fico has repeatedly lashed out at Ukraine's President Volodymyr Zelenskyy, calling him a blackmailer and declaring that he is sick of him. He has never used such language about President Putin.

Despite PM Fico's rhetoric, his government continues to provide humanitarian aid to Ukraine and supplies electricity and gas when necessary. This is not as surprising as it might sound. Slovakia has previously played a key role in mitigating the effects of Russian energy policies on Ukraine. In 2014, under PM Fico's rule, after Russia cut gas supplies to Ukraine over unpaid debts, Slovakia enabled a solution: it redirected Russian gas that had already entered Slovakia back to Ukraine via an alternative pipeline route.

Still, PM Fico's current foreign policy has sparked widespread protests (ENR, 2025). Much like Vladimír Mečiar in the 1990s, Robert Fico has embraced the notion of a "sovereign foreign policy". He has railed against the US Embassy, criticized EU leaders, and accused Slovakia's closest allies, including the Czech Republic, of meddling in its internal affairs. At the same time, he has sought to strengthen ties with pro-Russian Serbia. His current stance towards the EU stands in sharp contrast to his own words from 2013, when he championed deeper European integration arguing that Slovakia must be part of the group of countries that support further integration within the European Union.

Regarding Russia's war on Ukraine, President Peter Pellegrini also called on EU leaders to show the courage to meet with representatives of the Russian Federation and to start developing a dialogue aimed at ending the war as soon as possible. According to him the negotiations on a temporary ceasefire currently depend on talks between the United States and Russia, but Europe must take the initiative. He did not explain what role Ukraine should have in such talks, despite it being the target of daily Russian attacks.

Slovakia's Ministry of Foreign Affairs has been constantly under fire after suggesting that Europe should consider forgiveness for Russia once the war in Ukraine ends – comments that have reignited tensions over the country's stance on the conflict (Beňo, 2025). The Foreign Ministry claims that diplomatic channels with Moscow should remain open and that Europe would eventually need to reconcile with Russia (just as it did with Germany after the Second World War). The exchange underscored growing rifts within Slovakia's political establishment over how to engage with the Kremlin. While the Fico government has taken a more cautious, and at times contrarian, line within the EU, progressive lawmakers are pressing for tougher policies, including military aid and greater alignment with Ukraine's Western backers. The opposition and the Foreign Minister also clashed over post-war reconstruction.

Energy security emerged as another flashpoint. Slovakia has said it will not back new EU sanctions on Russian gas without ironclad guarantees (Dlhopolec, 2025). The Foreign Ministry warns that a premature decoupling from Russian energy could cost the country billions. It claims that Slovakia is one of the most exposed countries in Europe and it will not gamble with its economy. While other countries invest in alternatives, Slovakia threatens vetoes. In fact Slovakia now pays among the highest gas prices in the EU.

The September meeting between Prime Minister Robert Fico and President Volodymyr Zelenskyy did not bring anything new as it had been expected. The two leaders have long been at odds, trading barbs before and after Ukraine announced plans to end the transit of Russian gas through its territory from January 2025 (Silenská, 2025). Despite some efforts to diversify, Slovakia remains heavily dependent on Russian energy. PM Fico, who has met Putin three times since the Kremlin's full-scale invasion of Ukraine in February 2022, has described Zelenskyy

as an enemy and a saboteur. President Zelenskyy has accused the Slovak prime minister of betraying his country's interests and of taking instructions from President Putin to open a second energy front against Ukraine.

Still, both leaders stressed the need for cooperation between their governments, particularly at ministerial and institutional levels, not just at the level of leaders. They agreed that they must stick to the pragmatic character of their cooperation. President Zelenskyy added that he had briefed Robert Fico on his recent discussions with European leaders — the so-called “Coalition of the Willing”, of which Slovakia is not a member — about security guarantees for Ukraine after the war.

At the meeting, one of the most divisive issues remained energy policy. PM Robert Fico confirmed there were topics on which they had different opinions, but that is what the world is about (citing energy and international affairs in particular). This was the first official meeting between the Slovak prime minister and the Ukrainian president. According to PM Fico's Office, energy infrastructure supposed dominate discussions. Both leaders briefed the press afterwards, alongside Ukraine's Prime Minister Yuliya Svyrydenko. Slovakia's delegation included Economy Minister Denisa Saková (Hlas-SD) and Foreign Minister Juraj Blahár (Smer-SD).

PM Fico might have arrived in Ukraine carrying what he once promised — a “message” from President Vladimir Putin. However, President Zelenskyy had his own note to deliver: in a recent call with European leaders, Donald Trump complained about Slovakia and Hungary continuing to buy Russian oil (Irish, 2025). Why this meeting mattered? For Kyiv, the meeting was a chance to keep Slovakia engaged despite Robert Fico's pro-Moscow leanings. For PM Fico, it was an opportunity to play regional powerbroker and perhaps take another swing at Brussels (Reuters, 2025). However, in a fact, Slovakia tries to keep itself out from any comments regarding the conflict in Ukraine.

Prime Minister Robert Fico is accusing Western countries of deliberately prolonging the war in Ukraine. He claims that some European leaders are tired of 80 years of peace and want to escalate tensions with Russia. He alleged that the West sabotaged peace talks between Kyiv and Moscow in spring 2022 and seeks to weaken and carve up Russia for its resources.

PM Fico's allegation refers to negotiations held in Istanbul in March and April 2022, when Ukraine signaled it might suspend its NATO ambitions and temporarily tolerate Russia's occupation of Crimea and parts of the Donbas. The talks collapsed after Moscow demanded broad veto powers over any future military support for Ukraine – conditions Kyiv deemed unacceptable. Despite of the fact that it was ultimately Russia's maximalist demands and subsequent military escalation that derailed the talks. President Vladimir Putin refused a ceasefire and intensified strikes on Ukrainian cities.

PM Fico further also claims that Russia's economy is now stronger than Germany's, despite World Bank data showing Germany's GDP at \$4.7tn last year, more than double Russia's \$2.2tn. Economists note that Moscow's modest growth stems mainly from war-driven spending, with inflation near 9 percent (World Bank Data, 2025).

Conclusion

Today, while PM Robert Fico acknowledges the European Union's importance to Slovakia, he criticizes it for promoting what he calls a “one correct opinion” policy. He also rails against liberal ideologies, aiming to appeal to ultraconservative and far-right voters. In contrast, following Donald Trump's return to the US presidency, PM Fico has toned down his criticism of the United States.

Whether Robert Fico's current policies represent a true ideological shift or a strategic political move remains an open question. However, one thing is clear: Slovakia's foreign policy under his leadership has once again become a subject of intense debate, both at home

and abroad. Regarding Russia, at a meeting with ambassadors in January 2025, PM Fico rejected what he called a new Iron Curtain between Europe and Russia. According to him, Slovakia is interested in good relations and will do everything it can to normalize ties between Slovakia and Russia once the war ends.

The recent official meeting of PM Robert Fico and President Volodymyr Zelenskyy could mean a turning point of the two countries relationship. The two leaders have long been at odds, trading barbs before and after Ukraine announced plans to end the transit of Russian gas through its territory from January 2025. Despite some efforts to diversify, Slovakia remains heavily dependent on Russian energy. PM Fico, who has met President Putin three times since the Kremlin's full-scale invasion of Ukraine in February 2022, has described Zelensky as an enemy and someone who blackmails. President Zelenskyy has accused the Slovak prime minister of betraying his country's interests and of taking instructions from President Putin to open a second energy front against Ukraine.

In September, Slovakia came under fire over its energy ties to Russia, with President Trump accusing both Slovakia and Hungary of undermining efforts to cut off Moscow's war revenues (Dlhopolec et al., 2025). Slovak President Peter Pellegrini told President Trump it was not easy for Slovakia to stop importing Russian oil, either technologically or in terms of capacity, but said the country was trying to diversify its sources and that cannot be done overnight. Slovakia needs several sources, not just one.

References:

- Beňo, M. (2025). Fico welcomes 'standardisation' with Russia, opposition talks of betrayal. *Slovak Spectator*. <https://spectator.sme.sk/politics-and-society/c/news-digest-fico-welcomes-standardisation-with-russia-opposition-talks-of-betrayal>
- Dlhopolec, P. (2025). Fico becomes Europe's nightmare. *Slovak Spectator*. <https://spectator.sme.sk/politics-and-society/c/fico-becomes-europe-s-nightmare>
- Dowell, S. (2025). EU rule of law report reveals deepening erosion in Hungary and rising risk in Slovakia. *TVP World*. <https://tvpworld.com/87748320/eu-rule-of-law-report-reveals-deepening-erosion-in-hungary-and-rising-risk-in-slovakia>
- Dlhopolec, P., Inotai, E. and Tesija, V. (2025). Playing for Time: Pressure Mounts on Hungary, Slovakia to Cut Russian Energy Ties. *Balkan Insight*. <https://balkaninsight.com/2025/09/24/playing-for-time-pressure-mounts-on-hungary-slovakia-to-cut-russian-energy-ties/>
- ENR (2025). President: In a changing world, Slovakia's membership in the EU has an even stronger meaning. *European News Room*. <https://europeannewsroom.com/president-in-a-changing-world-slovakias-membership-in-the-eu-has-an-even-stronger-meaning-2/>
- Eurobarometer survey (2024). Trust in the EU. *EU Neighbor East*. <https://euneighbourseast.eu/news/latest-news/new-eurobarometer-survey-shows-record-high-trust-in-the-eu-in-recent-years/>
- Giordano, E. (2025). Fico shakes Putin's hand as Russia's war victory parade kicks off. *Politico*. <https://www.politico.eu/article/robert-fico-shakes-vladimir-putin-hand-as-russias-war-victory-parade-kicks-off/>
- Guilbert, K. (2025). Slovakia at 'critical crossroads' as months of protest threaten pro-Moscow Fico. *Euronews*. <https://www.euronews.com/2025/03/21/slovakia-at-critical-crossroads-as-months-of-protest-threaten-pro-moscow-fico>
- Irish, J. (2025). Slovakia pushes back on pressure over Russia energy purchases. *Reuters*. <https://www.reuters.com/business/energy/slovakia-pushes-back-pressure-over-russia-energy-purchases-2025-09-24/>
- Liboreiro, J. et al. (2025). Slovak prime minister vetoes new Russia sanctions at EU summit.

- Euronews*. <https://www.euronews.com/my-europe/2025/06/26/eu-summit-viktor-orban-vows-to-veto-ukraines-accession>
- Lintnerová, T. (2025). President: Slovakia's EU Membership Gaining More Significance in Changing World. *News Now*. <https://newsnow.tasr.sk/president-slovakias-eu-membership-gaining-more-significance-in-changing-world/>
- MZV, Official website of the Ministry of Foreign and European Affairs of the Slovak Republic (2025). Twenty-one years of Slovakia in the European Union. *MZV SR*. https://www.mzv.sk/en/web/en/pressreleasedetail?p_p_id=sk_mzv_portal_pressrelease_detail_portlet_PressReleaseDetailPortlet&p_p_lifecycle=0&groupId=10182&articleId=54156281
- Nienaber, M. (2025). Germany's Merz Floats Cutting Off EU Funds to Fico's Slovakia. *Bloomberg*. <https://www.bloomberg.com/news/articles/2025-05-26/germany-s-merz-floats-cutting-off-eu-funds-to-fico-s-slovakia>
- Reuters (2025). Zelenskiy meets Slovakia's Fico, says Ukraine will respond to Russia's energy attacks. *Reuters*. <https://www.reuters.com/world/zelenskiy-meets-slovakias-fico-says-ukraine-will-respond-russias-energy-attacks-2025-09-05/>
- Silenská, N. (2025). Fico says he will relay Putin's private-talk message to Zelenskyy. *Euroactive*. <https://www.euractiv.com/news/fico-says-he-will-relay-putins-private-talk-message-to-zelenskyy/>
- Vančo, M. (2025): What Slovakia failed to accomplish from the recovery plan. *Slovak Spectator*. <https://spectator.sme.sk/politics-and-society/c/what-slovakia-failed-to-accomplish-from-the-recovery-plan>
- World Bank Data (2025). *Economies. Germany*. <https://data360.worldbank.org/en/economy/DEU>
- World Bank Data (2025). *Economies. Russian Federation*. <https://data360.worldbank.org/en/economy/RUS>

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SMART ENERGY CITY POLICY CONCEPT – IMPLICATIONS IN EU AND SLOVAKIA¹

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Abstract: Within the domain of energy, the concept of a "Smart City" encompasses a series of integrated "smart" or intelligent solutions. For instance, the systematic monitoring of consumption and heat leaks in buildings can contribute to enhancing the energy efficiency of cities. The objective of this paper is to examine the potential of the Smart City concept in the energy sector to enhance the quality of life in Slovakia, with a focus on socio-economic dimensions. The issue is to identify planned implementations and current projects, their benefits, limits, and barriers. Smart technologies are to be used in energy sector to achieve clean, safe and sustainable energy. the subsequent presentation of proposals and recommendations will serve as the foundation for advancing the implementation of Smart City policies in the energy sector within Slovakia. This initiative will be informed by the particularities of our nation and will draw inspiration from the success of EU-level initiatives.

Keywords: Industry 4.0, Agenda 2030, sustainable development, artificial intelligence, internet of things, digital technologies

JEL: F63, O33, O52

Introduction

Within the domain of energy, the concept of a "Smart City" encompasses a series of integrated "smart" or intelligent solutions. For instance, the systematic monitoring of consumption and heat leaks in buildings can contribute to enhancing the energy efficiency of cities. Smart lighting has the potential to enhance energy efficiency in street lighting, reducing wasteful energy consumption during periods of non-usage. A comprehensive, universally applicable methodology for the transformation of urban entities into "smart cities" is not currently available. Given the unique characteristics of each city, the optimal approach entails the implementation of a customized combination of measures, each of which is selected to address the specific challenges and objectives of the city in question. The potential for implementing smart solutions in energy, transportation, waste management, and other areas varies from city to city. Smart city energy policy is centered on the implementation of contemporary technologies and methodologies that facilitate the effective utilization of available energy resources and optimize energy consumption within urban environments. This concept is predicated on the integration of technologies such as the Internet of Things (IoT), smart meters, and renewable energy sources. Collectively, these technologies contribute to enhancing efficiency and reducing the negative impact on the environment. The utilization of IoT devices constitutes a pivotal component of this policy. These devices, including smart thermostats and sensors, facilitate the acquisition of precise energy consumption data in real time, both by cities and individuals. For instance, the implementation of intelligent lighting systems within a specific urban district has the potential to autonomously modulate

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its luminosity in accordance with the presence of individuals or the prevailing time of day. This approach has the capacity to result in substantial energy savings. Concurrently, smart meters—frequently installed in residential buildings—offer comprehensive energy consumption analyses, empowering users to optimize their energy utilization and identify areas conducive to efficiency enhancement. Moreover, two-way energy networks facilitate decentralized energy trading between individuals and energy providers. Consequently, residents who generate their own energy, for instance through photovoltaic systems, can reduce expenses or even generate revenue by selling excess energy to the grid. This model has been implemented in various countries, including Germany and Denmark, where the decentralization of energy has played a significant role in driving substantial innovation. The significance of these components extends beyond mere technological advancement; their capacity to enhance the socio-economic conditions of residents is also a crucial factor. These measures have been shown to have a substantial impact on enhancing the quality of life. This is due to their capacity to facilitate the accessibility of sustainable energy sources, reduce energy expenditures, and promote sustainable urban development (MIRRI SR, 2022a; Euractiv, 2011; Rojko, 2020).

Smart city energy policy constitutes a pivotal component of the overarching concept of smart cities, a response to the escalating energy demands of contemporary urban areas. The policy's primary objective is the efficient utilization of available energy resources, with a secondary objective of reducing environmental burdens and supporting technological innovations that can contribute to improving the quality of life of residents. In the context of mounting urbanization and mounting pressure for sustainable development, there is an imperative to integrate advanced technologies and adopt novel approaches to energy resource management. Smart City energy policy, therefore, is a comprehensive framework that integrates modern technologies, environmental strategies, and socio-economic objectives. The Smart City energy concept is predicated on the utilization of contemporary technologies and innovations for the efficient and sustainable management of energy resources in urban areas. The objective of this initiative is to enhance energy efficiency, mitigate greenhouse gas emissions, and enhance the quality of life for residents through the implementation of intelligent energy systems. These systems include smart grids, renewable energy sources, and energy-efficient building practices. These initiatives enable cities to achieve multiple objectives, including energy savings, adaptation to climate change, cost reduction, and the promotion of ecological and economic sustainability. The implementation of these policies necessitates collaboration between the public and private sectors, thereby contributing to the enhancement of the quality of life within urban environments. The objective of this paper is to examine the potential of the Smart City concept in the energy sector to enhance the quality of life in Slovakia, with a focus on socio-economic dimensions. The issue of the study is to identify planned implementations and current projects, their benefits, limits, and barriers. A particular emphasis will be placed on the analysis of the opportunities presented by EU programs, as well as the insights derived from successfully implemented projects within Europe. Consequently, the subsequent presentation of proposals and recommendations will serve as the foundation for advancing the implementation of Smart City policies in the energy sector within Slovakia. This initiative will be informed by the particularities of our nation and will draw inspiration from the success of EU-level initiatives.

1 Theoretical background - components of the Smart City policy concept in the field of energy

The concept of a "smart city in energy" refers to intelligent management and optimization of energy systems through the utilization of modern technologies. The fundamental components of this concept encompass the following:

- 1) Intelligent energy networks, so-called Smart Grid
 - Decentralized two-way energy flow between the producer, distribution networks and consumers.
 - Digitalization and automation of distribution network management to increase stability and flexibility.
 - Integration of renewable energy sources and management of fluctuations in production.
 - Use of the Internet of Things (IoT - in informatics, a term for connecting devices/objects/people to the Internet), sensors and big data analysis for monitoring and optimizing energy flows.
- 2) Energy efficiency and sustainability
 - Reducing the energy intensity of buildings using intelligent management and automation systems.
 - Use of renewable and emission-free energy sources in cities
 - Modernization and optimization of public lighting, heating, cooling systems, etc.
 - Reducing losses in energy networks and overall energy consumption in the city.
- 3) Citizen involvement and transparency
 - Providing citizens with clear information on energy consumption and environmental impacts.
 - Involving the public in planning and decision-making on energy projects.
 - Supporting the decentralization of energy sources and community energy (European Commission, 2025a; MIRRI SR, 2022b).

The concept of "smart energy" is predicated on one or more of the principles of smart energy production, smart energy networks, smart energy storage, smart energy consumption, clean energy, green energy, sustainable energy, and renewable energy sources, in conjunction with information and communication technologies. A smart energy system is defined by the intelligent integration of decentralized sustainable energy sources, efficient distribution, and optimized energy consumption. Smart energy, therefore, is comprised of three distinct components that must be integrated and communicate effectively with each other to establish a cohesive smart energy system. According to Mohanty, Choppali and Kougianos (2016), smart energy can then include:

- green energy,
- photovoltaic energy,
- solar thermal energy,
- biogas,
- wind energy.

European Strategic Energy Technology Plan (SET Plan) is a pivotal step in facilitating the transition to a carbon-neutral energy system by developing low-carbon technologies in a rapid and cost-competitive manner. The SET Plan fosters collaboration among EU Member States, businesses, and research institutions by promoting the advancement of new technologies and the reduction of their costs through coordinated national research initiatives. The SET Plan activities are divided into ten research and innovation actions.

- integration of renewable technologies into energy systems,
- reduction of technology costs,
- new technologies and services for consumers,
- resilience and security of energy systems,
- new materials and technologies for buildings,
- energy efficiency in industry,
- competitiveness in the global battery and e-mobility sector,

- renewable fuels and bioenergy,
- carbon capture and storage,
- nuclear safety (European Commission, 2025a; MIRRI SR. 2022b).

The development of energy-efficient urban infrastructure represents a pivotal initiative in the pursuit of reducing energy consumption in smart cities. The design of these buildings prioritizes energy efficiency, aims to reduce energy consumption, and incorporates the generation of renewable energy on site.

The implementation of intelligent street lighting systems is an integral component of the smart city concept, where the intensity of these lights is adaptable, contingent on the movement of pedestrians or the arrival of vehicles. In the event of an emergency, the lights can be automatically amplified to enhance visibility (Energy-Floors, 2023).

Smart cities advocate for the adoption of electric vehicles (EVs), where these mechanisms are designed to absorb the energy generated by friction between the tires of electric vehicles and the road. This energy is subsequently converted into electricity through piezoelectric or electromagnetic systems. The electricity generated can be used to directly power the vehicle engine or be stored in the vehicle battery for later use. Smart charging stations establish a data connection with the electric vehicles that utilize them.

Digitization is a pivotal component of EU policy, as it facilitates the more efficient management of urban systems and energy flows. A pilot project has been initiated in Amsterdam that employs Internet of Things (IoT) technologies to monitor energy flows in urban buildings, resulting in consumption optimization and cost reduction (European Commission, 2025b).

According to the European Commission (2025c), the prevailing trends in achieving energy self-sufficiency in urban areas include decentralization, digitalization, integration of renewable energy sources, development of energy storage technologies, and active involvement of citizens and communities.

- Energy efficiency and savings = The utilization of renewable energy sources (RES) entails the implementation of solar panels, wind farms, and analogous renewable energy sources for the purpose of local energy production. Furthermore, it involves the establishment of community energy systems, wherein citizens engage in both energy production and consumption.
- Energy self-sufficient buildings = The introduction of intelligent control and automation systems to buildings is a key factor in achieving energy efficiency and savings. These systems serve to reduce the energy intensity of buildings and utilize modern technologies to optimize energy consumption in urban areas. Examples of such technologies include LED lighting and intelligent heating and cooling control systems.
- Energy storage = The development of energy-autonomous buildings is predicated on the creation of mobile energy containers capable of independently supplying buildings with heat or cooling. These containers utilize passive solar energy to achieve buildings with zero or nearly zero energy consumption.
- The process of energy storage entails the implementation of two primary components: batteries and storage facilities. These facilities are utilized for the purpose of accumulating excess energy derived from renewable energy sources. Additionally, hydrogen plays a crucial role in this process, functioning as an energy accumulator.
- Integrated energy solutions = The integration of energy solutions entails the convergence of diverse technological modalities, encompassing renewable energy sources (RES), energy storage mechanisms, and consumption management systems, within intricate energy systems. The implementation of predictive data analysis and artificial intelligence facilitates the optimization of these complex systems.
- Citizen and community engagement = Citizen and community engagement is defined as the practice of electricity sharing between households and community energy projects.

This concept is further characterized by the raising of awareness and the motivation of citizens to engage in behaviors that are conducive to sustainability.

2 Energy Smart City policy analysis and best practices overview in EU and Slovakia

The implementation of Smart City solutions in the field of energy has yielded several successful projects and initiatives in Slovakia and within the European Union. These projects illustrate the potential of integrating modern technologies and renewable energy sources to achieve reduction emissions, energy efficiency enhancement, and improved quality of life for residents. To enhance clarity, the following discussion will focus on examples from Slovakia and successful initiatives from the EU, emphasizing specific technologies, solutions, and results. When it comes to best practices in the EU within the Energy Smart City policy area, following examples could be illustrated.

Amsterdam, located in the Netherlands, has been a leader in the implementation of smart energy solutions. The ATELIER project is one of the key initiatives in which Amsterdam is collaborating with Bilbao to establish Positive Energy Districts (PEDs). These areas have been designed to produce more energy than they consume by integrating buildings with smart mobility and technologies. Another significant project is City-zen, which was implemented in the Nieuw-West district of Amsterdam. This initiative facilitated the connection of over 10,000 households to a smart grid, a system that enables real-time monitoring and management of energy consumption. This network is equipped with sensors and remote control at all voltage levels, which allows the distribution company Alliander (Alliander Sustainable Area Development) to effectively manage the load and voltage in the network (Van der Stoep, 2016). Amsterdam has also developed the Energy Atlas, an interactive tool that provides a detailed overview of energy consumption in different parts of the city. This initiative enables residents and businesses to access data regarding their energy consumption, thereby facilitating the identification of opportunities for the utilization of renewable energy sources, such as solar or wind power (Mara de Pater, 2016). In the domain of electromobility, the city of Amsterdam has initiated the Flexpower project, which aims to enhance the efficiency of electric vehicle charging. This system enables flexible charging, adapting to the current availability of energy in the network. In 2009, this project was initiated with the installation of 3,000 photovoltaic panels on the roofs of buildings in the Zuidas district of the city. These panels generate a sufficient amount of energy to meet the consumption needs of 30,000 citizens employed within this urban area (ElaadNL, 2017). The West Orange project, which aims at intelligent data collection, is supported by a modern ICT infrastructure. The application enables individuals to monitor their energy consumption in real time and to evaluate their energy management. The project encompassed the development of a smart socket. This feature enables the user to monitor energy consumption and schedule the shutdown of the socket to conserve energy when it is not in use (Sanseverino Riva, 2017).

Freiburg im Breisgau, Germany, regarding smart energy solutions in the domain of energy efficiency, the new city hall in Freiburg, conceived as a zero-energy building, represents a significant accomplishment. The building's design incorporates hybrid modules on the roof for electricity and heat generation, complemented by vertical photovoltaic panels integrated into the facade that function as shading elements. The city of Freiburg has implemented a series of financial incentives designed to encourage citizens to undertake energy-efficient renovations. These incentives are intended to promote the installation of measures such as improved thermal insulation in buildings, efficient heating and ventilation systems, and photovoltaic devices (Stadt Freiburg, 2020).

Among the smart initiatives to make Copenhagen an even smarter city is the Energy Strategy, which aims to transition completely to renewable energy sources by the year 2050

and achieve energy independence from non-renewable sources through the following measures such as the emphasis on wind energy, which is projected to account for approximately 40% of total electricity consumption in the future, complemented by biomass and biogas. It is evident in its strategic deployment of wind turbines in coastal waters, complemented by solar and wave energy as well as the country's engagement in geothermal projects. The energy produced from biomass is poised to be the primary catalyst for the transition to alternative heating sources (Cavada, Hunt & Rogers, 2017).

Vienna, Austria, has gained international acclaim for its forward-thinking smart city initiatives. A prominent project in this regard is Seestadt Aspern, which is located on the grounds of a decommissioned airport, this carbon-neutral district Seestadt Aspern functions as a laboratory for the Smart City concept, wherein innovative solutions in the domains of housing, social security, energy, and mobility are evaluated and implemented. The buildings in Aspern meet high energy efficiency standards. For example, the Liselotte Hansen-Schmidt educational campus has been designed as a zero-energy school, using solar, wind, and geothermal energy (Smartcityvpraxi.cz, 2015). In the domain of energy, Vienna is undertaking pioneering initiatives, including the utilization of heat from a wastewater treatment facility to provide heating to up to 106,000 households in an eco-friendly manner. Moreover, the biogas plant in Simmering processes kitchen waste into gas for heating, with plans to double its output and provide heat for 900 households (MIRRI SR, 2022c).

The GrowSmarter project sought to promote the implementation of intelligent urban solutions. It utilized three "Lighthouse" cities—Stockholm, Cologne, and Barcelona. In Barcelona, the implementation of smart street lighting exemplifies the integration of innovative technology that utilizes streetlamps as a foundation for sensors, WiFi, and mobile networks, thereby enhancing the management of public spaces. The utilization of waste heat recovery has been employed in various contexts, including the recovery of heat from sewage wastewater, data centers, and waste systems. The integration of waste heat from sources such as refrigeration equipment in supermarkets into district heating systems represents a significant aspect of open district heating (European Commission, 2020).

The mySMARTLife initiative is predicated on the concepts of smart population and economy being implemented in the cities of Nantes (France), Hamburg (Germany), and Helsinki (Finland), collectively referred to as "lighthouse" cities, and are collaborating with their partner cities, Bydgoszcz (Poland), Rijeka (Croatia), and Valencia (Spain), on a joint project with the objective of integrating ICT technologies, e-mobility solutions, and energy systems. In Helsinki, the project has equipped the first apartment building with 167 apartments with smart thermostats in every room. These thermostats are connected to the City Platform via the Internet of Things (IoT) technology. Each household will be equipped with smart solutions, including smart meters, which will improve energy efficiency and enable efficient consumption management. In this area, measures such as the use of renewable energy sources, waste heat in buildings, and flexible energy demand management are being implemented and evaluated. The mySMARTLife initiative entailed the integration of a sophisticated district-level electricity storage system into an existing solar power plant and a network of electric vehicle charging stations (European Commission, 2025d).

Slovakia has witnessed the emergence of numerous pioneering initiatives that prioritize the utilization of contemporary technologies and renewable energy sources for the purpose of enhancing the quality of life for its citizens, mitigating environmental impacts, and enhancing energy efficiency. These projects include initiatives aimed at modernizing public lighting, integrating solar systems, implementing smart sensors, and establishing comprehensive Smart City energy platforms. When it comes to best practical experiences of smart energy city policy in Slovakia the following are more detailed examples of specific projects that have been successfully implemented.

A successful project in Prešov is the Intelligent Public Lighting project, implemented between April and May of 2017. The integration of LED technology in lighting fixtures has been demonstrated to result in substantial energy savings, with the intensity of light being adjustable from 0% to 100% via a mobile device. The system encompassed a range of functionalities, including the reception of emergency signals from citizens, the dissemination of real-time city information, and the monitoring of traffic density and the levels of carbon dioxide in the atmosphere at designated locations. In addition to the function of providing illumination, the poles were designed to support other municipal processes, including the monitoring of parking spaces and the measurement of noise (EKPK, 2023).

The city of Žilina has successfully completed a large-scale modernization of its public lighting infrastructure. This initiative involved the replacement of 3,897 traditional discharge lamps with state-of-the-art LED lamps, representing a significant advancement in energy efficiency and lighting quality. These new lamps were adapted to different types of environments. In city districts and parks, a light-yellow color was used, which has been shown to have a pleasant and cozy effect on people. On trolleybus lines and main routes, a neutral white shade was chosen for better visibility and safety. The scope of the project was to encompass the installation of 226 smart devices and the replacement of 51 lighting switchboards. A significant advantage of modernization is the anticipated electricity savings of up to 60% compared to traditional lighting systems (Mesto Žilina, 2024).

As part of the Smart City project in Veľký Šariš, Východoslovenská energetika a.s. (VSE) ensures the connection of the heating system to measurement and regulation via a comprehensive IoT platform, the implementation of smart meters to monitor instant consumption, the optimization of consumption points, the electrification of the local castle, the introduction of an optical network in the city and the installation of photovoltaic panels and monitoring of green energy consumption (Property & Environment, 2020).

The city of Trenčín is one of the cities selected to replicate the Positive Energy District (PED) concept. The PED concept was developed by a project consortium, and it is an urban planning initiative focused on sustainability. The municipality of Trenčín is currently prioritizing the diversification of its economic activities, with a focus on the tourism, innovation, culture, and industry sectors (Lindholm & Reda, 2021; Gabaldon Moreno et al., 2021). The fundamental concept of PED is the concept of an urban district that generates more energy from renewable sources than it consumes, thereby creating an energy surplus. This surplus energy can be exported to other parts of the district, leading to a net export of energy (Alpagut, Akyürek, Mitre, 2019). Trenčín is actively involved in projects aimed at integrating renewable energy sources. The city has entered a collaborative partnership with regional entities to facilitate the development of solar and geothermal energy systems. Solar panels have been installed on several public buildings, including schools and cultural centers, with the objective of covering most of their energy consumption. Trenčín has also initiated pilot projects for smart lighting, which are connected to the Internet of Things (IoT) systems to monitor energy consumption and automatically adjust lighting intensity according to current conditions. These measures have contributed to a 20% reduction in the city's energy costs (Mesto Trenčín, 2021; Eco-Logic, 2025; Mesto Trenčín, 2022).

The implementation of the Smart Grids concept for optimizing electricity distribution is beginning in Žilina. Smart grids facilitate the effective management of energy consumption, thereby reducing losses in the distribution system and enhancing the quality of energy supply. This approach involves the incorporation of renewable energy sources, such as solar panels and wind turbines, into the existing energy network. Smart Grids embody the foundational infrastructure necessary for the effective utilization of renewable energy sources, facilitating a dual-direction data flow between the provider and the consumer (Wood, 2023).

3 Benefits and limits vs. development potential and opportunities for improving the Smart City energy policy concept

The implementation of Smart City energy policies has been demonstrated to engender a number of significant benefits that exert a long-term positive impact on the energy efficiency, sustainability, and economic viability of urban areas. The benefits are the result of the use of modern technologies and innovations that allow cities to effectively manage their energy resources, reduce operating costs, and minimize their ecological footprint. The primary advantages associated with smart energy can be categorized as following aspects.

A primary benefit of Smart City energy policies is the enhancement of energy efficiency. Smart grids facilitate the effective administration of energy distribution by considering current consumption and the provision of energy from diverse sources. This, in turn, results in enhanced utilization of available energy and a reduction in energy losses. In the city of Barcelona, the implementation of smart meters has been demonstrated to be a highly effective strategy for optimizing energy consumption in urban buildings. This initiative culminated in a 25% reduction in energy consumption, yielding substantial savings in both energy expenditures and CO₂ emissions (Minnovation Technologies, 2024).

Another pivotal element of Smart City energy policy is the promotion and incorporation of renewable energy sources, including solar panels, wind turbines, geothermal sources, and other sustainable technologies. In Amsterdam, the municipal government has implemented smart systems for integrating renewable energy sources into the city's energy grids. This initiative has resulted in a 15% reduction in CO₂ emissions over a period of five years (I Amsterdam, 2024).

A notable benefit of Smart City policy in the domain of energy is the financial savings engendered by the modernization of energy systems. In the city of Košice, the modernization of public lighting to LED technology has proven to be a highly effective initiative. This initiative has yielded annual savings amounting to hundreds of thousands of euros. The modernization of lighting to smart LED lighting with automatic control according to current conditions (e.g., weather or lighting density) has been shown to result in reduced electricity consumption (Tokarčík, 2024).

One of the primary objectives of the Smart City policy is to enhance the energy self-sufficiency of urban areas. This approach involves the decentralization of energy production, which means that cities and their residents can consume, produce, and share energy. It allows municipalities and cities to create local energy systems that are more resilient to fluctuations in energy prices on global markets. Trenčín serves as a case study, illustrating a municipality that is exploring the notion of community energy (Eco-Logic, 2025).

As part of the overarching Smart City energy policy, there is a commitment to promoting sustainable mobility. The development of infrastructure for electric vehicles and charging stations in cities such as Bratislava and Košice where the adoption of electric buses and shared mobility solutions by urban centers has been demonstrated. Furthermore, intelligent traffic management systems that optimize traffic flows and smart parking systems have been shown to contribute to a reduction in traffic congestion, leading to fuel savings and a decrease in emissions associated with inefficient transport (SITA, 2023).

The economic advantages and benefits of digitalization and automation of energy systems are evident in the reduction of maintenance and operational costs. Intelligent technologies, including smart grids, LED lighting, and renewable energy sources, empower cities and households to substantially curtail energy consumption, thereby reducing financial expenditures as well as generating employment opportunities in the energy, IT, and construction sectors.

Smart cities have been shown to have a positive impact on the environment. In the city of Bratislava, several solar power plants were installed on the roofs of schools

and municipal institutions as part of the Green City project. These panels ensure the supply of clean energy for the operation of buildings and will reduce CO₂ emissions by 120 tons per year (Euroactive, 2024). In the city of Košice, several electric buses have been introduced, along with charging stations for public use. This initiative has resulted in a 30% reduction in greenhouse gas emissions and local air pollution in the city's central areas (Techbox, 2024). Intelligent traffic management systems that optimize traffic flow and minimize time spent in traffic jams can further reduce emissions.

The implementation of smart energy in urban areas poses several challenges that must be addressed to ensure its successful integration into urban planning and management. Addressing these challenges necessitates a comprehensive approach that incorporates technological, regulatory, financial, and social dimensions. The successful implementation of smart energy in urban areas is contingent upon collaboration between cities, technology providers, investors, and citizens. The primary limitations associated with the implementation of smart energy systems can be enumerated as follows:

Security concerns represent a significant impediment to the implementation of the Smart City policy. The implementation of smart grids and the proliferation of IoT devices have rendered energy infrastructure susceptible to cyber-attacks. Such breaches have the potential to disrupt energy supplies and cause significant damage to urban systems. Furthermore, it is imperative to prioritize the safeguarding of personal data, as smart meters and sensors amass a substantial amount of information regarding energy consumption and the behaviors of residents.

The presence of financial constraints is a notable challenge. Substantial financial resources, which many cities, municipalities, and private entities are unable to cover independently. These costs encompass not only the technology itself, but also research, planning, implementation, and subsequent maintenance of the systems, which represents a complex financial burden. Many cities, particularly smaller ones, face budgetary constraints and a paucity of resources that would enable them to implement ambitious projects. The long-term economic benefits, including energy savings, are often only evident after a considerable period, which can diminish the impetus for cities to initiate the implementation of these solutions. A further issue is the lack of motivation for the private sector, which perceives the return on investment in smart solutions to be long-term (SBA, 2024).

The existence of technological barriers is a salient factor in this context. The implementation of contemporary technologies, including smart meters, IoT systems, and decentralized energy networks, necessitates a significant degree of expertise. The implementation of smart systems, including smart grids, smart public lighting, and energy consumption monitoring systems, hinges upon the existence of a robust infrastructure. Additionally, the absence of uniform technical standards for smart energy solutions hinders their extensive utilization in practice. A case in point is the implementation of Smart Grids in Banská Štiavnica, where the reconstruction of a segment of the distribution system proved to be a prerequisite, resulting in an escalation in project costs and an extension in the implementation timeline (Energiu, 2020).

The presence of legislative and administrative barriers has been identified as a significant impediment to progress. In the energy sector, for instance, antiquated regulations can impede the potential for energy sharing between households or the effective integration of renewable energy sources into public energy networks. A notable example is the solar power plant construction project in the Nitra region, which experienced a delay of more than two years due to the complexity of permits and the evolution of legislative conditions (MIRRI, 2017).

The introduction of new technologies can be impeded by social and cultural factors. If residents do not comprehend the advantages of smart solutions or harbor concerns regarding their potential disadvantages. For instance, in Bratislava, a portion of the population voiced

their opposition to the implementation of smart meters, citing concerns regarding the collection of personal data and the monitoring of energy consumption (Vávra, 2022).

The implementation of Smart City policies in the domain of energy presents a multitude of opportunities that have the potential to markedly enhance the quality of life for residents and promote sustainable urban development. A significant opportunity exists in the development of renewable energy sources.

These resources have the capacity to assist in reducing the country's dependence on fossil fuels while concurrently supporting energy decentralization. Smart grids have the potential to enhance the stability of energy supplies and facilitate their optimization (Ministry of Economy of SR, 2025).

Digitization is a pivotal component of contemporary energy management. The advent of digital solutions, such as smart metering devices and advanced analytical tools, has enabled the real-time monitoring and optimization of energy consumption.

The establishment of energy communities, wherein individuals and households engage collectively in the production and consumption of energy to enhance social cohesion, reduce energy expenditure, and contribute to the development of local economies. Public-private partnerships have the potential to facilitate not only the financial aspect of project implementation but also the integration of technological advancements to expedite the implementation of intelligent solutions and enhance their efficacy.

Another significant opportunity is cooperation with the private sector such as the collaboration between municipal authorities and private investors. A notable example is the collaboration between the city of Košice and local companies in the modernization of public lighting, which involved the implementation of energy-saving and intelligent LED technologies.

Furthermore, Slovakia stands to benefit from the strategic initiatives employed in other European cities, which have demonstrated success in addressing these challenges.

Conclusion

Based on the findings, we have arrived in conclusion that Smart City energy policy is a foundational instrument for cities aspiring to achieve sustainable development, enhance the quality of life of their residents, and concurrently address climate challenges. By and large, the integration of smart technologies has been demonstrated to facilitate enhanced resource efficiency, curtailed energy intensity, and the promotion of sustainable development. A significant component of these strategies involves the utilization of renewable energy sources and technologies to mitigate greenhouse gas emissions. However, the successful implementation of smart solutions necessitates effective cooperation between the public sector, private entities, and citizens. Generally speaking, the Smart City concept is a modern and innovative approach to urban development that utilizes technology to enhance the quality of life for residents, increase resource efficiency, and support sustainable development. As demonstrated in this paper's analysis, energy, as one of the primary components of a Smart City, plays a pivotal role in the transformation of cities into intelligent and ecological environments. Despite its limitations in implementing smart city solutions, Slovakia is demonstrating positive progress in the development of intelligent energy systems. Significant examples of the implementation of Smart City solutions in Slovakia have been identified. To put it in nutshell, the implementation of contemporary solutions, including smart grids, renewable energy sources, and intelligent energy management, offers urban centers the potential to curtail energy expenditures, enhance the quality of life for their inhabitants, and concurrently promote environmental sustainability.

References:

- Alpagut, B., Akyürek, Ö., & Mitre, E. M. (2019). *Positive energy districts methodology and its replication potential*. Proceedings, 11. Multidisciplinary Digital Publishing Institute.
- Cavada, M., Hunt, D., & Rogers, C. (2017). *The little book of smart cities*. RIBA Publishing.
- Eco-Logic. (2025). Komplexná modernizácia časti verejného osvetlenia v meste Trenčín. <https://www.ecologic.sk/pripadove-studie/81-komplexna-modernizacia-casti-verejneho-osvetlenia-v-meste-trencin>
- EKPK. (2023). *Smart city v doprave mesta Prešov*. <https://ekpk.sk/smart-city-v-doprave-mesta-presov/>
- ElaadNL. (2017). *FlexPower Amsterdam*. <https://elaad.nl/en/projects/flexpower-amsterdam/>
- Energium. (2020). *Nízkoúhľiková stratégia mesta Banská Štiavnica*. https://www.banskastiavnica.sk/wp-content/uploads/2022/07/NUS-Banska-Stiavnica_20200430.pdf
- Euractiv. (2011). *Dánsko postaví energetiku kompletne na obnoviteľných zdrojoch*. <https://euractiv.sk/section/fosilne-paliva/news/dansko-chce-do-roku-2050-vyrabat-vsetku-elektrinu-z-oze-018214/>
- Euractiv. (2024). *Bratislava dobieha svetové metropoly: Vallov klimatický tím chce znížiť emisie o polovicu*. <https://euractiv.sk/section/ekonomika-a-euro/interview/bratislava-dobieha-svetove-metropoly-vallov-klimaticky-tim-chce-znizit-emisie-o-polovicu/>
- European Commission. (2020). *GrowSmarter: Transforming cities for a smart, sustainable Europe*. Directorate-General for Energy. <https://smart-cities-marketplace.ec.europa.eu/projects-and-sites/projects/growsmarter>
- European Commission. (2025a). *Energy and smart cities*. Directorate-General for Energy. https://energy.ec.europa.eu/topics/clean-energy-transition/energy-and-smart-cities_en
- European Commission. (2025b). *Europe's digital decade: Digital targets for 2030*. https://commission.europa.eu/strategy-and-policy/priorities-2019-2024/europe-fit-digital-age/europes-digital-decade-digital-targets-2030_en
- European Commission. (2025c). *Cluster 5: Climate, energy and mobility*. https://research-and-innovation.ec.europa.eu/funding/funding-opportunities/funding-programmes-and-open-calls/horizon-europe/cluster-5-climate-energy-and-mobility_en
- European Commission. (2025d). *mySMARTLife Helsinki*. *Smart Cities Marketplace*. <https://smart-cities-marketplace.ec.europa.eu/projects-and-sites/projects/mysmartlife/mysmartlife-helsinki>
- Gabaldón Moreno, A., Vélez, F., Alpagut, B., Hernández, P., & Sanz Montalvillo, C. (2021). *How to achieve positive energy districts for sustainable cities: A proposed calculation methodology*. Sustainability, 13, 710. <https://doi.org/10.3390/su13020710>
- I amsterdam. (2024). *Powering the future: Amsterdam's rise as a renewable energy hub*. <https://www.iamsterdam.com/en/business/key-sectors-for-business/renewable-energy-cleantech/powering-the-future-amsterdams-rise-as-a-renewable-energy-hub>
- Lindholm, O., & Reda, F. (2021). *Positioning positive energy districts in European cities*. Buildings, 11(1), 19. <https://doi.org/10.3390/buildings11010019>
- Mara de Pater. (2016). *Energy atlas*. *Amsterdam Smart City*. <https://amsterdamsmartcity.com/updates/project/energy-atlas>
- Mesto Trenčín. (2021). *Moderné technológie – Smart plán mesta Trenčín*. <https://trencin.sk/pre-obcanov/investicie/projekty-eu/moderne-technologie-smart-plan-mesta-trencin>
- Mesto Trenčín. (2022). *Od 1. septembra začnú v Trenčíne jazdiť nové autobusy MHD*. <https://trencin.sk/aktuality/od-1-septembra-zacnu-v-trencine-jazdit-nove-autobusy-mhd/>

- Mesto Žilina. (2024). *Mesto dokončilo rozsiahlu modernizáciu verejného osvetlenia*. <https://zilina.sk/mesto-dokoncilo-rozsiahlu-modernizaciju-verejneho-osvetlenia/>
- Ministry of Economy of the Slovak Republic. (2025). *Energetická politika a stratégia energetickej bezpečnosti*. <https://www.mhsr.sk/energetika/energeticka-politika/energeticka-politika-a-strategia-energetickej-bezpecnosti>
- Minnovation Technologies. (2024). *Example of a smart city: A case study into Barcelona*. <https://minnovation.com.au/smart-cities-2/example-of-a-smart-city-a-case-study-into-barcelona>
- MIRRI SR. (2017). *Využitie slnečnej energie na výrobu elektriny – Fotovoltaická elektrárň FVE Banská 7*. ITMS2014+. <https://www.itms2014.sk/projekt?id=b41757fc-6319-45b3-b3e8-20ed1c26e271>
- MIRRI SR. (2022a). *Využitie IoT v rámci inteligentnej samosprávy*. https://www.smartcity.gov.sk/wp-content/uploads/2023/12/Vyu%C5%BEitie-IoT-v-r%C3%A1mci-inteligentnej-samospr%C3%A1vy_final.pdf
- MIRRI SR. (2022b). *Udržateľná štvrť Seestadt Aspern vo Viedni*. <https://www.smartcity.gov.sk/projekty-v-zahranici/udrzatelna-stvrt-seestadt-aspern-vo-viedni/>
- Mohanty, S. P., Choppali, U., & Kougianos, E. (2016). *Everything you wanted to know about smart cities: The internet of things is the backbone*. IEEE Consumer Electronics Magazine, 5(3), 60–70. <https://doi.org/10.1109/MCE.2016.2556879>
- Property & Environment. (2020). *VSE predstaví prvý komplexný projekt Smart City*. <https://www.energie-portal.sk/Dokument/vse-predstavi-prvy-komplexny-projekt-smart-city-106674.aspx>
- Rojko, M. (2020). *Lokálne energetické komunity v EÚ sa rozvíjajú aj napriek legislatívnym prekážkam*. Property & Environment. <https://www.energie-portal.sk/Dokument/lokalne-energeticke-komunity-v-eu-sa-rozvijaju-aj-napriek-legislativnym-prekazkam-106280.aspx>
- Sanseverino Riva, E. (2017). *Smart cities: Case studies – Amsterdam*. University of Palermo.
- SBA. (2024). *Smart cities a MSP na Slovensku*. <https://monitoringmsp.sk/2021/05/05/smart-cities-a-msp-na-slovensku/>
- SITA. (2023). *Záujem firiem o inteligentné riadenie energetickej spotreby rastie*. <https://sita.sk/venergetike/zaujem-firiem-o-inteligentne-riadenie-energetickej-spotreby-rastie-na-slovensku-ho-donedavna-vyuzivalo-len-10-percent-nefinancnych-spolocnosti/>
- Smartcityvpraxi.cz. (2015). *Aspern Seestadt: Ďalší krok k rozvoju smart city Viedeň*. https://smartcityvpraxi.cz/zajimave_projekty_4.php
- Stadt Freiburg. (2020). *Freiburg im Programm „Smart Cities 2020“*. <https://digital.freiburg.de/neuigkeiten/detail/freiburg-im-programm-smart-cities-2020>
- Techbox. (2024). *V Košiciach budú jazdiť 18-metrové klbové elekrobusy*. <https://www.techbox.sk/v-kosiciach-budu-jazdit-18-metrove-klbove-elektrobusy-nabiju-sa-z-troleji>
- Tokarčík, D. (2024). *Mesto zmodernizuje verejné osvetlenie za vyše 1,5 milióna eur*. <https://www.kosice.sk/clanok/mesto-zmodernizuje-verejne-osvetlenie-za-vyse-1-5-miliona-eur>
- Van der Stoep, A. (2016). *City-zen: Smart grid in Amsterdam Nieuw-West*. Amsterdam Smart City. <https://amsterdamsmartcity.com/updates/project/city-zen-smart-grid-in-amsterdam-nieuw-west>
- Vávra, M. (2022). *Stav plnenia cieľov trvalo udržateľného rozvoja v rámci hlavných miest krajín V4 s osobitným dôrazom na Bratislavu*. In MERKÚR 2022: Proceedings of the International Scientific Conference for PhD Students and Young Scientists.
- Wood, E. (2023). *What is a microgrid?* Microgrid Knowledge. <https://www.microgridknowledge.com/about-microgrids/article/11429017/what-is-a-microgrid>

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SLOVAKIA'S POSITION IN THE EUROPEAN INNOVATION AREA: COMPARISON WITH CENTRAL EUROPE AND DEVELOPMENT PROSPECTS FOR YEARS (2016–2023)¹

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Abstract: The aim of this paper is to analyze the development of Slovakia's innovation performance in comparison with selected Central European countries (the Czech Republic, Hungary, Poland) and the European Union average in the period 2016–2023. The analysis uses data from the Regional Innovation Scoreboard and the European Innovation Scoreboard, tracking changes in the Regional Innovation Index (RII), public and private expenditure on research and development (R&D), and the cooperation of small and medium-sized enterprises in innovation. The results show that, despite slight improvements in some indicators, Slovakia remains classified as an *emerging innovator*, similar to Poland and Hungary, while the Czech Republic already belongs to the higher category of *moderate innovators*. The comparison suggests that Slovakia lags behind mainly in private investment in R&D and in the internationalization of innovation activities. The article proposes measures to support Slovakia's transition to a higher category of innovation performance by strengthening public-private cooperation, improving innovation infrastructure, and supporting regional ecosystems.

Keywords: regional development, research and development, innovation performance

JEL: O31, O32, R11

Introduction

Innovation performance in the Central European region is driven by a complex interplay of internal and external factors that influence the ability of firms and regions to innovate effectively. These drivers include knowledge management, financial resources, regional cooperation, and the integration of technological and non-technological innovations. Innovation performance is also shaped by structural conditions, economic performance, and the ability to leverage international networks. The following sections describe these key drivers of innovation performance in Central Europe in detail. Knowledge management is a key driver of innovation performance, especially in professional services firms. Effective knowledge management involves the dissemination of best practices and the involvement of international knowledge networks, which can significantly increase business performance (Pörzse et al., 2012). Human capital, including investment in education and skills upgrading, is essential

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for promoting innovation. The lack of human capital for research and development activities is a significant problem, particularly in lower-middle-income countries (Bate, 2023). Access to financial resources is crucial for innovation, enabling companies to invest in research and development and other innovative activities. Economic performance measured by GDP per capita also plays an important role in distinguishing innovation performance between regions (Sára et al., 2013; Ganescu & Serbanica, 2021). The economic growth of Central and Eastern European countries is closely linked to innovation, with expenditure on research and development, patenting, and the number of researchers being key indicators of innovation performance (Petrariu et al., 2013).

Regional cooperation and institutional support are essential for improving innovation performance. Regional innovation system approaches and global production networks emphasize the importance of regional and international cooperation in the innovation process. Institutional support, including the implementation of innovation policies and the creation of supportive environments for innovation, is essential to foster a positive attitude towards competitors and to promote international partnerships (Gangaliuc, 2022). Achieving synergies between technological and non-technological innovations is essential for improving innovation performance. This includes integrating technological advances with organizational and process innovations (Sára et al., 2013). A broad concept of innovation that goes beyond investment in research and development emphasizes the importance of supporting both technological and non-technological innovation, upgrading skills, and integration into international networks (Ganescu & Serbanica, 2021). Structural conditions, such as industrial structures and economic performance, significantly influence innovation performance. Differences in these conditions explain differences in innovation performance between regions in Central and Eastern Europe and their counterparts outside the CEE (Tuominen M et al., 2004). Spatial patterns of innovation determinants, including local spillovers and social capital, also influence regional economic performance. Regions benefit economically from their locational advantages, which can increase innovation performance (Olejnik & Żółtaszek, 2020). Innovation capability is recognized as a critical determinant of long-term firm performance. In their meta-analysis of 153 studies, the authors confirm that companies engaging actively in innovation are more likely to achieve sustainable growth and global competitiveness. Therefore, innovation plays a fundamental role not only at the firm level but also in the broader context of regional development (Rubera & Kirca, 2012). Transformational leadership has emerged as a significant driver of creativity and organizational innovation. Leaders who can motivate and inspire their teams foster an environment conducive to the development of new ideas and their practical implementation.

This leadership style is particularly relevant in the dynamic environment of the knowledge-based economy (Gumusluoglu & Ilsev, 2009). The relationship between transformational leadership and organizational innovation performance has been widely studied. The authors highlight that leaders capable of articulating a clear vision and providing intellectual stimulation encourage employees to demonstrate higher creativity and embrace the risks associated with innovation processes (Jung et al., 2003). Cultural dimensions, as defined by Hofstede, play a crucial role in the implementation of innovation strategies across regions. Research shows that cultures with lower uncertainty avoidance and higher collectivist orientation are more likely to adopt innovative approaches that require teamwork and knowledge sharing (Kirkman et al., 2006). The economic growth of Central and Eastern European countries is strongly tied to innovation performance. Key indicators such as R&D investment, patenting activity, and the number of researchers are fundamental to understanding the disparities between regions and designing effective innovation policies (Petrariu et al., 2013).

1 Research design

This study focuses on analyzing Slovakia's position in the European innovation area in the period 2016–2023, comparing it with selected Central European countries (the Czech Republic, Hungary, Poland) and the European Union average. The main objective is to identify differences in Slovakia's innovation performance and to examine the factors that influence its ranking among emerging innovators. The analysis is based on data from the Regional Innovation Scoreboard (RIS) and the European Innovation Scoreboard (EIS) for the period 2016–2023. The following indicators were included in the analysis:

- Regional Innovation Index (RII)
- Public expenditure on research and development (% of GDP)
- Private expenditure on research and development (% of GDP)
- Share of employment in knowledge-intensive industries (%)
- Number of patent applications per million inhabitants

Descriptive and inferential statistics methods were used to process the data. Within descriptive statistics, basic parameters such as mean values, medians, standard deviations and year-on-year changes for individual innovation performance indicators were calculated. Bar charts and time series were used to visualise the differences between Slovakia, selected Central European countries (Czech Republic, Hungary, Poland) and the European Union average. Inferential statistics were used to test the significance of the differences between the studied groups. Before applying the tests, the normality of the data distribution was verified using the Shapiro-Wilk test. If normality was confirmed, an independent samples t-test was used to compare the Slovak averages with the EU average and selected Central European countries. If the normality assumption was not met, a non-parametric alternative in the form of the Mann-Whitney U test was applied. Statistical data processing was performed in JAMOVI software, while data visualisation was performed in Microsoft Excel.

Research assumption: we expect Slovakia to have a lower innovation performance than the average of the European Union and selected Central European countries in the period under review, with the differences being particularly significant in the area of private R&D expenditure.

Research question: Are there statistically significant differences in the innovation performance of Slovakia compared to selected Central European countries and the European Union average in the period 2016-2023?

Following the research question, 2 hypotheses were set:

H₀: There are no statistically significant differences in innovation performance between Slovakia and the European Union average and selected Central European countries in the period 2016-2023.

H₁: There are statistically significant differences in innovation performance between Slovakia and the European Union average and selected Central European countries in the period 2016-2023.

2 Results

We set a research question and two research hypotheses, which we empirically test. In the next part of the partial analysis and conclusion construction to test the research hypotheses, we examined each variable using descriptive statistics.

Figure 1: T test of innovation performance for year 2023

Independent Samples T-Test						
		Statistic	df	p		Effect Size
Value	Student's t	0.230	18.0	0.821	Cohen's d	0.128

Note. $H_a: \mu_{\text{Other countries}} \neq \mu_{\text{Slovakia}}$

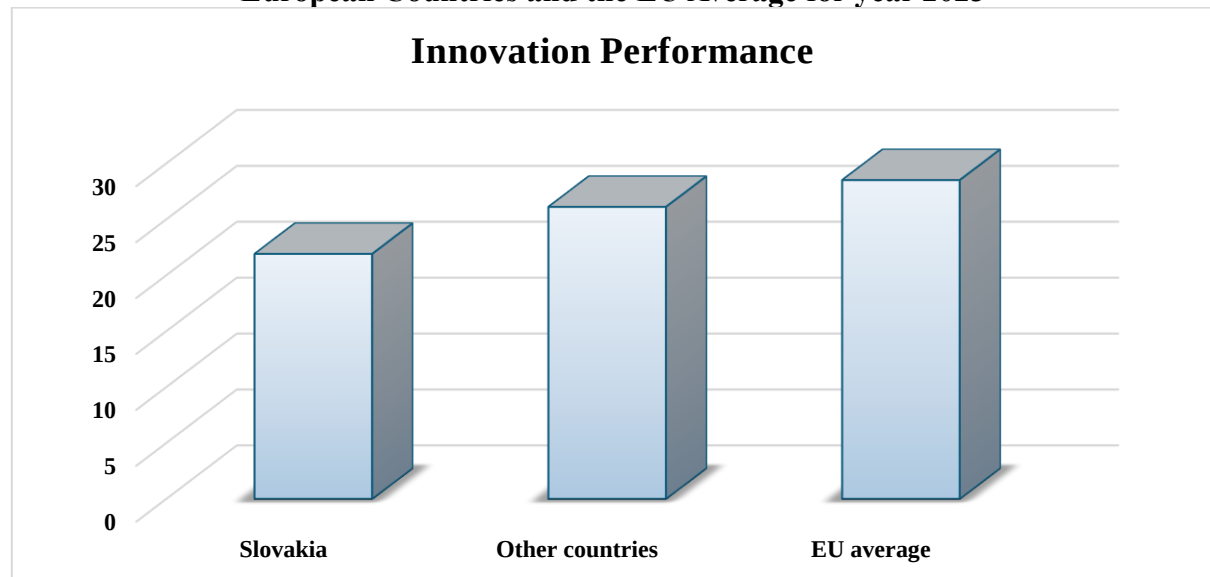
Source: Own processing based on Jamovi results

Figure 2: Descriptives results of innovation performance for year 2023

Group Descriptives						
	Group	N	Mean	Median	SD	SE
Value	Other countries	16	26.1	12.2	32.4	8.11
	Slovakia	4	21.9	10.8	30.7	15.3

Source: Own processing based on Jamovi results

Figure 3: Innovation Performance of Slovakia in Comparison with Other Central European Countries and the EU Average for year 2023



Source: Own processing based on Jamovi results

The conducted statistical analysis focused on comparing the innovation performance of Slovakia with other Central European countries and the average of the European Union. The findings are summarized in Figure 1, 2 and visualized in Figure number 3.

The descriptive statistics show that the mean innovation performance of Slovakia reached a value of 21.9, while the group of other countries achieved a slightly higher mean of 26.1. The median values for Slovakia and other countries were 10.8 and 12.2, respectively,

suggesting that most observations in both groups are concentrated at relatively comparable levels. The standard deviations, 30.7 for Slovakia and 32.4 for other countries, indicate similar variability within both groups. To test whether these observed differences are statistically significant, an independent samples t-test was conducted. The results revealed that the difference between Slovakia and the group of other countries was not statistically significant ($t(18) = 0.230$, $p = 0.821$). This high p-value indicates that any differences in the innovation performance between these two groups could be attributed to random variation rather than a systematic difference. Furthermore, the effect size calculated using Cohen's d was 0.128, which suggests a very small practical difference between the two groups.

Figure 1 provides a graphical representation of these findings, depicting the mean innovation performance of Slovakia and the group of other countries with their respective 95% confidence intervals. Although the mean value for Slovakia is slightly lower, the overlapping confidence intervals reinforce the conclusion that there is no substantial difference between the groups. Overall, the results indicate that Slovakia's innovation performance is comparable to other Central European countries and does not significantly deviate from the regional average. This finding suggests that Slovakia belongs to the same innovation performance cluster as its neighboring countries and does not exhibit outlier characteristics, either positively or negatively, within the examined indicators.

3 Discussion

The results of this study offer valuable insights into the innovation performance of Slovakia within the broader context of Central and Eastern Europe (CEE). Building upon the introduction, which highlights the complex interplay of internal and external factors influencing regional innovation, the findings reveal that Slovakia's innovation performance remains largely comparable to its CEE peers and the EU average.

The analysis showed no statistically significant differences between Slovakia and other countries in the region, suggesting that Slovakia shares similar structural conditions and faces comparable challenges in fostering innovation. This finding aligns with Petrariu et al. (2013), who emphasized the role of research and development (R&D) expenditure, patenting activity, and human capital as key indicators differentiating innovation performance across regions. Slovakia's mean innovation score of 21.9, compared to 26.1 for the group of other countries, highlights a slight lag but not to a statistically significant degree. A key determinant of innovation performance discussed in the literature is knowledge management. As Pörzse et al. (2012) note, the dissemination of best practices and engagement in international knowledge networks can enhance organizational innovation capacity. However, the results of this study suggest that Slovakia, despite moderate engagement in such networks, has not leveraged this potential to a degree that would create measurable differences relative to its regional counterparts.

Human capital is another crucial factor. Bate (2023) underlined the shortage of skilled R&D personnel as a constraint, particularly in lower-middle-income countries. While Slovakia invests in education and skills development, the absence of significant differences compared to neighboring countries may reflect similar levels of challenges in retaining and attracting talent for innovation-intensive sectors.

Access to financial resources and the role of economic performance also deserve attention. As noted by Sára et al. (2013) and Ganescu & Serbanica (2021), GDP per capita and private sector investment are pivotal for regional innovation disparities. Slovakia's moderate private R&D expenditure suggests the need for policies encouraging greater participation from businesses, which would complement public funding and help drive innovation forward. Regional cooperation and institutional support are widely recognized as enablers of innovation. Gangaliuc (2022) emphasized the importance of fostering environments that encourage

collaboration and international partnerships. The findings of this study imply that Slovakia's existing innovation policies, while effective in maintaining parity with CEE countries, require reinforcement to achieve convergence with Western European innovation leaders.

The integration of technological and non-technological innovations is another dimension where Slovakia's innovation ecosystem can improve. Combining technological progress with organizational and process innovations, as advocated by Sára et al. (2013), could help Slovak firms move up the value chain and enhance overall competitiveness.

Cultural dimensions, such as those described by Hofstede, might also influence Slovakia's innovation strategies. A collectivist orientation and moderate uncertainty avoidance can either facilitate or hinder innovation adoption, depending on how these cultural traits interact with institutional and economic structures (Kirkman et al., 2006).

In summary, while the results of this analysis confirm Slovakia's comparable standing within the CEE innovation landscape, they also underline the necessity of targeted strategies addressing structural, financial, and human capital constraints to foster substantial improvement. Bridging the gap with the EU average will likely require not only increased investments but also the cultivation of a more innovation-friendly ecosystem that integrates global knowledge flows and local capabilities.

Conclusion

Verification of research hypotheses and answer to the research question, based on the T - test conducted, we can state:

We accept the hypothesis H_0 -, There are no statistically significant differences in innovation performance between Slovakia and the European Union average and selected Central European countries in the period 2016-2023.

Hypothesis H_1 - we reject, there are no statistically significant differences in innovation performance between Slovakia and the European Union average and selected Central European countries in the period 2016-2023.

Based on the analysis we can answer the research question - Are there statistically significant differences in the innovation performance of Slovakia compared to selected Central European countries and the European Union average in the period 2016-2023?

Based on the conducted statistical analysis, it can be concluded that there are no statistically significant differences in the innovation performance of Slovakia compared to selected Central European countries and the European Union average in the period 2016–2023. The independent samples t-test performed to evaluate differences between Slovakia and the group of other countries yielded a non-significant result ($t(18) = 0.230$, $p = 0.821$). This high p-value suggests that any observed differences in the mean innovation performance could be attributed to random variability rather than systematic disparities between the groups.

Furthermore, the effect size (Cohen's $d = 0.128$) was found to be very small, indicating a negligible practical difference between Slovakia and the selected countries.

The descriptive statistics support these findings, as the mean value for Slovakia (21.9) was slightly lower than the mean for other countries (26.1), but the overlapping 95% confidence intervals confirm the absence of substantial differences. These results suggest that Slovakia's innovation performance during the observed period is largely comparable to that of other Central European countries, such as the Czech Republic, Poland, and Hungary, and does not significantly deviate from the European Union average. Therefore, the null hypothesis, which states that there are no statistically significant differences between Slovakia and the other countries in the selected indicators, is accepted.

Research limitation: although the paper provides relevant insights into the innovation performance of Slovakia in comparison with selected Central European countries

and the European Union average, but its results need to be interpreted with several limitations in mind.

1. The analysis is based on secondary data from the Regional Innovation Scoreboard (RIS) and the European Innovation Scoreboard (EIS), which provide aggregated data at the level of NUTS 2 countries and regions. These data may not capture intra-regional differences or specific factors influencing the innovation performance of individual regions.
2. The selection of indicators was limited to key metrics (R&D public and private sector, Regional Innovation Index, SME share of innovation), which means that other aspects of innovation capacity, such as the quality of collaboration between the academic and business sectors or technology transfers, were not included in the analysis.
3. Third, the analysis focused on the period 2016-2023, with some indicators only available for selected years. This may partly affect the ability to track longer-term trends and how they relate to policy measures to promote innovation.

References:

- Bate, A. F. (2023). The determinants of innovation performance: An income-based cross-country comparative analysis using the Global Innovation Index (GII). *Journal of Innovation and Entrepreneurship*, 12(1). <https://doi.org/10.1186/s13731-022-00248-6>
- Ganescu, M. C., & Serbanica, C. (2021). Regional innovation performance and structural conditions in Central and Eastern Europe: Embracing the broad-based innovation concept. *Ekonomia i Prawo*, 20(1), 107–119. <https://doi.org/10.12775/EiP.2021.007>
- Gangaliuc, C. (2022). The impact of endogenous and exogenous forces on innovation: A logical analysis of regional innovation systems in Central and Eastern Europe. *Research in Social Change*, 14(1), 13–28.
- Gumusluoglu, L., & Ilsev, A. (2009). Transformational leadership, creativity, and organizational innovation. *Journal of Business Research*, 62(4), 461–473.
- Jung, D. I., Chow, C., & Wu, A. (2003). The role of transformational leadership in enhancing organizational innovation: Hypotheses and some preliminary findings. *The Leadership Quarterly*, 14(4), 525–544.
- Kirkman, B. L., Lowe, K. B., & Gibson, C. B. (2006). A quarter century of culture's consequences: A review of empirical research incorporating Hofstede's cultural values framework. *Journal of International Business Studies*, 37(3), 285–320.
- Olejnik, A., & Żółtaszek, A. (2020). Tracing the spatial patterns of innovation determinants in regional economic performance. *Comparative Economic Research*, 23(4), 87–108. <https://doi.org/10.18778/1508-2008.23.04.05>
- Petrariu, I. R., Bumbac, R., & Ciobanu, R. (2013). Innovation: A path to competitiveness and economic growth. The case of CEE countries. *Theoretical and Applied Economics*, 20(5), 7–16.
- Pörzse, G., Takács, S., Fejes, J., Csedo, Z., & Sára, Z. (2012). Knowledge and innovation as value drivers in professional services firms: An empirical research in Central and Eastern Europe. *European Journal of Business and Management*, 4(8), 124–132.
- Rubera, G., & Kirca, A. H. (2012). Firm innovativeness and its performance outcomes: A meta-analytic review and theoretical integration. *Journal of Marketing*, 76(3), 130–147. <https://doi.org/10.1509/jm.10.0498>
- Sára, Z., Csedo, Z., Fejes, J., Tóth, T., & Pörzse, G. (2013). Innovation management in Central and Eastern Europe: Technology perspectives and EU policy implications. *Journal of Economics and Sustainable Development*, 4(4), 48–55.
- Tuominen, M., Rajala, A., & Möller, K. (2004). How does adaptability drive firm innovativeness? *Journal of Business Research*, 57(5), 495–506.

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GREEN ASPECT OF RECOVERY AND RESILIENCE PLAN

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Abstract: The financing of the Recovery and Resilience Plan should end at the end of 2026. In practice, this means that all projects financed by this instrument should have already been started or completed. Given this fact, it is possible to partially assess the need and effectiveness of national recovery plans. In the article, we focus on the established milestones and their implementation within the first pillar - green transformation in the Recovery and Resilience Mechanism. The COVID-19 crisis disrupted the implementation of previously adopted strategies regarding environmental measures, and therefore it was necessary to incorporate components focused on measures related to environmental protection into the national recovery plans.

Keywords: recovery and resilience plan, green transformation, milestone achievement

JEL: Q50, Q51, Q54

Introduction

The EU's most comprehensive environmental policy document is the European Green Deal. It is a new growth strategy that aims to transform the EU into a fair and prosperous society with a modern, competitive and resource-efficient economy, with net-zero greenhouse gas emissions by 2050 and where economic growth is decoupled from resource use (European Commission, 2019). It emphasises that all policy areas - energy, transport, industry, agriculture, budgetary policies and others - should contribute to protecting the environment and, in particular, the climate.

However, the European Green Deal is not the first strategic document that responds to the need for environmental protection measures. The climate and energy packages of 2010 and 2014 and the Energy 2020 document were aimed at reducing energy consumption within the EU and at targets for reducing air emissions. The Europe 2020 strategy was a document that focused on several goals, including the goal of reducing emissions. An important strategic goal in reducing energy consumption was the Energy Union document of 2015, which also set goals in the area of diversification of energy sources, but also drew attention to innovation and new technologies in the area of energy use. The European Green Deal is a broadly conceived strategic document focused on all areas of economic policies of the EU Member States (European Commission, 2019).

The Recovery and Resilience Facility was established by Regulation (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 (Regulation (EU) 2021/241) in response to the consequences of the COVID-19 crisis. The Facility was part of the temporary NextGeneration Instrument (NGEU), which generated funds to address the consequences of the health crisis and was part of the long-term EU budget for 2021-2027. The Recovery and Resilience Facility focused on policy areas of European interest divided into six pillars, which are: green transition; digital transformation; smart, sustainable and inclusive growth, including economic cohesion, jobs, productivity, competitiveness, research, development and innovation and a well-functioning internal market with strong small and medium-sized enterprises; social and territorial cohesion; health and economic, social and institutional resilience, with the aim of, among other things, increasing crisis preparedness and response;

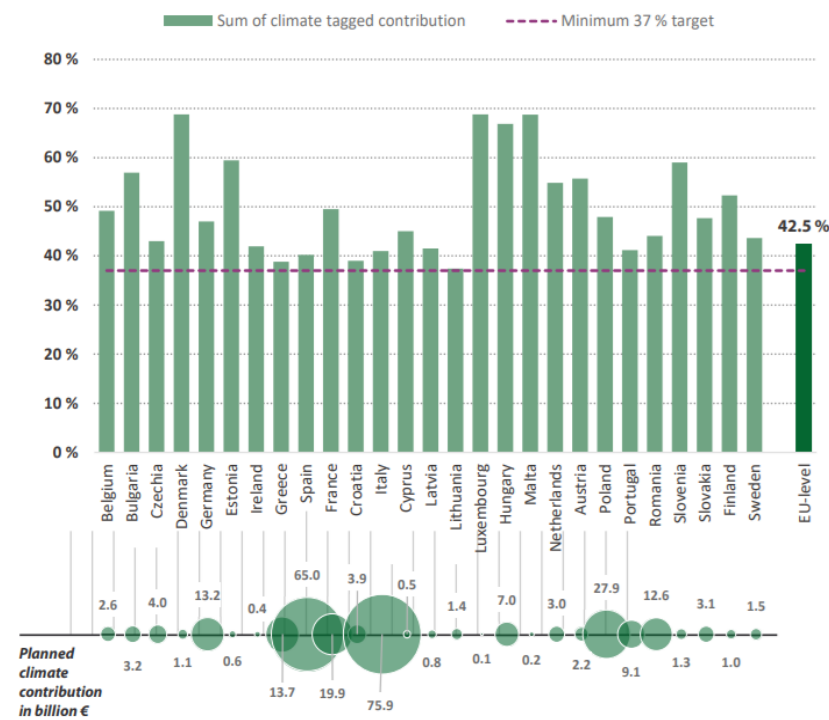
and policies for the next generation, children and youth, such as education and skills. The COVID-19 crisis was a black swan in the implementation of “green” solutions, not only of the European Green Deal measures, but also an opportunity for real recovery plans in line with the Green Deal (Vaguero et al., 2021, p.1). The EU Recovery and Resilience Plan’s record-breaking €750 billion financial package was subsequently complemented by the RePowerEU financial instrument of €20 billion in grants (European Commission, 2022). Its purpose is to strengthen the EU’s strategic autonomy by diversifying its energy supply and ending its dependence on fossil fuel imports from Russia.

The situation that has arisen in the world and in Europe as a result of the COVID-19 disease has resulted in solutions to protect the air and climate being replaced by measures that were supposed to protect the health and lives of their citizens. On the other hand, the situation has become an opportunity to rebuild European economies and increase their resilience. In addition to these aspects, measures to protect the environment – a pillar of the green transition – have also been included in the national recovery plans. The EU recovery plan includes investments in environmentally friendly technologies, including green public transport and vehicles, more efficient buildings and public spaces, clean water, circular waste management, biodiversity protection, green spaces in cities, an increase in renewable energy sources and greener agriculture for healthy food.

1 Green transformation

The financing of the recovery plans had several rules – 37% of the allocated funds had to be allocated to measures related to the green transition and 20% to be allocated to measures for spending in the digital area. Overall, Member States allocated 42% of the allocated funds within the national recovery plans to measures in the green transition pillar, with Luxembourg (80.5%) the largest percentage, Spain (38.14%) the smallest, Slovakia (41.08%) allocated to the green transition pillar (European Commission, 2025).

Figure 1: RRF expected climate contribution by member state



Source: EDA, 2024

The Recovery and Resilience Facility Regulation requires that the allocation of funds to climate objectives is assessed *ex ante* based on cost estimates provided by Member States in their recovery and resilience plans. The Recovery and Resilience Facility sets out a climate tracking methodology, which sets out the areas of support and coefficients for calculating support for climate and environmental objectives.

The highest coefficients within the climate objectives (100%) are, for example, for research and innovation processes, technology transfer and cooperation between enterprises focusing on a low-carbon economy, resilience and adaptation to climate change; for the renovation of existing residential buildings to ensure energy efficiency; for energy from renewable sources; for newly built or renovated railways. To achieve the environmental objectives, the highest coefficients (100%) have been determined for measures in the field of adaptation to climate change and the prevention and management of climate-related risks: floods, fires, storms, droughts, earthquakes and technological accidents (Regulation (EU) 2021/241).

The green transition played a secondary role in the implementation and discussion of the RRF, despite its formal prioritization within the EU policy framework (Kökény, 2025). EU citizens and political leaders expected that the measures in the recovery plans would appear primarily measures that showed the weaknesses and threats to the economies and functioning of the Member States against the background of the health crisis. These included investments in health, access to education, programs to support entrepreneurship, rural development and investments that would eliminate the consequences of the actions taken by governments during the period 2020-2022. Despite a slight “political disregard” of green solutions, the European Commission pushed for a mandatory share of the green transition of more than a third of the allocations for each Member State.

The European Union has expanded its mechanisms for monitoring and reporting on green spending under the RRF. Publicly available overviews, country comparisons and progress reports can help build accountability and foster public and political engagement. Such transparency mechanisms could serve as a soft enforcement tool, encouraging countries to meet their green commitments due to reputational concerns (Limosany et al, 2025).

However, several Member States' plans suggest that RRF funds could be used to finance already planned infrastructure measures, particularly in South-Eastern and Eastern Europe. For example, the Bulgarian draft recovery plan relies heavily on investments in energy efficiency improvements that do not significantly extend beyond measures already adopted in the national long-term housing modernisation strategy. There are also indications that similar approaches are being followed in the plans of Slovenia and Hungary (Schwarze&Sushchenko, 2021, p. 14).

UNEP defines a green economy as one that results in improved human well-being and social equity, while significantly reducing environmental risks and ecological scarcities. In its simplest expression, a green economy can be thought of as one which is low carbon, resource efficient and socially inclusive. In a green economy, growth in income and employment should be driven by public and private investments that reduce carbon emissions and pollution, enhance energy and resource efficiency, and prevent the loss of biodiversity and ecosystem services. (UNEP, 2011, p.19) In the context of the previous definition, investments in green transformation within recovery plans are practically in line with the objectives that were set when creating tools and mechanisms to eliminate the consequences caused by the COVID-19 disease.

here is also a positive association between attention to environmentally sustainable development goals and projected GDP growth, suggesting that investments and reforms aimed at promoting sustainability, as outlined in the Recommended Review Plans (RRPs), can not only help achieve these goals but also stimulate economic growth (Limosani et al., 2025).

The Recovery and Resilience Facility can be seen primarily as a tool for addressing the consequences of the health crisis, but also all aspects related to it. EU citizens were confronted with the fact that the measures of the governments of individual Member States were in sharp confrontation with the fundamental freedoms of the common market, which had far-reaching negative consequences for citizens. Basic social, educational, and health standards were also threatened. It was right to expect that the financial instruments of the recovery plans would be focused on the areas that proved to be most at risk from this crisis and possible future crises with similar consequences. However, the area of recovery plans within the framework of the green transition appears to be an opportunity, e.g. for the creation of new jobs.

One of the positive consequences of the green transition is the creation of new jobs. Employment in this area increased from 0.6 million full-time equivalents in 2000 to 2.7 million full-time equivalents in 2022, i.e. more than 2 million full-time equivalent jobs were created – also as a result of renewable energy and energy efficiency measures. While in 2000 environmental protection accounted for more than three quarters (75%) of employment in the environmental economy, in 2022 this share had decreased to 57% following the creation of jobs related to renewable energy and energy efficiency (Eurostat, 2015).

1.1 Milestones and measures of the green transition of the EU and the Slovak Republic

Within the green transition pillar, 3,119 milestones and 1,231 measures were set in the national recovery plans, and 96 milestones and 50 measures were set in the Slovak recovery plan. (European Commission, 2025). The Slovak recovery plan includes 6 components – renewable energy sources and energy infrastructure, building renovation, sustainable transport, industrial decarbonisation, climate change adaptation and REPowerEU.

Within renewable sources, the goal is to achieve a 32% share of energy from renewable sources. Investments from the recovery plan should significantly contribute to the goal of reducing energy consumption in buildings by 40% by 2050 and at the same time reducing emissions from buildings by 79% compared to 2020. When building transport infrastructure and subsequent investments in ecological transport, over 100 km of railways will be reconstructed and 200 km of new cycling infrastructure will be built. Slovakia has committed to reducing emissions by at least 2.6 million tons of CO₂ eq per year. As part of climate change adaptation, flood protection measures and protective measures in protected areas will be built. REPowerEU is focused on the renovation of buildings (Plán obnovy, 2021).

Table 1 Green transition pillar: Breakdown of expenditure supporting the green transition per policy area in EU and Slovak Republic in %

<i>Policy area</i>	<i>EU</i>	<i>Slovakia</i>
Energy efficiency	26	55
Sustainable mobility	25	26
Renewable energy and networks	20	11
Other climate change mitigation	6	0
R&D&I in green activities	6	2
Sustainable use and protection of water and maritime resources	6	0
Transition to a circular economy	4	0
Climate change adaption	2	4
Protection and restoration biodiversity and ecosystem	2	1
Pollution prevention and control	1	0
Green skills and jobs	1	1

Source: https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/green.html

According to Regulation 2021/241, the implementation of the mechanism is to be monitored and evaluated through common indicators, through a “scoreboard”. For the green transition pillar, savings in annual primary energy consumption in MWh/year, additional installed operational capacity in the field of renewable energy in MW, infrastructure for alternative fuels (filling/charging stations - their number), population benefiting from protective measures against floods, wildfires and other climate-related natural disasters expressed in number of persons (Regulation (EU) 2021/2106). Within the EU, 35% of the milestones in the first pillar have been met (European Commission, 2025).

This approach is followed by the European Court of Auditors (ECA), which has already published several special reports on the issue of financing environmental regulations from the EU budget. ECA Special Report No. 14 of 2024 examined the process of designing and implementing green transition measures in recovery and resilience plans, selecting four Member States: Greece, Croatia, Portugal and Slovakia.

When evaluating climate coefficients (Regulation (EU) 2021/241), these were overestimated for new buildings because there are no energy savings, which resulted in an overestimation of the mechanism by 34.5 billion. The report also states that the construction of new buildings results in a significant increase in greenhouse gas emissions. In Slovakia, the only objective of the sub-measure on adaptation to climate change concerns the selection of projects. The Commission will disburse funds without knowing whether the projects contribute to the objective of the measure or whether they have even been completed. (European Court of Auditors, 2024)

Conclusion

The green transition under the Recovery Plan is not a one-off project, but a long-term direction that will fundamentally affect the future of the citizens of the European Union. It represents an opportunity to modernise the economy, increase its resilience and at the same time improve the quality of life. However, success will depend on the ability to effectively implement reforms, support innovation and at the same time respect the settings of control mechanisms in their implementation. In any case, the green transition can become an engine of sustainable growth and competitive advantage of the European Union in the coming decades.

The primary objective of the recovery plans – elimination of the consequences of the crisis caused by COVID-19, especially in healthcare, social services, education, etc. was supplemented by some milestones that at first glance do not meet the stated objectives. The governments of the member states had practically free rein in determining the basic components of the recovery plans and setting milestones. The green transition pillar was tasked with bringing the aspect of environmental measures back to the fore. It depended on the governments how they could implement, within this pillar, those measures that primarily fulfilled the expected objectives of the mechanism to support recovery and resilience – e.g. healthcare reforms, education reforms. The European Court of Auditors points out in its reports that it is analysing in detail the investments from the recovery plan in green solutions, whether they actually meet the objectives of reduced energy intensity, climate protection and whether the indicators on the basis of which the projects were included in the financing system from the recovery plans are not overestimated.

In Slovakia, one measure concerning the construction and renovation of hospitals is covered by an indicator of savings in annual primary energy consumption. The ECA (2024) considers that the construction of new buildings does not lead to any energy savings. The only other indicator for this measure comes from its target, which is related to the number of beds. However, this is not sufficient to assess the performance and climate impact of the measure.

Many projects within the framework of the green transition show not only doubts about the achievement of the goals of reducing emissions and improving the climate, but there is

a risk that, although they create new jobs, the labor market is not sufficiently prepared for the demand for qualified labor. The biggest risk in meeting the goals of the Recovery and Resilience Mechanism in the green transition pillar lies in its limited duration, but the goals in the field of environmental protection are long-term and therefore their fulfillment cannot be predicted with complete clarity.

References:

- Commission Delegated Regulation (EU) 2021/2106 of 28 September 2021 on supplementing Regulation (EU) 2021/241 of the European Parliament and of the Council establishing the Recovery and Resilience Facility by setting out the common indicators and the detailed elements of the recovery and resilience scoreboard
- European Commission (2022). Communication from the Commission to the European Parliament, the European Council, the Council, the European economic and social committee and the committee of the regions REPowerEU plan COM (2022) 230 final}
- European Court of Auditors (2024) *Special report 14/2024: Green transition – Unclear contribution from the Recovery and Resilience Facility* <https://www.eca.europa.eu/en/publications/SR-2024-14>
- European parliament (2021) *REGULATION (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021* establishing the Recovery and Resilience Facility <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R0241>
- European Commission (2025). *Recovery and Resilience Scoreboard* https://ec.europa.eu/economy_finance/recovery-and-resilience-scoreboard/index.html?lang=en
- European Commission. (2019) COMMUNICATION FROM THE COMMISSION *The European Green Deal* <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52019DC0640>
- Eurostat (2025) https://ec.europa.eu/eurostat/statisticsexplained/index.php?title=Environmental_economy_%E2%80%93_statistics_on_employment_and_growth
- Kökény, L., Kmetty, Z. & Hortay, O. (2025) Political positioning of Recovery and Resilience Facility (RRF) discourse – The loss of green objectives. *Sustainable Futures, volume 10, december 2025, 101068* <https://doi.org/10.1016/j.sfr.2025.101068>
- Limosani, M., Millemaci, E. & Mustica, P. (2025). Do green policies enhance short-term economic growth? Assessing EU Recovery and Resilience Plans through the lens of Sustainable Development Goals. *Economic modelling Volume 147, June 2025, 10704* <https://doi.org/10.1016/j.econmod.2025.107044>
- Plán obnovy SR <https://www.planobnovy.sk/kompletny-plan-obnovy/zelena-ekonomika/>
- REGULATION (EU) 2021/241 of the European Parliament and of the Council of 12 February 2021 establishing the Recovery and Resilience Facility <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:32021R0241>
- Schwarze, R.- Sushchenko, O. (2021). A Green and Resilient Recovery for Europe WORKING PAPER - OCTOBER 2021, p.1-24,
- UNEP (2011). Towards to GREEN economy Pathways to Sustainable Development and Poverty Eradication -2011 https://sustainabledevelopment.un.org/content/documents/126GER_synthesis_en.pdf
- Vaquero, M.G., Sánchez-Bayón, A. & Lominchar, J. (2021). European Green Deal and Recovery Plan: Green Jobs, Skills and Wellbeing Economics in Spain. *Energies 2021, 14, 4145.1-20.* <https://doi.org/10.3390/en14144145>

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INNOVATION AND CREATIVE DESTRUCTION IN EUROPE

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Abstract: Innovation represents a fundamental driver of long-term economic growth, productivity, and competitiveness. However, innovation also generates structural shifts described by Joseph Schumpeter as *creative destruction*, a process through which new technologies, business models, and industries replace outdated ones. Despite its strong scientific capacity and world-class research institutions, Europe continues to lag behind global competitors—particularly the United States and China—in scaling high-tech firms, attracting risk capital, and commercializing research results. This paper examines the theoretical foundations of innovation and creative destruction, analyses Europe's innovation performance, and discusses the success factors underlying Switzerland's long-standing position as the world's most innovative economy. Based on recent OECD, IMF, and World Bank reports, the study offers policy recommendations aimed at strengthening Europe's innovation capacity while managing the socio-economic consequences of creative destruction.

Keywords: innovation, creative destruction, R&D, venture capital, competitiveness

JEL: O31, O32, O40

Introduction

Sustainable economic growth has long been considered a primary objective of modern economies. Economic expansion generates wide-ranging positive effects on society, including poverty reduction, improved access to public services such as healthcare and education, increased employment opportunities, and overall economic stability. Yet contemporary economies face a complex constellation of challenges—rising inflation, ageing populations, geopolitical tensions, China's economic slowdown, and climate change—that require profound structural adjustments in how societies live, work, learn, commute, and produce. Achieving long-term growth under these conditions depends increasingly on the capacity to innovate and adapt to rapid technological change.

Innovation has been at the centre of economic analysis since the seminal works of Joseph A. Schumpeter, who conceptualized capitalism as a system propelled by continuous technological change and industrial transformation (Schumpeter, 1942). Contemporary empirical research confirms that innovation represents a decisive driver of productivity growth in advanced economies, with estimates showing that technological progress accounts for a substantial share of long-term economic expansion (McKinsey & Company, 2021). According to the OECD (2023), innovation is indispensable for responding to structural pressures such as demographic shifts, digital transformation, environmental challenges, and intensifying global competition.

At the same time, innovation is inseparable from the process Schumpeter famously termed *creative destruction*, whereby new technologies, production methods, and business models replace outdated ones, generating both economic benefits and significant transition costs. Creative destruction introduces new opportunities for firms and workers who adapt successfully, but also displaces companies, industries, and skills that fail to evolve (Aghion, Akcigit & Howitt, 2015; Komlos, 2017). As technological change accelerates in the era of the fourth industrial revolution, these dynamics are more visible than ever: automation,

digital platforms, artificial intelligence, and advanced manufacturing are reshaping labour markets and the structure of entire industries (UNCTAD, 2023).

Innovation enables firms to become more productive, cost-efficient, and competitive. Economies that embrace innovation tend to attract more foreign direct investment, retain highly skilled labour, and demonstrate stronger performance during periods of uncertainty or crisis. However, every major technological advance inevitably results in the decline of older products and services, reinforcing the dual nature of innovation: constructive in its contribution to growth, but destructive in its structural impact.

In addition to its economic function, innovation has far-reaching social implications. Enhanced technologies generate higher living standards through better services, longer life expectancy, and increased leisure time. Yet innovation also calls for significant policy interventions to reduce negative effects on vulnerable groups and regions exposed to industrial change. The IMF (2023) stresses that economies with strong innovation ecosystems recover more quickly from crises, as they are better equipped to reallocate resources, support retraining, and absorb technological shocks.

From an analytical standpoint, understanding innovation and creative destruction requires consideration of the institutional, financial, and regulatory environment in which they occur. The OECD (2023) highlights that effective innovation systems rely on robust R&D investment, collaborative ties between universities and industry, well-functioning labour markets, and supportive regulatory frameworks. In fragmented or rigid institutional settings, even strong scientific capacity may fail to translate into economic gains—a challenge highly relevant to Europe.

Given these dynamics, the goal of this paper is to evaluate the relationship between innovation and creative destruction within the European context, examine Europe's structural barriers to innovation leadership, and analyse the exceptional case of Switzerland—the most innovative economy in the world. The study combines a theoretical overview with comparative analysis of innovation indicators and international policy assessments, drawing on major institutional sources including the OECD, European Commission, IMF, and World Bank.

1 Innovation and Creative Destruction

Innovation is essential for enhancing productivity, strengthening competitiveness, and ensuring long-term economic growth in modern economies. However, the mechanisms through which innovation drives development are closely linked to structural transformation. As Joseph A. Schumpeter argued, capitalist development is propelled by cycles of technological breakthroughs, firm entry and exit, and industrial restructuring—a process he termed *creative destruction* (Schumpeter, 1942). This dynamic relationship between creation and destruction remains central to contemporary theories of endogenous growth.

Creative destruction describes the way new products, technologies, and business models replace older and less efficient ones. Modern economic research formalizes this idea through the Schumpeterian growth paradigm, which views innovation as the outcome of competition between incumbent firms and new entrants (Aghion, Akcigit & Howitt, 2015). Empirical contributions also confirm that competition plays a crucial role in stimulating innovation. Aghion et al. (2005) identified an “inverted U-shaped” relationship between competition and innovation: when competition is moderate, firms innovate to escape rivals, but when competition is either too weak or too intense, innovation incentives decline. This insight is highly relevant in markets with regulatory fragmentation—such as those found in parts of Europe — where insufficient competitive pressure constrains innovative performance.

Innovation-driven transformation unfolds through several mechanisms. New entrants introduce superior technologies and business models, while less productive incumbents decline or exit, contributing to higher aggregate productivity (Oster, 2015). Technological substitution

occurs when new technologies replace older ones, rather than complementing them; a well-known example is the displacement of DVD rentals by online streaming services, often referred to as the “Netflix effect” (Perry, 2015). Digital platforms such as Amazon, Uber, and Airbnb have disrupted established industries in retail, transportation, and hospitality by leveraging data and network effects (Medina et al., 2022). These dynamics illustrate how innovation reshapes entire sectors rather than improving them incrementally.

Technological change also has profound implications for labour markets. Automation and digitalization reduce demand for routine manual and cognitive tasks while increasing demand for advanced technological and analytical skills (UNCTAD, 2023; World Bank, 2024). Workers in declining sectors face job displacement, while new opportunities arise in high-skill, high-productivity industries. At the macroeconomic level, innovation reallocates capital and labour from low-productivity activities to high-growth sectors. Although this process is essential for long-term economic efficiency, it frequently imposes significant short-term adjustment costs—especially in regions dominated by declining industries.

Recent decades provide many clear examples of creative destruction in practice. The transformation of the music industry from physical formats to digital streaming platforms fundamentally altered revenue models and production methods (UNCTAD, 2023). The expansion of e-commerce has reshaped traditional retail by offering consumers greater accessibility and lower prices while accelerating the decline of brick-and-mortar stores (Marti & Puertas, 2023). Artificial intelligence is rapidly transforming manufacturing, finance, healthcare, and public services, with estimates suggesting that over 30% of tasks in advanced economies may be affected (UNCTAD, 2023). These developments highlight the accelerating pace at which innovation simultaneously generates new economic opportunities and renders older systems obsolete.

Innovation is therefore a core condition for long-term competitiveness. It allows firms to improve efficiency, expand internationally, and offer higher-quality goods and services. Innovative economies typically attract greater foreign direct investment, retain highly skilled labour, and perform more robustly during economic downturns. The IMF (2023) emphasizes that economies with strong innovation ecosystems tend to recover more rapidly from crises because they possess the structural flexibility to redeploy resources and absorb technological shocks. At the same time, innovation produces uneven outcomes across sectors and regions. High-skill, technology-intensive activities benefit the most, while labour-intensive and low-productivity sectors may struggle to survive. These dynamics reinforce the need for policies supporting lifelong learning, labour mobility, social inclusion, and well-functioning innovation systems that minimize the social costs of structural change.

2 Innovation in Europe

Europe’s innovation performance presents a persistent paradox. On the one hand, Europe benefits from a strong scientific base, excellent universities, and a large pool of researchers; on the other hand, the region continues to lag behind global competitors—most notably the United States and China—in the commercialization of innovation, the scaling of high-tech firms, and the availability of risk capital (European Commission, 2023). Although the European Union invests considerable public resources in research and innovation, structural factors hinder its ability to convert scientific knowledge into global technological leadership. This gap between scientific excellence and innovation performance has become a central policy challenge within the EU.

While the EU and the United States are comparable in economic size, their innovation ecosystems differ significantly. As Audretsch and Thurik (2001) point out, the U.S. model has transitioned from a “managed economy” to an “entrepreneurial economy,” characterized by deep capital markets, flexible labour regulations, and strong incentives for firm creation.

In contrast, Europe continues to face fragmentation across national markets, heterogeneous regulatory environments, and administrative burdens that complicate cross-border business operations. These factors limit the ability of European firms—especially young, innovative start-ups—to achieve the scale necessary to compete internationally.

One of the most visible weaknesses of Europe's innovation ecosystem is the uneven distribution of R&D investment. Despite the longstanding EU target of allocating 3% of GDP to research and development, only a handful of member states—Belgium, Sweden, Austria, and Germany—met or exceeded this benchmark in 2022 (Eurostat, 2022). Meanwhile, eight member states invested less than 1% of GDP, contributing to widening disparities between Europe's innovation leaders and laggards. This imbalance affects not only research capacity but also the ability to commercialize new technologies and attract high-skilled talent.

Europe also significantly lags behind the United States in venture capital investment. In 2019, U.S. venture capital flows reached USD 136.5 billion, compared with only USD 36.3 billion in Europe (Global Antitrust Institute, 2020). Venture capital is crucial for scaling high-growth firms, particularly in deep-tech sectors such as artificial intelligence, biotechnology, and advanced materials. A lack of risk capital limits the growth trajectory of European firms and contributes to the so-called “European start-up valley of death,” in which promising firms struggle to secure later-stage financing (Acs et al., 2017).

Regulatory fragmentation further constrains innovation. Complex administrative processes, high compliance costs, and inconsistent national policies create barriers that hinder entrepreneurship and the scale-up of innovative enterprises. According to the European Investment Bank (2023), these structural rigidities significantly diminish Europe's global competitiveness. Forbes (2021) similarly notes that Europe's investor culture remains comparatively risk-averse, limiting the capacity of entrepreneurs to pursue ambitious, high-risk innovation projects. These challenges slow innovation diffusion and reduce the ability of European firms to respond effectively to technological disruptions.

Performance differences among EU member states amplify these structural barriers. The European Innovation Scoreboard (UNU-MERIT, 2023) categorizes Sweden, Finland, Denmark, the Netherlands, and Belgium as Innovation Leaders, exhibiting performance levels significantly above the EU average. Germany, France, and Austria rank as Strong Innovators, while countries such as the Czech Republic, Italy, Portugal, and Spain fall into the Moderate Innovators category. Emerging Innovators, including Bulgaria, Croatia, and Poland, remain far below the EU average. These persistent disparities complicate the creation of a unified European innovation ecosystem and threaten the long-term cohesion of the single market.

In response to these challenges, the European Union has launched several major initiatives aimed at strengthening its innovation capacity. Horizon Europe, the EU's flagship research and innovation programme with a budget of EUR 96 billion for 2021–2027, supports scientific excellence, industrial leadership, and the development of breakthrough technologies (European Commission, 2023). Additional instruments such as the European Innovation Council (EIC) Accelerator and the Important Projects of Common European Interest (IPCEI) aim to strengthen deep-tech start-ups, improve technology transfer, and promote collaboration across borders. Despite these efforts, the OECD (2023) emphasizes that Europe must address deeper institutional and regulatory constraints if it aims to close the innovation gap with its global competitors.

Europe's ability to compete in an innovation-driven global economy will depend on its capacity to attract global talent, strengthen venture capital markets, reduce regulatory burdens, and enhance cooperation between scientific institutions and industry. Without coordinated policy action, the region risks falling further behind in areas such as artificial intelligence, advanced manufacturing, and green technologies—fields that will shape economic leadership in the coming decades.

3 Switzerland – The World’s Most Innovative Economy

Switzerland has consistently ranked as the world’s most innovative economy, holding the top position in the Global Innovation Index for more than a decade (WIPO, 2023). Its success is remarkable given the country’s relatively small size, limited natural resources, and highly competitive international environment. Switzerland’s performance demonstrates that a well-designed innovation ecosystem can compensate for structural constraints and even create a global competitive advantage.

A key factor behind Switzerland’s innovation leadership is the exceptional quality of its education and research institutions. Swiss universities—most notably ETH Zürich and EPFL—regularly appear among the highest-ranked institutions worldwide and attract talented researchers, engineers, and entrepreneurs from abroad. Strong STEM education, international mobility, and high academic standards create a robust foundation for scientific excellence (Geneva Business School, 2024). Moreover, Switzerland benefits from an extensive network of applied research institutions and laboratories that facilitate technology transfer and close collaboration between academia and industry.

Switzerland also stands out for its high R&D intensity. With R&D expenditures reaching 3.36% of GDP in 2021, Switzerland is among the global leaders in research investment (World Bank Group, 2023). Unlike many countries in which public institutions dominate research funding, a significant share of Swiss R&D expenditure comes from the private sector—particularly from industries such as pharmaceuticals, biotechnology, medical technology, and precision engineering. These sectors rely heavily on cutting-edge research and thus contribute to maintaining a continuous innovation cycle.

A stable and innovation-friendly institutional environment further reinforces Switzerland’s success. Transparent governance, efficient regulatory frameworks, strong intellectual property protection, and reliable public administration create favourable conditions for entrepreneurship and technological development (World Economic Forum, 2023). These institutional strengths reduce uncertainty and transaction costs, allowing firms to focus on long-term innovation strategies rather than administrative burdens.

Collaboration between universities, research institutes, and the private sector represents another critical component of Switzerland’s innovation advantage. The OECD (2023) highlights Switzerland as one of the most effective countries in converting scientific knowledge into commercial applications. The interaction between academia and industry—supported by incubators, innovation parks, and technology transfer centres—facilitates the rapid diffusion of new technologies and strengthens the commercialization of research outputs.

Together, these factors demonstrate that Switzerland’s innovation leadership is not accidental but the result of sustained investment in human capital, strong institutional arrangements, and an ecosystem designed to stimulate continuous technological advancement. For Europe, Switzerland’s experience provides valuable insights into how targeted policies, a competitive environment, and a strong research base can create a globally leading innovation system.

Conclusion

Innovation and creative destruction are fundamental drivers of long-term economic development, shaping productivity growth, industrial transformation, and the competitiveness of nations. While innovation stimulates technological progress and economic expansion, it also generates disruptive effects as new technologies replace older ones, leading to structural adjustments in labour markets, industries, and entire regions. Managing this dual process requires policies that support innovation while minimizing the social costs of transition.

Europe faces several structural challenges that hinder its innovation capacity. Fragmented markets, regulatory burdens, limited venture capital availability, uneven R&D

investment, and risk-averse investment culture all contribute to the persistent gap between Europe and leading global innovators such as the United States. Significant differences in innovation performance among EU member states further complicate efforts to build a unified innovation ecosystem capable of competing globally. Despite the strengths of European science and research, the region continues to struggle with the commercialization of technologies and the scaling of high-growth firms.

To close this gap, Europe must adopt more ambitious and coordinated policies. Increasing public and private R&D investments, supporting the development of deep tech start-ups, simplifying regulatory frameworks, promoting labour market adaptability, strengthening STEM education, and improving collaboration between research institutions and industry are crucial steps. The EU's existing initiatives—such as Horizon Europe, the European Innovation Council, and IPCEI programmes—provide a strong foundation but require complementary reforms to fully unlock Europe's innovation potential.

Switzerland's example illustrates how a small country can achieve global innovation leadership through sustained investment in education, research, and institutional excellence. Its innovation ecosystem demonstrates the importance of competitive markets, stable governance, high-quality human capital, and strong industry–academia collaboration. Europe can draw valuable lessons from this model to strengthen its own capacity to innovate and adapt to the rapid technological changes shaping the global economy.

References:

- Acs, Z. J., Audretsch, D. B., Lehmann, E. E., & Licht, G. (2017). *National systems of entrepreneurship*. *Small Business Economics*, 49(4), 759–782.
- Aghion, P., Akcigit, U., & Howitt, P. (2015). *The Schumpeterian growth paradigm*. *Annual Review of Economics*, 7, 557–575.
- Aghion, P., Bloom, N., Blundell, R., Griffith, R., & Howitt, P. (2005). *Competition and innovation: An inverted-U relationship*. *The Quarterly Journal of Economics*, 120(2), 701–728.
- Audretsch, D. B., & Thurik, A. R. (2001). *What's new about the new economy? From the managed to the entrepreneurial economy*. *Industrial and Corporate Change*, 10(1), 267–315.
- European Commission. (2023). *European Innovation Performance Report*. Publications Office of the European Union.
- European Commission. (2023). *Horizon Europe: EU research and innovation programme*. Publications Office of the European Union.
- European Investment Bank. (2023). *Investment Report 2023*. EIB Group.
- Eurostat. (2022). *Research and development expenditure (GERD), EU member states*. <https://ec.europa.eu/eurostat/>
- Forbes. (2021). *Can Europe dominate in innovation?* <https://www.forbes.com>
- Geneva Business School. (2024). *Switzerland has the best education system in the world*. <https://gbsge.com/>
- Global Antitrust Institute. (2020). *Global Antitrust Institute comments on the European Commission's Communication on Europe's Digital Future*. George Mason University.
- IMF. (2023). *Fostering innovation and growth in Europe*. International Monetary Fund.
- Jovanovic, B., & Rousseau, P. L. (2005). *General purpose technologies*. In P. Aghion & S. Durlauf (Eds.), *Handbook of Economic Growth* (Vol. 1B, pp. 1181–1224). Elsevier.
- Komlos, J. (2017). *Has creative destruction become more destructive?* Munich Personal RePEc Archive.
- Marti, L., & Puertas, R. (2023). *Analysis of European competitiveness in digitalization*. *Journal of Open Innovation: Technology, Market, and Complexity*, 9(1), 17.
- McKinsey & Company. (2021). *What is innovation?* McKinsey & Company.

- Medina, E., et al. (2022). *Innovation in broadcasters' business models in the digital age*. Journal of Media Business Studies, 19(3), 155–172.
- OECD. (2023). *Science, Technology and Innovation Outlook 2023*. OECD Publishing.
- Oster, G. L. (2015). *Benefits of creative destruction*. Economic Perspectives, 49(2), 45–60.
- Perry, M. J. (2015). *The Netflix effect: How streaming changed the entertainment industry*. American Enterprise Institute.
- Schumpeter, J. A. (1942). *Capitalism, Socialism and Democracy*. Harper & Brothers.
- UNCTAD. (2023). *Technology and Innovation Report 2023*. United Nations.
- UNU-MERIT. (2023). *European Innovation Scoreboard 2023*. Maastricht University.
- World Bank. (2024). *World Development Report 2024: Digital technologies for development*. World Bank Group.
- World Bank Group. (2023). *Research and development expenditure (% of GDP)*. <https://data.worldbank.org/>
- World Economic Forum. (2023). *Global Competitiveness Report 2023*. World Economic Forum.
- WIPO. (2023). *Global Innovation Index 2023*. World Intellectual Property Organization.

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Section 6

CURRENT LEGAL, CULTURAL AND SOCIAL ISSUES OF INTERNATIONAL RELATIONS

PARALYSIS OF THE WTO APPELLATE BODY: PROSPECTS FOR REFORM AND THE RISE OF ALTERNATIVE DISPUTE SETTLEMENT MECHANISMS

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Abstract: This paper examines the paralysis of the World Trade Organization's Appellate Body and evaluates whether emerging alternative mechanisms are capable of preserving the stability and legitimacy of the multilateral dispute settlement system. The objective is to analyse both the institutional causes of the Appellate Body's collapse and the systemic consequences for global trade governance. Using qualitative desk research, documentary analysis of WTO materials, and case studies of arbitration under Article 25 of the DSU, the study assesses the effectiveness of mechanisms such as the Multi-Party Interim Appeal Arbitration Arrangement (MPIA). The results indicate that although alternatives can temporarily replicate some appellate functions, they lack the universality, authority, and jurisprudential coherence of the former Appellate Body. The main conclusion is that without a politically viable compromise—particularly one acceptable to the United States—fragmentation of the global trading system will deepen. The paper contributes to the scholarship by mapping current reform debates, evaluating competing governance models, and identifying implications for the long-term functioning of the WTO.

Keywords: WTO, Appellate Body, dispute settlement, MPIA, multilateral governance

JEL: F13, F55, K33

Introduction

The dispute settlement system of the World Trade Organization (WTO) has long been considered the backbone of the multilateral trading regime (Jackson, 1998). In a 2009 statement marking 400 disputes under the system, Pascal Lamy said the dispute settlement system is “widely considered to be the jewel in the crown of the WTO.” (WTO, 2009). The creation of a compulsory and binding system under the Dispute Settlement Understanding (DSU) marked a profound departure from the diplomatic, power-politics-driven approach of the GATT era. Central to this institutional architecture was the Appellate Body (AB), which provided a second tier of review to ensure coherence and legal consistency (Hoekman, 2021). Over nearly twenty-five years of operation, the AB shaped the interpretation of numerous WTO agreements and contributed significantly to the predictability of global trade law.

However, this carefully constructed system has faced an unprecedented institutional breakdown. Beginning in 2017, the United States blocked the reappointment and appointment of AB members, citing concerns about “judicial overreach,” disregard for procedural rules, and instances of what it viewed as unauthorized law-making (Bacchus, 2018). When the terms of the final sitting members expired in December 2019, the AB ceased to function.

Today, a member dissatisfied with a panel ruling may file an appeal, thereby preventing adoption of the report—a tactic commonly referred to as “appealing into the void”.

The paralysis of the AB raises fundamental questions about the credibility and future of the WTO. Without an appellate mechanism, the dispute settlement system has lost its compulsory and final nature, and members increasingly explore alternative paths for resolving trade conflicts. The most prominent among these is the Multi-Party Interim Appeal Arbitration Arrangement (MPIA), established under Article 25 of the DSU. Yet despite its sophistication, the MPIA functions only among participating states, limiting its systemic impact (Hoekman & Wolfe, 2021).

The objective of this paper is to assess the institutional causes and geopolitical dynamics that led to the paralysis of the Appellate Body, analyse the broader systemic consequences, and evaluate the viability of emerging alternatives. The guiding research question is:

To what extent can alternative dispute settlement mechanisms maintain legal certainty, predictability, and fairness in the absence of the WTO Appellate Body, and what reform scenarios could restore a functional appellate tier?

The methodology adopted in this paper combines doctrinal legal analysis, qualitative desk research, and comparative institutional assessment to capture the multidimensional nature of WTO dispute settlement. The analysis begins with a close reading of primary WTO sources—including the DSU, ministerial declarations, Appellate Body reports, and Article 25 notifications—to identify both the formal legal structure of the dispute settlement system and the interpretative practices that shaped its operation prior to the Appellate Body’s paralysis. This is complemented by a qualitative review of secondary literature in international economic law and political economy, drawing on authoritative academic scholarship, WTO Secretariat documentation, policy briefs, and datasets tracking MPIA participation and appeals into the void. These materials provide the necessary context for understanding the geopolitical and institutional drivers behind the paralysis and the emergence of alternative mechanisms. To evaluate the effectiveness and systemic implications of these alternatives, the paper employs a comparative institutional methodology, contrasting the design, scope, and performance of the MPIA and regional dispute settlement mechanisms with the original two-tier WTO model. Finally, the study incorporates case-based analysis of disputes that have proceeded through MPIA arbitration as well as those caught in the appellate void, allowing the paper to ground its findings in the observable behaviour of WTO members and to assess the widening gap between the DSU’s intended design and current practice. Together, these approaches provide a holistic framework for examining how the dispute settlement system has evolved since 2019, how alternative mechanisms operate in practice, and whether they can meaningfully substitute for the functions of a universal appellate body.

1 Institutional Role and Importance of the WTO Appellate Body

The Appellate Body was designed as a standing tribunal composed of seven members serving four-year terms. Its mandate was to review legal interpretations developed by dispute settlement panels. While the DSU does not establish a doctrine of *stare decisis*, the AB cultivated a practice of relying on its previous reasoning, promoting consistency and judicial economy (Howse, 2016). This consistency encouraged states to internalize WTO obligations and adjust domestic policies in anticipation of predictable legal interpretations (Davey, 2022). The AB also played a crucial role in refining core WTO concepts. For example, its jurisprudence on “likeness,” “necessity,” “public body,” and standards for causation in anti-dumping and countervailing duty investigations significantly shaped global trade regulation (Lester et al., 2020). This body of case law served as guidance not only for litigants but also for domestic regulators worldwide, illustrating how deeply embedded the AB became in the governance of international trade.

For developing countries, appellate review was especially important. Empirical studies show that smaller economies were more willing to bring cases under the WTO than under GATT, precisely because the system's design minimized the influence of power asymmetries (Davis & Bermeo, 2009). The AB offered a level playing field, one that could not be replicated through bilateral negotiations. The removal of this mechanism therefore disproportionately disadvantages those states that rely most heavily on clear, enforceable legal rules.

Additionally, the AB enhanced the legitimacy of the WTO by grounding its reasoning in widely accepted principles of public international law, particularly the Vienna Convention on the Law of Treaties (Holmes & Sasmal, 2024). Its rigorous methodological approach conferred normative authority, allowing the WTO to function as more than a political forum. The loss of this appellate function thus erodes the legal identity of the organization itself.

2 Dynamics and Causes of the Paralysis

The paralysis of the AB is rooted in long-standing U.S. dissatisfaction with its functioning. Since at least the mid-2000s, U.S. trade officials expressed concern that the AB exceeded its mandate by engaging in extensive legal reasoning, treating prior decisions as binding, and issuing dicta beyond what was strictly necessary for resolving disputes (McDougall, 2018). These criticisms escalated in the context of politically sensitive anti-dumping cases, where the AB consistently rejected the U.S. practice of zeroing (Bown & Keynes, 2020).

From the U.S. perspective, several trends were problematic:

- failure to meet the DSU's 90-day deadline,
- allowing AB members to continue serving after their terms expired,
- alleged creation of new obligations not negotiated by members,
- overreliance on precedent (Hillman, 2018).

Although scholars disagree on whether these concerns were justified (Howse, 2016), the political outcome is clear: the U.S. chose to block appointments until its concerns were addressed. Because appointments require consensus, no other member could override the U.S. veto (Shaffer, 2019).

The paralysis became formalized in 2019 when the AB was left with fewer than three members—the minimum needed to form a division. Since then, members have routinely appealed panel rulings simply to prevent their adoption. The number of new panel requests has declined, reflecting diminished confidence in the system (Hoekman, 2021).

2.1 Systemic Consequences of Appellate Paralysis

The consequences of the paralysis are far-reaching. First, the absence of appellate review undermines legal certainty. Different panels may develop divergent interpretations of WTO law, and without a central appellate authority, inconsistency becomes more likely (Pelc, 2022). States can no longer rely on a predictable process for resolving disputes.

Second, the paralysis weakens compliance incentives. Under the previous system, members aligned domestic policies with anticipated outcomes of AB decisions. Without a functioning appellate body, compliance becomes less automatic, and losing parties can indefinitely delay implementation by appealing (Van den Bossche, 2023).

Third, the power imbalance between large and small economies becomes more pronounced. Developing countries often lack the political or economic leverage to negotiate bilateral settlements. Without the AB, these states have fewer tools to enforce rights or defend their interests (Mohamadieh, 2020).

Fourth, the paralysis fuels geopolitical fragmentation. It coincides with rising U.S.–China trade tensions, proliferating unilateral trade measures, and declining trust in multilateral

institutions (Hameed, Sutrisno, Duffy, 2025). The loss of the AB both reflects and accelerates these broader shifts.

3 Reform Debates within the WTO

Efforts to reform the dispute settlement system have intensified since the onset of the crisis. Ministerial conferences and General Council meetings have repeatedly acknowledged the need to restore a “fully functioning dispute settlement system” by 2024 or 2025 (WTO, 2023). Yet consensus remains elusive.

Reform proposals can be grouped into three broad categories: (1) clarifying the AB’s interpretative mandate, (2) modifying procedures and structural elements, and (3) enhancing inclusiveness and capacity for developing countries (Cottier, 2021).

3.1 Substantive Areas of Reform

Many proposals seek to address U.S. concerns directly. These include:

- reaffirming the limits of judicial interpretation under DSU Article 3.2,
- clarifying that AB reports have persuasive but not binding precedential value,
- limiting advisory statements,
- re-emphasizing reliance on the Vienna Convention (Holmes & Sasmal, 2024).

Procedural reforms include introducing a remand mechanism to allow panels—not the AB—to complete factual records. This responds to U.S. concerns about the AB exceeding its authority (Payosova, Hufbauer & Schott, 2018). Other proposals call for stricter enforcement of the 90-day deadline or more flexible timelines agreed by the parties.

3.2 Reform Scenarios

The literature identifies three plausible scenarios:

1. Minimalist Compromise:

Members adopt a narrow package addressing procedural concerns. The United States lifts its veto, allowing the reconstitution of the AB (Van den Bossche, 2023).

2. Structural Redesign:

The AB is transformed into multiple appellate chambers, an advisory mechanism, or a hybrid arbitration-court model (Hoekman & Mavroidis, 2020). This approach reflects deeper institutional innovation.

3. Persistent Deadlock:

No consensus is reached, the AB remains paralyzed, and members increasingly rely on alternatives such as the MPIA. Over time, this leads to systemic fragmentation (Hameed, Sutrisno, Duffy, 2025).

At present, the third scenario appears most likely.

4 Rise of Alternative Dispute Settlement Mechanisms

In the absence of a functional AB, WTO members have developed parallel mechanisms to preserve some form of appellate review. The most prominent is the Multi-Party Interim Appeal Arbitration Arrangement (MPIA), launched in 2020 by the European Union and a group of like-minded WTO members (WTO, 2020). The MPIA uses Article 25 of the DSU, which allows arbitration as an alternative method for dispute settlement.

The MPIA aims to mirror the AB’s appellate function. It relies on a pool of arbitrators chosen for their expertise and neutrality. Its procedural rules emphasize efficiency, including strict page limits and accelerated timelines (Hoekman & Wolfe, 2021).

However, the MPIA is limited to disputes between participating members, meaning that major actors—such as the United States, India, and many African and Asian economies—remain outside the system. This results in a fragmented landscape in which some WTO members enjoy appellate review while others do not.

4.1 The Multi-Party Interim Appeal Arbitration Arrangement

The MPIA has produced several awards that resemble AB reports in structure and reasoning. Scholars note that the mechanism promotes legal continuity and reinforces the rule-oriented spirit of the system (Pauwelyn, 2023). However, concerns persist. The MPIA lacks universal coverage, its awards do not create systemwide jurisprudence, and its temporary nature raises questions about long-term sustainability.

4.2 Regional and Bilateral Dispute Settlement Trends

Parallel to the MPIA, many states increasingly turn to regional trade agreements (RTAs) for dispute settlement. Modern RTAs such as CPTPP and CETA include adjudicatory procedures that can appear more flexible than the WTO's DSU, yet their growing use risks fragmenting multilateral trade law by encouraging forum shopping and producing divergent interpretations of trade rules. As Hoekman (2021) notes, this trend weakens the *centralizing* function the WTO system was designed to serve. A foundational principle of the DSU is its exclusive jurisdiction over disputes arising under WTO agreements—intended to prevent the overlap, political bargaining, and unilateral retaliation that characterized the GATT era. Jackson (1998) explains that the WTO system replaced the power-based diplomacy of GATT with a more legalized, rules-oriented framework precisely to protect smaller economies. When members resolve disputes politically or rely on unilateral countermeasures, as Shaffer (2019) observes in his open-access symposium essay, the multilateral system drifts back toward power politics and away from legal discipline. The combined rise of RTA litigation, selective engagement with the MPIA, and increased reliance on political solutions thus signals a gradual erosion of the WTO's integrative and rule-based dispute settlement model.

Conclusion

The paralysis of the WTO Appellate Body represents one of the most significant challenges in the history of the multilateral trading system. The absence of a functional appellate mechanism undermines legal predictability, weakens compliance incentives, and disproportionately affects developing countries. While alternative mechanisms such as the MPIA offer valuable stopgap solutions, they cannot replicate the universal authority, jurisprudential coherence, or legitimacy of the former Appellate Body.

The future of the WTO depends on whether members—especially the United States—can reach a compromise that balances judicial independence with political oversight. If no agreement is reached, the dispute settlement system will continue to fragment, shifting authority away from multilateral institutions toward regional and unilateral processes. Restoring the appellate tier is therefore essential not only for dispute resolution but also for safeguarding the foundations of the multilateral trading system.

References:

- Bacchus, J. (2018). Might unmake right: How the U.S. is undermining the WTO dispute settlement system. Cato Institute.
- Bown, C. P., & Keynes, S. (2020). Why Trump shot the sheriffs: The end of WTO dispute settlement 1.0 (CEPR Discussion Paper No. 14477). Centre for Economic Policy Research.
- Comprehensive Economic and Trade Agreement (CETA).
- Comprehensive and Progressive Agreement for Trans-Pacific Partnership (CPTPP), Chapter 28: Dispute Settlement.

- Cottier, T. (2021). Recalibrating the WTO Dispute Settlement System: Towards New Standards of Appellate Review, *Journal of International Economic Law*, Volume 24, Issue 3, September 2021, Pages 515–533,
- Davey, W. J. (2022). WTO Dispute Settlement: Crown Jewel or Costume Jewelry? *World Trade Review*, 21(3), 291–300. Open access PDF:
- Davis, C. L., & Bermeo, S. B. (2009). Who files? Developing country participation in GATT/WTO adjudication. *The Journal of Politics*, 71(3), 1033–1049.
- Hameed, M., Sutrisno, N., & Duffy, F. A. (2025). The Appellate Body crisis: Challenges and reforms to the World Trade Organization dispute settlement mechanism. *Prophetic Law Review*, 7(1).
- Hillman, J. (2018). Three approaches to fixing the World Trade Organization's Appellate Body: The good, the bad and the ugly? Institute of International Economic Law, Georgetown University Law Center.
- Hoekman, B. M., & Mavroidis, P. C. (2020). The Appellate Body crisis and WTO dispute settlement reform (Policy Brief). Bertelsmann Stiftung.
- Hoekman, B. (2021). The end of the World (Trade Organization) as we know it? *European Journal of International Law*, 32(3), 743–770.
- Hoekman, B., & Wolfe, R. (2021). Reforming the World Trade Organization: Practitioner perspectives from China, the EU, and the US. *China & World Economy*, 29(4), 1–34. Retrieved from
- Holmes, P., & Sasmal, S. (2024). To judge or not to judge: Non liquet in WTO adjudication (UKTPO Working Paper). UK Trade Policy Observatory.
- Howse, R. (2016). The World Trade Organization 20 Years On: Two Decades of Judicial Activism and Political Impasse (Draft). Institute for International Law and Justice..
- Jackson, J. H. (1998). Dispute settlement and the WTO. *Journal of International Economic Law*, 1(3), 329–351.
- Lester, S., Manak, I., & Hufbauer, G. C. (2020). Restoring appellate review under WTO dispute settlement. In *The central role of the WTO in the world trading system: Challenges and choices* (pp. 32–??). Cato Institute.
- McDougall, R. (2018). Crisis in the WTO: Restoring the WTO dispute settlement system (CIGI Paper No. 194). Centre for International Governance Innovation.
- Mohamadieh, K. (2020). Corporate power and States' (in)action in response to the COVID-19 crisis (Third World Network Briefing Paper). Third World Network.
- Pauwelyn, J. (2023). The WTO's Multi-Party Interim Appeal Arbitration Arrangement (MPIA): What's new? *World Trade Review*. Advance online publication.
- Payosova, T., Hufbauer, G. C., & Schott, J. J. (2018). The dispute settlement crisis in the World Trade Organization: Causes and cures (PIIE Policy Brief 18-5). Peterson Institute for International Economics.
- Pelc, K. J. (2022). Counterfactuals and contingency in WTO dispute settlement history. *World Trade Review*, 21, 301–311. <https://doi.org/10.1017/S1474745622000076> (open access)
- Petersmann, E.-U. (2021). Reforming the WTO appellate system: Legal and political challenges. *World Trade Review*, 20(3), 437–459.
- Shaffer, G. (2018/2019). A tragedy in the making? The decline of law and the return of power in international trade relations (Symposium article). *Yale Journal of International Law Online*.
- Van den Bossche, P. L. H. (2023). Can the WTO dispute settlement system be revived? (WTI Working Paper No. 1407). World Trade Institute.
- United States-Mexico-Canada Agreement (USCMA).
- WTO. (2009). WTO disputes reach 400 mark. Press Release, 4 November 2009.

- WTO. (2020). Multi-Party Interim Appeal Arbitration Arrangement pursuant to Article 25 of the DSU.
- WTO. (2023). Outcome document of the thirteenth WTO Ministerial Conference. OECD & European Commission. (2023). Indicators of Immigrant Integration 2023: Settling In. 67–79.

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THE CONCEPT OF POLITICALLY EXPOSED PERSONS IN THE SLOVAK LAW, EU LAW AND INTERNATIONAL LAW

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Abstract: This paper deals with the issue of correctly defining politically exposed persons as an important factor in the fight against corruption and protection against the legalisation of proceeds from crime. The aim of the paper is to identify the group of politically exposed persons in the Slovak Republic and assess it in terms of compliance with EU and international law. We examine not only the applicable legislation at these three levels, but also its interpretation by law enforcement authorities, using not only standard scientific methods but also methods of scientific interpretation – literal (grammatical), systematic, logical, and teleological.

Keywords: politically exposed persons (PEPs), corruption, anti-money laundering, public official, Financial Intelligence Unit, AML Regulation

JEL: K33, G28, D73

Introduction

One of the main sources of illegal income in the world is corruption. Corruption is embedded in the very DNA of crime. It acts as a key enabler and catalyst for criminal activities and contributes to destabilising society. It is instrumental to most forms of organised crime and this to evade law enforcement, gain economic or political influence, facilitate criminal operations or weaken the trust in public sector or law enforcement (EUROPOL, 2025). International conventions use the term corruption but usually do not define it. One of the few exceptions is the Civil Law Convention on Corruption (done at Strasbourg in 1999) adopted at the level of the Council of Europe, which defines (but only for the purposes of this convention) "corruption" as requesting, offering, giving or accepting, directly or indirectly, a bribe or any other undue advantage or prospect thereof, which distorts the proper performance of any duty or behaviour required of the recipient of the bribe, the undue advantage or the prospect thereof (Article 2). We distinguish between active and passive corruption. Active corruption is the intentional promising, offering or giving by any person, directly or indirectly, of any undue advantage to any of public officials, for himself or herself or for anyone else, for him or her to act or refrain from acting in the exercise of his or her functions. Passive corruption, on the other hand, is the intentional request or receipt by any of its public officials, directly or indirectly, of any undue advantage, for himself or herself or for anyone else, or the acceptance of an offer or a promise of such an advantage, to act or refrain from acting in the exercise of his or her functions. Both of these concepts are defined in Articles 2 and 3 of the Criminal Law Convention on Corruption (done at Strasbourg in 1999) adopted by the Council of Europe, as was the Civil Law Convention on Corruption. The Criminal Law Convention on Corruption uses the terms "active bribery" and "passive bribery" in relation to domestic public officials (i. e. public officials of the contracting states to the Convention) and foreign public officials (i. e. public officials of states other than the contracting states to the Convention). A special category under the Convention are members of domestic or foreign public assemblies who are offered or accept bribes in connection with their legislative or administrative powers.

Corruption mainly concerns public officials at various levels of government and in various functions of the legislative, executive, or judicial branches of the state or working in international organizations (see, for example, Article 16 of the United Nations Convention against Corruption or Directive on the fight against fraud to the Union's financial interests by means of criminal law), but it can also involve employees of state-owned enterprises or state-owned commercial companies, as well as the private sector (Chaikin, 2008). In the private sector, the role of financial institutions and their employees is particularly prominent (Lawlor-Forsyth & Gallant, 2018; European Banking Authority [EBA], 2025).

However, the most serious form of corruption is so-called high-level corruption or (grand corruption). It is corruption associated with the illegal use of power by officials holding the highest positions in the state hierarchy and/or politicians to benefit themselves and their associates (Organization of Economic Cooperation and Development [OECD], 2024), or corruption in which those at the political, decision-making levels of government use their office to enrich themselves, their families, and their associates (Financial Action Task Force [FATF], 2011). It refers not so much to the amount of money involved as to the level in which it takes place (FATF, 2011). In connection with the prevention of grand corruption, it is therefore necessary to define the persons who are potentially capable of committing it. For this purpose, the term public official was created, but in addition to this, the concept of politically exposed persons was also introduced. The difference between them is primarily that a politically exposed person is also considered to be a person who has held the position of public official in the past, as well as related natural and legal persons. This term is defined in relation to the role of financial institutions in the fight against money laundering.

The aim of this paper is to identify the group of politically exposed persons in the Slovak Republic and assess them from the perspective of EU and international law, i.e. whether our legislation and its interpretation are in line with supranational legislation that is binding on the Slovak Republic.

In order to achieve this objective, we have used scientific methods of analysis, synthesis, induction, deduction, and comparison in this paper. In terms of scientific methods of legal interpretation, we use logical, literal (grammatical), systematic, and teleological interpretation of legal rules.

1 The concept of politically exposed persons in international law

A general definition of a politically exposed person (although not yet referred to as such) is already contained in the UN Convention against Corruption. Specifically, it refers to individuals who are, or have been, entrusted with prominent public functions and their family members and close associates (Article 52(1)). In this context, it obliges the contracting states to impose certain obligations on financial institutions (Article 52(1) to (3)) and on politically exposed persons themselves (Article 52(5) and (6)).

In addition, the UN Convention against Corruption also defines a public official as not only a senior representative of the state or local government, but also other public agency or public enterprise, or other person providing public services (Article 2(a)). This category may include, for example, universities, trade unions, and religious societies, but business entities only if the government exercises a dominant influence over them, either directly or indirectly, e.g., by owning a majority stake in the entity (Rose et al., 2019). However, the purpose of defining a public official is not so much to regulate their position vis-à-vis financial institutions as to create a definition of the various criminal forms of corruption (Article 15 et seq.).

The concept of politically exposed persons has evolved further. The international organisation FATF attempted to define it more precisely in its Recommendations 12 and 22 (FATF, 2013). Recommendation 12 applies to financial institutions and Recommendation 22

to designated non-financial businesses and professions. It distinguishes between domestic PEPs, foreign PEPs and international organisation PEPs (FATF, 2013). It does not include family members and close associates in these categories, but defines them separately (FATF, 2013). Domestic (foreign) PEPs are considered to be individuals who are or have been entrusted domestically with prominent public functions (alternatively – with prominent public functions by a foreign country), for example Heads of State or of government, senior politicians, senior government, judicial or military officials, senior executives of state-owned corporations, important political party officials. International organisation PEPs are persons who are or have been entrusted with a prominent function by an international organisation, refers to members of senior management or individuals who have been entrusted with equivalent functions, i.e. directors, deputy directors and members of the board or equivalent functions (point 11. of the FATF Recommendations 12 & 22).

Some international conventions regulating corruption do not address the issue of politically exposed persons at all. One example is the Convention on Combating Bribery of Foreign Public Officials in International Business Transactions (done at Paris in 1997), adopted at the level of the OECD. This Convention defines a "foreign public official", i. e. any person holding a legislative, administrative or judicial office of a foreign country, whether appointed or elected; any person exercising a public function for a foreign country, including for a public agency or public enterprise; and any official or agent of a public international organisation (Article 1(4)(a)).

2 The concept of politically exposed persons in EU law

The FATF recommendations also formed the basis for the legislation in force in the EU. Directive on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing from the year 2015 (so-called IV. AML Directive) unlike the previous III. AML Directive, which only addressed risks to foreign PEPs (Article 13(4)), introduced an equivalent approach to domestic and foreign PEPs in accordance with the cited FATF recommendations (cf. Articles 20-23). It is therefore not true that the IV. AML Directive was amended based on FATF recommendations to extend the scope of PEPs to include domestic PEPs (Daudrikh, 2021), because the definition of PEPs was also general in the III. AML Directive¹; however, it only saw increased risk in relation to foreign PEPs, as mentioned above. The definition of PEPs in the IV. AML Directive was more precise than in the III. AML Directive. The current legal regulation of PEPs in EU law has not changed since then, despite the amendment of the IV. AML Directive by the V. AML Directive and, most recently, by the VI. AML Directive. A change in the definition of politically exposed persons is brought about by Regulation (EU) 2024/1624 of the European Parliament and of the Council of 31 May 2024 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing (AML Regulation), which will enter into force on July 10, 2027 (some provisions even on July 10, 2029).

According to the currently valid IV. AML Directive, a politically exposed person means a natural person who is or who has been entrusted with prominent public functions and includes the following (Article 3(9)):

- a) heads of State, heads of government, ministers and deputy or assistant ministers;
- b) members of parliament or of similar legislative bodies;
- c) members of the governing bodies of political parties;

¹ According to the Article 3(8) of the III. AML Directive 'politically exposed persons' means natural persons who are or have been entrusted with prominent public functions and immediate family members, or persons known to be close associates, of such persons.

- d) members of supreme courts, of constitutional courts or of other high-level judicial bodies, the decisions of which are not subject to further appeal, except in exceptional circumstances;
- e) members of courts of auditors or of the boards of central banks;
- f) ambassadors, chargés d'affaires and high-ranking officers in the armed forces;
- g) members of the administrative, management or supervisory bodies of State-owned enterprises;
- h) directors, deputy directors and members of the board or equivalent function of an international organisation.

At the same time, no public function referred to in points a) to h) shall be understood as covering middle-ranking or more junior officials. The Directive also contains precise definitions of family members of PEPs (Article 3(10)) and close associates of PEPs (Article 3(11)), who are not PEPs but are subject to the same legal regime as PEPs (Article 23).

The AML Regulation which is already in force, but not yet effective, distinguishes in its definition of PEPs in a Member State or a third country, PEPs in an international public organisation and PEPs at European Union level. The definition of PEP in a Member State includes all functions as in the current definition of PEP within the meaning of IV. AML Directive (except, of course, for functions in international organizations, which fall under the special definition of PEPs), with the following exceptions (Article 2(34)(a)):

- narrows the definition of executive representatives of political parties in that only members of the governing bodies of political parties that hold seats in national executive or legislative bodies, or in regional or local executive or legislative bodies representing constituencies of at least 50 000 inhabitants are included among PEPs;
- extends the definition of members of state-owned enterprises to include members of state-controlled enterprises and, in certain circumstances, local authorities (in the case of medium-sized or large enterprises); and
- extends the definition of PEPs to include heads of regional and local authorities, including groupings of municipalities and metropolitan regions, with at least 50.000 inhabitants.

This extension is justified by the fact that such enterprises or local authorities may also have large budgets at their disposal, which results in a particularly urgent risk of corruption and related money laundering among their senior representatives (see recital 92 of the AML Regulation).

Definition of a PEP in a third country includes functions that are equivalent to those of the Member State (see above) (Article 2(34)(d)). This also applies to the definition of PEPs at EU level, which includes the president of the European Council, the president of the Commission, members of the Commission and their deputies, members of the European Parliament, the president of the Court of Justice and the General Court, members of the Court of Auditors, members of the Governing Council of the ECB and ambassadors and chargés d'affaires of the EU (Article 2(34)(c)). Finally, PEPs in an international organisation include the highest-ranking officials, their deputies and members of the board or equivalent functions of an international organisation as well as representatives to a Member State or to the Union (Article 2(34)(b)). As in the previous legislation, neither the AML Regulation considers family members of PEPs (Article 2(35)) nor persons known to be a close associate of PEPs (Article 2(36)) are not considered PEPs in themselves, but the same measures should be taken in relation to them as to PEPs, as they pose an equally high risk of money laundering (cf, for example, Article 9(2)(a)(iii), Article 20(1)(g)). Compared to the IV. AML Directive, the AML Regulation extends the circle of family members in the case of heads of State, heads of government, ministers and deputy or assistant ministers in a Member State or their equivalents at EU and third country level to include siblings (Article 2(35)(d)).

3 The concept of politically exposed persons in Slovak law

The current legal regulation of PEPs in the Slovak Republic is based on the IV. AML Directive. A PEP is considered to be a natural person who holds or has held a prominent public function (Article 6(1) of Act No. 297/2008 Coll. on the protection against the legalization of proceeds from criminal activity and on the protection against the financing of terrorism and on amendments to certain acts – hereinafter referred to as the "AML Act").

According to Article 6(2) of the AML Act, a prominent public function is:

- a) head of state, prime minister, deputy prime minister, minister, head of a central government body, state secretary or similar deputy of a minister,
- b) member of the legislative body,
- c) a judge of the Supreme Court, a judge of the Supreme Administrative Court, a judge of the Constitutional Court or other higher judicial authorities whose decisions cannot be appealed, with the exception of special cases, the President of the Judicial Council of the Slovak Republic, the vice-chairman of the Judicial Council of the Slovak Republic, the president of the Specialised Criminal Court, the vice-president of the Specialised Criminal Court, the president of a regional court, the vice-president of a regional court, the president of an administrative court, the vice-president of an administrative court, the president of a district court or the vice-president of a district court,
- d) member of the court of auditors or the board of the central bank,
- e) ambassador, chargé d'affaires,
- f) high-ranking member of the armed forces, armed corps or armed security corps,
- g) member of the management body, supervisory body or control body of a state-owned enterprise or commercial company owned by the state,
- h) Attorney General, Deputy Attorney General, regional prosecutor, deputy regional prosecutor, district prosecutor or deputy district prosecutor,
- i) a person in another similar position of national or regional importance or another similar position held in European Union institutions or international organisations,
- j) a member of the statutory body of a political party or political movement.

Slovak AML Act thus extends the definition of PEPs to include officials of courts of all levels, as well as officials of the prosecutor's office at all levels of management. It is as if our legislators took into account the risk highlighted in a publication by the World Bank (Greenberg, 2010), namely that corruption in lower courts may prevent cases from reaching the supreme courts (Greenberg, 2010). A similar argument can be applied to public prosecutors.

Let us pause for a moment on the terms mentioned in letter g) above, i.e., state-owned enterprise and state-owned commercial company. Together, they correspond to the term "state-owned enterprise" under Article 3(9)(g). In the Slovak legal system, there is a special legal form called "state-owned enterprise." It is regulated by Act No. 111/1990 Coll. on state-owned enterprises. Since the change of regime in 1989, the number of state-owned enterprises has gradually declined significantly as a result of the economic transformation through privatization, and their number is also currently on the decline (Kšenzíhová & Dzimko, 2022). It is quite clear that a state-owned enterprise is owned by the state. In its business activities, a state-owned enterprise uses the assets and property rights entrusted to it at the time of its establishment and the assets and property rights acquired during its business. However, these assets and property rights are the property of the state. It is precisely the inability of a state-owned enterprise to own property that distinguishes it significantly from other types of legal entities, in particular commercial companies (Kšenzíhová & Dzimko, 2022).

The question of what is meant by the term "state-owned commercial company" remains to be resolved. Is it a company owned exclusively by the state, or one in which the state has a stake? And if the latter is the case, what stake should it be? Is a minority stake sufficient, or is it necessary for the state to have a majority stake in the commercial company? And is this even decisive? Isn't managerial control more important than formal ownership of a majority stake? Let's look at the definitions of politically exposed persons according to other sources of law on which the AML Act is based. According to IV. AML Directive, PEPs are members of the administrative, management or supervisory bodies of State-owned enterprises. According to the FATF Recommendations, PEPs are, among other persons, senior executives of state-owned corporations.

It follows from the above that none of the national or international definitions of PEPs considers a statutory body of a legal entity with partial stake of the state to be a PEP. All definitions of PEPs in international documents are based on the assumption that a PEP is only a person who is a member in the body of a state-owned enterprise. The Slovak AML Act extends this definition to membership in the bodies of a commercial company owned by the state, but in the overall context of the international conventions and recommendations on which the Slovak AML Act is based, it must be interpreted as meaning companies with 100% state ownership, which in this sense are treated as state-owned enterprises (such as Slovenská pošta, a.s. [Slovak Post], Železnice Slovenskej republiky [Railroads of the Slovak Republic], Železničná spoločnosť Slovensko, a.s. [Railway Company of the Slovak Republic], Slovenská televízia a rozhlas [Slovak Television and Broadcasting]). These entities cannot be understood to mean legal persons in which the state has only a partial or even minority ownership interest. On the other hand, if the state controlled² a certain legal entity despite a partial (or even minority) ownership interest, this could be perceived, using a teleological legal interpretation (but not a grammatical one), as a situation close to a legal entity "owned by the state."

The above interpretation is also supported by other sources of law in the Slovak Republic. When the legislative text refers to persons in which the state has only a partial ownership interest, the term "company with state ownership interest" is used (e.g., Article 2(f) of Constitutional Act No. 493/2011 Coll. on budgetary responsibility, Article 190(3) of Act No. 281/2015 Coll. on the State Service of Professional Soldiers and on Amendments to Certain Acts).

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Another argument in favour of the claim that PEPs are only members of bodies of companies wholly owned or controlled by the state is *argumentum a maiori ad minus*, specifically the definition of a public official under Constitutional Act No. 357/2004 Coll.

²We refer to control within the meaning of Section 66a(1) of the Commercial Code, according to which a controlled entity is a company in which a certain person has a majority share in voting rights because they have a share in the company or shares in the company with which the majority of voting rights are associated, or because, on the basis of an agreement with other authorized persons, they can exercise the majority of voting rights, regardless of the validity or invalidity of such an agreement. For more details, see Patakyová, 2022, pp. 314-318.

on the protection of public interest in the performance of public functions, which is undoubtedly a broader concept than politically exposed person. The category of public officials covers a wider range of persons than the category of PEPs, including, for example, representatives of local government (Article 2(1)(o) to (s)), rectors of public universities (Article 2(1)(t)), and the chair and members of the board of directors of the Nation's Memory Institute (Article 2(1)(zg)). There is no doubt that members of bodies of companies that are only partially owned by the state are not public officials, unless the state exercises managerial control over the company, e.g. on the basis of a shareholder agreement or a partnership agreement. This follows from Article 2(1)(zc) of the cited Constitutional Act, according to which this Constitutional Act applies (i.e., public officials are) statutory bodies or members of statutory bodies, members of the management body and members of the control body or supervisory body of legal entities who are directly or indirectly nominated or appointed by the state or a legal entity wholly owned by the state.

This is also in line with the intention of the legislator as expressed in the explanatory memorandum to Constitutional Act No. 469/2019 Coll., amending Constitutional Act No. 357/2004 Coll. on the protection of public interest in the performance of public functions, as amended (NR SR, 2019) as follows: "(...) the aim of the proposed legislation (as was the aim of previous amendments) is not to apply the personal scope of the constitutional law to persons who are directly or indirectly proposed or appointed to perform a function, in particular by private investors, for example on the basis of special nomination rights, in certain sectors under commonly used shareholder agreements covering various holding structures, or on the basis of the exercise of managerial control by private investors in comparable situations." (special part of the explanatory memorandum to point 1(d)). The Constitutional Court of the Slovak Republic also tends to interpret the concept of public official in a restrictive manner (ÚS SR, 2015).

It would be contrary to the principles of logical, teleological, and systematic legal interpretation to allow a person who does not meet the stricter defining characteristics of a public official to meet the less stringent characteristics for PEP.

However, there is another factor to consider. One of the legal obligations of the Financial Intelligence Unit, as an organizational unit of the Presidium of the Police Force of the Slovak Republic (Ministerstvo vnútra Slovenskej republiky [MV SR], 2025a), is to publish online the so-called List of Prominent Public Functions (MV SR, 2025b) and to update it on an ongoing basis (the currently published version is dated March 7, 2025). This list specifies the specific functions that fall under each type of politically exposed person. For example, PEPs pursuant to Article 6(2)(e) of the AML Act, which are ambassadors and *chargés d'affaires*, shall include all of the following persons according to the List of Prominent Public Functions:

- ambassadors, envoys, and *chargés d'affaires* of the Slovak Republic abroad,
- heads of representative offices of the Slovak Republic,
- Slovak consuls general abroad,
- heads of permanent missions of the Slovak Republic to the EU, NATO, UN, OSCE, OECD, and the Council of Europe.

However, we believe that this interpretation of the Financial Intelligence Unit goes beyond the scope of the law. The consul general is a different function from that of ambassador and is governed by a different international convention – the Vienna Convention on Consular Relations (done at Vienna in 1963) instead of the Vienna Convention on Diplomatic Relations (done at Vienna in 1961) (for comparison of both institutes, see Klučka, 2017). Although the Financial Intelligence Unit has the power under Article 26(2)(n) of the AML Act to interpret the provisions of Article 6(2) of this Act by publishing and continuously updating a List of Prominent Public Functions on its website, but it does not have the power to modify it, either

by extending it beyond the scope of the Act or narrowing it below this scope. The old and well-known principle applies here that state authorities may only act based on the Constitution, within its limits and to the extent and in the manner provided for by law (Article 2(2) of the Constitution of the Slovak Republic). We therefore believe that extending the list of PEPs in the List of Prominent Public Functions beyond the scope of Article 6(2)(e) of the AML Act (and beyond the scope of Article 3(9) of the IV. AML Directive) has no legal effect and that current and former Slovak consuls general abroad should not be considered as PEPs.

A similar problem arises in the case of members of the management body, supervisory body, or control body of a state-owned enterprise or commercial company owned by the state within the meaning of Article 6(2)(g) of the AML Act. The List of Prominent Public Functions among these persons includes:

- state-owned enterprises established by the Slovak Republic through individual ministries or their agencies, and commercial companies in which the Slovak Republic owns more than a 50% stake (hereinafter also referred to as "state-owned companies"),
- members of the boards of directors and managing directors of state-owned companies,
- members of the supervisory boards of state-owned companies, and
- proxies of the state-owned companies.

Apart from the fact that state-owned enterprises and commercial companies cannot be politically exposed persons, as they are legal entities, it is not correct to include commercial companies in which the Slovak Republic "owns" more than a 50% share among state-owned commercial companies, as this does not necessarily mean that it controls them or exercises managerial control over them. There are many companies, e.g., with equity participation by Slovak Investment Holding, a.s., in which the Slovak Republic has a 100% indirect equity participation through the Ministry of Finance of the Slovak Republic, but which are not controlled by Slovak Investment Holding, a.s., because managerial control is exercised by a co-investor. If we want to maintain a logical interpretation of legal norms and the hierarchical structure of the legal system, we should interpret the concept of a commercial company owned by the state as meaning that the state not only passively holds a certain share in it, but also controls the commercial company through it, unless we want to accept a narrow (literal) interpretation that it must be a 100% share in the commercial company. In this context, the term commercial company in which the state "owns" a share of more than 50% should also be interpreted. We therefore believe that in this case, the Financial Intelligence Unit again has inadmissibly extended the defined term beyond the scope of the law. Using a systematic, logical, and teleological interpretation of the provisions of the AML Act, we conclude that only members of the bodies of commercial companies controlled by the state are considered to be persons holding prominent positions in the Slovak Republic. Such an interpretation is not only in line with the international conventions to which the Slovak Republic is bound, but also with the currently valid and effective, as well as future (already valid but not yet effective) provisions of European law.

According to Article 6(3) of the AML Act, a PEP is also a natural person who is

- a) the husband, wife, or person in a similar position to the husband or wife of the person referred to in paragraph 1,
- b) a child, son-in-law, daughter-in-law of the person referred to in paragraph 1 or a person who has a similar status to a son-in-law or daughter-in-law of the person referred to in paragraph 1, or
- c) a parent of the person referred to in paragraph 1.

According to Article 6(4) of the AML Act, a PEP is also a natural person who is known to be the ultimate beneficiary

- a) of the same client or otherwise controls the same client as the person referred to in paragraph 1 or does business with the person referred to in paragraph 1, or

b) a client established for the benefit of a person referred to in paragraph 1.

Similar to the UN Convention against Corruption, our legislation includes family members of politically exposed persons and other close persons directly in the definition of PEPs. It therefore no longer needs to contain specific provision that would place them on an equal footing with PEPs in terms of risk and procedures for protection against the legalization of proceeds from criminal activity, as is the case with IV. AML Directive and AML Regulation.

In addition to family members, politically exposed persons may also include persons socially and professionally connected to a person who has been or is in a prominent public position (e.g., a friend or lover, a member of the same political party or trade union) (Daudrikh, 2022).

Conclusion

The incorporation of politically exposed persons into the legal system is closely linked to the prevention of corruption and the related legalization of proceeds from crime. This term was first used in the UN Convention against Corruption and subsequently incorporated into the FATF recommendations. From there, it entered EU law and, through it, Slovak law.

As in many similar cases, the Slovak lawmaker tightened European legislation and expanded the scope of politically exposed persons beyond what was stipulated in European directives. An example of this is the addition to the definition of PEPs of judicial officials, including the president and vice-president of the Judicial Council of the Slovak Republic and the presidents and vice-presidents of courts of all levels, as well as officials of the public prosecutor's office.

However, in defining the term PEP, the lawmaker used a number of unclear formulations that need to be interpreted in accordance with international and EU law. The Financial Intelligence Unit undertook to interpret these terms in the List of Prominent Public Functions, and although it clarified many of them (which were only defined in general terms), it misinterpreted some others, thereby actually undermining the definitional framework of PEPs under the applicable legislation. Examples include consuls general, who were wrongly included in the list of PEPs, and members of bodies of state-owned commercial companies, which, in accordance with EU law, should be interpreted as commercial companies with 100% state ownership or – if the state has a partial stake in them – controlled by the state. In this sense, it would be useful to revise the List of Prominent Public Functions so that it does not narrow or, in particular, broaden the legal definitions.

Once the AML Regulation becomes effective throughout the EU (July 10, 2027), there will be a harmonisation of basic concepts in the area of AML, including the definition of PEPs, which will eliminate many of the problems we face now in legal theory and practice.

References:

- Chaikin, D. (2008). Commercial corruption and money laundering: A preliminary analysis. *Journal of Financial Crime*, 15(3), 269–281. <https://doi.org/10.1108/13590790810882865>
- Daudrikh, Y. (2021). Postavenie politicky exponovanej osoby ako vysokorizikového klienta v oblasti boja proti legalizácii príjmov z trestnej činnosti a financovania terorizmu. *Acta Facultatis Iuridicae Universitatis Comenianae*, 40(1), 14–39. <https://afi.flaw.uniba.sk/index.php/AFI/article/view/536/371>
- Daudrikh, Y. (2022). *Regulácia ochrany pred legalizáciou príjmov z trestnej činnosti a financovaním terorizmu v korelácii uplatnenia zvýšenej starostlivosti o klienta*. Wolters Kluwer ČR.
- Directive (EU) 2017/1371 of the European Parliament and of the Council of 5 July 2017 on the fight against fraud to the Union's financial interests by means of criminal law. (2017).

- Official Journal of the European Union*, L 198, 29–41. <https://eur-lex.europa.eu/eli/dir/2017/1371/oj/eng>
- Directive 2005/60/EC of the European Parliament and of the Council of 26 October 2005 on the prevention of the use of the financial system for the purpose of money laundering and terrorist financing (Third AML Directive). (2005). *Official Journal of the European Union*, L 309, 15–36. <https://eurlex.europa.eu/LexUriServ/LexUriServ.do?uri=OJ:L:2005:309:0015:0036:en:PDF>
- Directive (EU) 2015/849 of the European Parliament and of the Council of 20 May 2015 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing (Fourth AML Directive). (2015). *Official Journal of the European Union*, L 141, 73–117. <https://eur-lex.europa.eu/eli/dir/2015/849/oj/eng>
- Directive (EU) 2018/843 of the European Parliament and of the Council of 30 May 2018 amending Directive (EU) 2015/849 (Fifth AML Directive). (2018). *Official Journal of the European Union*, L 156, 43–74. <https://eur-lex.europa.eu/eli/dir/2018/843/oj/eng>
- Directive (EU) 2024/1640 of the European Parliament and of the Council of 31 May 2024 on the mechanisms to be put in place by Member States for the prevention of the use of the financial system for the purposes of money laundering or terrorist financing (Sixth AML Directive). (2024). *Official Journal of the European Union*, L 2024/1640. <https://eur-lex.europa.eu/eli/dir/2024/1640/oj/eng>
- Greenberg, T. S., Gray, L., Schantz, D., Gardner, C., & Latham, M. (2010). *Politically exposed persons: Preventive measures for the banking sector*. World Bank. <https://openknowledge.worldbank.org/bitstreams/39c72010-4393-53c6-b698-a96a528290dc/download>
- European Banking Authority. (2025). *Report on money laundering and terrorist financing risks affecting the EU's financial sector* (pp. 25–26). EBA. <https://www.eba.europa.eu/sites/default/files/2025-07/13ae2f94-dc04-4a50-9f24-af2808e78944/Opinion%20and%20Report%20on%20ML%20TF%20risks.pdf>
- Europol. (2025). *The changing DNA of serious and organised crime*. EUROPOL. <https://www.europol.europa.eu/cms/sites/default/files/documents/EU-SOCTA-2025.pdf>
- Klučka, J. (2017). *Medzinárodné právo verejné (všeobecná a osobitná časť)* (3rd ed.). Wolters Kluwer.
- Kšenzíghová, A., & Dzimko, J. (2022). *Premeny vlastníckeho práva so zameraním sa na vlastnícke právo štátu*. *Historia et Theoria Iuris*, 14(2), 5–12. https://www.flaw.uniba.sk/fileadmin/praf/HTI_2022-II__1_.pdf
- Lawlor-Forsyth, E., & Gallant, M. M. (2018). Financial institutions and money laundering: A threatening relationship? *Journal of Banking Regulation*, 19, 131–148. <https://doi.org/10.1057/s41261-017-0041-4>
- Ministerstvo vnútra Slovenskej republiky. (2025a). *Organizačné zložky Prezídia Policajného zboru*. https://www.minv.sk/?struktura_PPZ
- Ministerstvo vnútra Slovenskej republiky. (2025b). *Zoznam významných verejných funkcií ku dňu 07.03.2025*. https://www.minv.sk/swift_data/source/policia/fsj/kpo/VF20250904.pdf
- Národná rada Slovenskej republiky. (2019). *Dôvodová správa k ústavnému zákonu č. 357/2004 Z. z. o ochrane verejného záujmu pri výkone funkcií verejných funkcionárov*. <https://www.nrsr.sk/web/Dynamic/DocumentPreview.aspx?DocID=474346>
- Organisation for Economic Co-operation and Development. (2024). *Combatting high-level corruption in Eastern Europe: Insights and solutions*. OECD. <https://www.oecd.org>
- Oznámenie Ministerstva zahraničných vecí Slovenskej republiky o prijatí Dohovoru Organizácie Spojených národov proti korupcii. (2006). *Zbierka zákonov Slovenskej republiky*, 158, No. 434. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2006/434/20060701>

- Oznámenie Ministerstva zahraničných vecí Slovenskej republiky o podpísaní Trestnoprávneho dohovoru o korupcii. (2002). *Zbierka zákonov Slovenskej republiky*, 151, No. 375. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2002/375/20020629>
- Oznámenie Ministerstva zahraničných vecí Slovenskej republiky o prijatí Občianskoprávneho dohovoru o korupcii. (2003). *Zbierka zákonov Slovenskej republiky*, 160, No. 370. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2003/370/20030827>
- Oznámenie Ministerstva zahraničných vecí Slovenskej republiky o uzavretí Dohovoru o boji s podplácaním zahraničných verejných činiteľov v medzinárodných obchodných transakciách. (1999). *Zbierka zákonov Slovenskej republiky*, 135, No. 318. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/1999/318/19991203>
- Patakyová, M., et al. (2022). *Obchodný zákonník*. C. H. Beck.
- Regulation (EU) 2024/1624 of the European Parliament and of the Council of 31 May 2024 on the prevention of the use of the financial system for the purposes of money laundering or terrorist financing. (2024). *Official Journal of the European Union*, L 2024/1624. <https://eur-lex.europa.eu/eli/reg/2024/1624/oj/eng>
- Rose, C., Kubiciel, M., & Landwehr, O. (2019). *The United Nations Convention against Corruption: A commentary*. Oxford University Press.
- Financial Action Task Force. (2011). *Laundering the proceeds of corruption*. FATF. <https://www.fatf-gafi.org/content/dam/fatf-gafi/reports/Laundering%20the%20Proceeds%20of%20Corruption.pdf>
- Financial Action Task Force. (2013). *Politically exposed persons (Recommendations 12 and 22)*. FATF. <https://www.fatf-gafi.org/content/dam/fatf-gafi/guidance/Guidance-PEP-Rec12-22.pdf>
- Vyhláška ministra zahraničných vecí o Viedenskom dohovore o diplomatických stykoch. (1964). *Zbierka zákonov Československej socialistickej republiky*, 67, No. 157. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/1964/157/19640723>
- Vyhláška ministra zahraničných vecí o Viedenskom dohovore o konzulárnych stykoch. (1969). *Zbierka zákonov Československej socialistickej republiky*, 11, No. 32. <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/1969/32/19690502>
- Ústavný súd Slovenskej republiky. (2015). Nález sp. zn. III. ÚS 132/2015. <https://www.ustavnysud.sk/docDownload/27262394-4236-49b9-9a6e-743546ae7f24>
- Ústavný zákon č. 357/2004 Z. z. o ochrane verejného záujmu pri výkone funkcií verejných funkcionárov. (2004). *Zbierka zákonov Slovenskej republiky*. <https://www.slov-lex.sk>
- Ústavný zákon č. 493/2011 Z. z. o rozpočtovej zodpovednosti. (2011). *Zbierka zákonov Slovenskej republiky*. <https://www.slov-lex.sk>
- Zákon č. 297/2008 Z. z. o ochrane pred legalizáciou príjmov z trestnej činnosti a o ochrane pred financovaním terorizmu. (2008). *Zbierka zákonov Slovenskej republiky*.
- Zákon č. 297/2008 Z. z. o ochrane pred legalizáciou príjmov z trestnej činnosti a o ochrane pred financovaním terorizmu – konsolidované znenie. (2025). <https://www.slov-lex.sk/ezbierky/pravne-predpisy/SK/ZZ/2008/297/20250115>
- Zákon č. 111/1990 Zb. o štátnom podniku. (1990). *Zbierka zákonov Českej a Slovenskej Federatívnej Republiky*. <https://www.slov-lex.sk/ezbierky/pravnepredpisy/SK/ZZ/1990/111/20230701>
- Zákon č. 281/2015 Z. z. o štátnej službe profesionálnych vojakov. (2015). *Zbierka zákonov Slovenskej republiky*. <https://www.slov-lex.sk/ezbierky/pravnepredpisy/SK/ZZ/2015/281/20250701>

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THE LEGAL STATUS OF THE SÁMI PEOPLE IN NORWAY, SWEDEN AND FINLAND: CONSTITUTIONAL RECOGNITION AND CULTURAL AUTONOMY

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Abstract: This article examines the legal status of the Sámi people in Norway, Sweden, and Finland, focusing on constitutional recognition, Sámi parliaments, and cultural and linguistic rights. Drawing on a comparative analysis of key legislation, it highlights how these legal frameworks shape the socio-cultural autonomy of the Sámi and their practical capacity to maintain traditional livelihoods and cultural practices. The article demonstrates that while all three countries provide formal recognition and institutional mechanisms for Sámi participation, differences in territorial governance, language rights, and administrative structures produce varying socio-economic impacts. The paper deliberately excludes issues related to resource extraction and broader land-use conflicts to maintain analytical clarity.

Keywords: Sámi, Indigenous peoples, Nordic countries

JEL: K30, K31

Introduction

The Sámi are the indigenous people of Norway, Sweden, and Finland, as well as parts of Russia, with their traditional territory, Sápmi, predating the establishment of modern administrative borders. While the Nordic countries are often recognized for their commitment to international standards and human rights, the situation of their indigenous populations raises questions. Despite legislative measures that seemingly provide comprehensive protection and cover multiple aspects of Sámi life, the practical implementation often falls short of these expectations. This article examines the constitutional recognition, parliamentary structures, and cultural and linguistic rights of the Sámi across these three states, highlighting both achievements and gaps in the protection of their traditional ways of life, without addressing sector-specific areas such as mineral extraction, energy, or environmental law.

The research is based on a qualitative legal analysis combining doctrinal and comparative approaches. The study first examines the relevant constitutional provisions and key legislative acts regulating Sámi rights in Norway, Sweden, and Finland. Subsequently, these legal frameworks are compared in order to identify similarities, differences, and the extent of constitutional and cultural autonomy granted to the Sámi people.

During the research process, it became evident that a comprehensive inclusion of all areas of Sámi rights - particularly those concerning land use, extractive industries, and consultation procedures - would substantially exceed the scope of this paper. Since a significant reduction would compromise the depth of analysis, the focus was therefore limited to the constitutional recognition of Sámi rights, the institutional status and competences of Sámi Parliaments, and the protection of language and cultural rights. This delimitation allows for a more coherent and in-depth evaluation of the legal status of the Sámi people within the Nordic constitutional frameworks.

1 Constitutional Recognition of the Sámi People

1.1 The Constitution of the Kingdom of Norway

Article 108 of the Constitution of the Kingdom of Norway (*Grunnloven*) forms the fundamental constitutional framework for the protection of the rights of the Sámi people, Norway's Indigenous population. Originally adopted in 1988 as Article 110a, it explicitly recognizes the Sámi's historical position and establishes a positive obligation on the state to create conditions for the preservation and development of Sámi language, culture, and traditional way of life (Ministry of Justice and Public Security, 2024). In 2023, the provision was further amended to express more clearly the status of the Sámi as an Indigenous people (Norwegian Human Rights Institution, 2025).

“The authorities of the State shall create conditions enabling the Sámi People, as an Indigenous People, to preserve and develop its language, culture and way of life.”

Section 108 of the Constitution of Norway

It was the first provision in the Norwegian legal system to establish a specific obligation of the state toward a particular ethnic group.

Its most significant practical impact became evident with the establishment of the Inner Finnmark District Court (*Indre Finnmark tingrett*) in 2004, located in the traditional Sámi area of Finnmark. The court's judges are proficient in the Sámi language and possess specialized knowledge of Sámi customs and customary law (Ravna, 2020).

Article 92 of the Norwegian Constitution further provides that all state authorities must respect the rights guaranteed by the human rights treaties to which Norway is a party. The ILO Convention No. 169 of 1989 has been partially implemented into Norwegian law through the Finnmark Act, which states in Section 3 that “the Act shall apply subject to the limitations following from ILO Convention No. 169.” However, the Convention itself has not otherwise been incorporated into Norwegian law, including its specific provisions concerning the Sámi people's property rights (Anaya & Åhrén, 2025).

In the context of the Norwegian legal system, it is beyond doubt - according to international legal standards—that the Sámi population meets the criteria set out in the definition of Indigenous peoples under Article 1(b) of the ILO Convention No. 169. This has been explicitly confirmed by the jurisprudence of Norway's highest courts. In its judgment of 21 June 2001 in the *Selbu* case, the Supreme Court of the Kingdom of Norway held that the Sámi population, including the Southern Sámi community, unquestionably fulfills the conditions for recognition as an Indigenous people within the meaning of the aforementioned article (Government.No, 2025b).

1.2 Constitution of Sweden, the Instrument of Government (*Regeringsformen*)

“The opportunities of the Sámi People, and ethnic, linguistic and religious minorities to preserve and develop a cultural and social life of their own shall be promoted.”

Section 2, subsection 6 of The Instrument of Government of Sweden

A constitutional amendment effective from 1 January 2011 formally recognized the Sámi as a “people,” thereby strengthening their status as an Indigenous population and distinguishing the Sámi as a nation from other minority groups categorized as ethnic, linguistic, or religious minorities.

The Constitution explicitly states that “opportunities for the Sámi and for ethnic, linguistic, and religious minorities to preserve and develop their own cultural and social life

shall be promoted.” Compared with the Norwegian Constitution, however, it does not impose a binding obligation on state authorities and is rather declaratory in nature (Sveriges Riksdag, 2023).

“The right of the Sámi population to practice reindeer husbandry is regulated in law.”

Section 17, subsection 2 of the Instrument of Government of Sweden

In comparison with Article 2, Section 6, the Sámi are referred to as a “population” in Article 17, Section 2. In the first instance, they are recognized as a people, or an Indigenous population, with collective rights to self-determination, whereas in the second, the term denotes a group of individuals entitled to carry out a specific activity.

In Sweden, international standards on the rights of Indigenous peoples and minorities have relatively limited influence on Swedish law concerning Sámi rights. Due to the dualist approach to the application of international law, the Swedish government retains a certain degree of sovereignty. (Kyllönen. *et al.*, 2024)

1.3 The Constitution of Finland (731/1999)

“The Sámi, as an Indigenous People, as well as the Roma and other groups, have the right to maintain and develop their own language and culture. Provisions on the right of the Sámi to use the Sámi language before the authorities are laid down by an Act. [...]”

Section 17, subsection 3 of the Constitution of Finland

Article 17, Section 3 of the Constitution of Finland (*Suomen perustuslaki*) explicitly enshrines the rights of the Sámi as an Indigenous people. It recognizes their right to preserve and develop their own language and culture. This is a fundamental provision that provides constitutional protection and serves as a framework for subsequent specific legislation concerning language and culture (Ministry of Justice, 1999).

Provisions regarding the right of the Sámi to use the Sámi language before public authorities are further regulated by specific legislation, whereas no such special laws apply to other groups (e.g., the Roma). Similarly, the rights of individuals using sign language and those who, due to health-related limitations, require interpretation or translation, are guaranteed by law.

“In their native region, the Sámi have linguistic and cultural self-government, as provided by an Act.”

Section 121, subsection 3 of the Constitution of Finland

In their region (the Sámi homeland - which includes the municipalities of Enontekiö, Inari, and Utsjoki, as well as the reindeer herding area within Sodankylä municipality), the Sámi have linguistic and cultural self-government (Article 121). However, these provisions do not extend to issues of territorial rights, resource use, or self-governance in a broader sense.

Compared with the Norwegian and Swedish models, the Finnish Constitution is limited to enshrining linguistic and cultural rights. Matters concerning the preservation of traditional ways of life or social life are entirely omitted. Consequently, among the constitutions of the three Nordic states, it is the weakest instrument in terms of providing constitutional protection for the comprehensive rights of an Indigenous population.

2 Institutional Representation: Sámi Parliaments and the Finnmark Act in Norway

2.1 Norway

Act concerning the Sami parliament and other Sami legal matters (the Sami Act, 1987 No. 56)

The Sámi Act (*Sameloven*), adopted on 12 June 1987 and entering into force on 24 February 1989, constitutes the primary legal instrument for the protection and promotion of Sámi identity in Norway. Its main purpose is to create conditions that enable the Sámi in Norway to preserve, develop, and strengthen their language, culture, and social life. The Act reflects the state's obligations under Article 108 of the Constitution and Norway's international commitments concerning the rights of Indigenous peoples.

One of the key provisions of the Act is the establishment of the Sámi Parliament (*Sámediggi*), which serves as the representative and advisory body of the Sámi in relation to state authorities and public administration. The Parliament has the authority to submit opinions, proposals, and statements on its own initiative on all matters affecting the interests of the Sámi population. It may also initiate proceedings and engage in communication with public authorities, private institutions, and other relevant entities.

The Act also establishes an obligation for county and municipal authorities to consult with Sámi representatives in cases where local regulations, decisions, or measures are being prepared that may directly affect Sámi interests. The right to consultation constitutes an important mechanism for ensuring the political participation of the Sámi and for protecting their collective rights within local and regional self-government.

However, the Act does not require that consultations with the Sámi result in obtaining their free, prior, and informed consent (FPIC) before the adoption or implementation of national legislative or administrative measures that may affect them. This approach does not meet the standard set out in the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP) (Larsen, 2025).

The Sámi Parliament is elected through direct elections held concurrently with the parliamentary elections to the Storting (the Parliament of the Kingdom of Norway).

The Norwegian legal system is based on the principle of self-identification as the fundamental criterion for recognizing an individual as a Sámi. According to the Sámi Act, a person is considered Sámi if they declare themselves to be Sámi and meet at least one additional criterion: either the person themselves, or one of their parents, grandparents, or great-grandparents, has used the Sámi language as a language of communication within the family, or one of their parents is or has been registered in the electoral roll of the Sámi Parliament (Ministry of Local Government And Regional Development, 2025).

These conditions are therefore not tied to the territorial principle and reflect the fact that the Sámi live not only within the traditional Sámi territories (*Sápmi*) but also beyond them.

The Act also establishes the equal status of the Sámi languages - Southern Sámi, Lule Sámi, and Northern Sámi - with Norwegian in official and public communication within areas with a significant Sámi population. This approach contrasts, for instance, with the legal position of the Inuit in Greenland, where the legal framework does not distinguish between the various linguistic and cultural groups within the Indigenous population (two minorities in northern and eastern Greenland are not recognized as distinct Indigenous groups) (Ministry of Local Government And Regional Development, 2025).

Although the Sámi Parliament constitutes an autonomous political body, it is not part of the hierarchical structure of the state administration and does not function as a legislative or fiscal authority. It has no defined territorial jurisdiction over any exclusive area, no law-making powers, and no independent sources of revenue; consequently, its activities depend on cooperation with Norwegian state institutions and on financial transfers from the state budget.

(Josefsen & Saglie, 2024). Its decision-making powers are therefore relatively limited in practice. The Parliament's significance lies primarily in political representation, participation, and the promotion of the interests of the Sámi population within the democratic system of the Kingdom of Norway.

Act relating to legal relations and management of land and natural resources in Finnmark (Finnmark Act, 2005 No. 85)

While the Sámi Parliament serves as the main institutional mechanism for Sámi representation, their status in matters concerning land and natural resource management is governed by a separate legal framework - the Finnmark Act (Finnmarksloven). The Finnmark Act provides the fundamental legal framework for the management of land and natural resources in the county of Finnmark, which remained largely state-owned until 2005. It recognizes that the traditional use of land and waters by the Sámi gives rise to specific collective and individual rights to these areas within the region (Ministry of Justice and Public Security, 2005).

The Act also grants all residents of Finnmark the right to use local natural resources - such as fishing, hunting, and gathering - in accordance with statutory conditions. Decisions by public authorities that may affect Sámi interests must be consulted with the Sámi Parliament, thereby ensuring their participation in decision-making processes. However, the Act does not apply to mineral extraction or marine fishing, which are regulated by separate legal provisions.

The Act established Finnmarkseiendommen (the Finnmark Estate, FeFo), an independent legal entity to which all land in Finnmark not subject to private ownership, approximately 95% of the county's territory, was transferred (Anaya & Åhrén, 2025). The Board of Directors of FeFo consists of six members, three of whom are appointed by the Sámi Parliament and three by the Finnmark County Council. Decisions concerning substantial changes in the use of uncultivated land that may significantly affect Sámi culture, reindeer husbandry, or the traditional use of territories are subject to a stricter regime. Before such decisions are made, an assessment of the potential impacts on Sámi interests must be carried out in accordance with the guidelines of the Sámi Parliament, which are binding on the Board.

The Act distinguishes between inland and coastal municipalities, thereby allowing the Sámi Parliament to exert stronger influence in areas with predominantly Sámi populations. This arrangement enables Sámi parliamentary representatives to block changes affecting the inland areas or the entire territory of Finnmark, whereas for projects concerning only the coastal zones, they retain a significant, though not decisive, degree of influence (Anaya & Åhrén, 2025).

For the purpose of implementing the Finnmark Act, special bodies were established - the Finnmark Commission and the Uncultivated Land Tribunal for Finnmark - tasked with examining historical land claims and disputes. Their work has given rise to several legal conflicts, the most notable being the *Karasjok* case, which illustrates the continuing uncertainty surrounding Sámi land ownership rights (Spitzer & Selle, 2023).

The Finnmark Act establishes a distinct framework for Sámi participation in the management of land and natural resources, which differs substantially in its nature and operation from the consultative mechanisms set out in other parts of the Norwegian legal system, such as the Sámi Act of 1987. In addition, it introduces a specific procedure for determining the existence of Sámi and other parties' ownership rights to land and resources based on historical use. This process is similar in nature to the adjudicatory commissions operating in other regions of Norway (Anaya & Åhrén, 2025).

Despite significant progress toward recognizing the collective rights of the Sámi, it cannot be said that their ownership rights to land and natural resources - essential for maintaining traditional livelihoods, particularly reindeer herding - have been fully acknowledged. Unlike in certain parts of Inuit territory in the Canadian region of Nunavut,

where Indigenous peoples hold full ownership rights, no such model exists in Norway, not even in Finnmark, the traditional center of Sámi settlement. Although the Sámi Parliament plays a role in decision-making regarding the use of uncultivated land and the legislation represents a step forward in recognizing Sámi rights, the Act has been criticized for its insufficient implementation of ILO Convention No. 169. The rights are formulated as non-discriminatory and equally shared between Sámi and non-Sámi residents, which in practice means that even in Finnmark, the Sámi do not possess clearly defined ownership rights to land that would enable them to fully preserve and develop their traditional way of life (Koivurova *et. al.*, 2015).

2.2 Sweden

Sami Parliament Act (1992:1433)

The Sámediggi Act establishes the legal framework for the Sámi Parliament (Swedish: Sametinget, Northern Sámi: Sámediggi, Lule Sámi: Sámedigge, Southern Sámi: Saemiedigkie) in Sweden, defining its composition, powers, and the rights of the Sámi as an Indigenous people. The Act specifies who is considered Sámi, regulates the electoral process for the Parliament, and sets out active and passive voting rights.

The Swedish Sámi Parliament was established in Kiruna in 1993 “as a publicly elected body and a state authority with the overall task of promoting a living Sámi culture.” However, it is not an organ of Sámi self-government - its operation is governed by the Swedish Parliament and Government through laws, regulations, and decisions regarding the allocation of funding (Zeldin, 2011).

Under this Act, a person is considered Sámi if they identify as Sámi and it is likely that they use or have used the Sámi language at home, or if one of their parents or grandparents used the Sámi language at home, or if they have a parent registered on the electoral roll of the Sámi Parliament. However, the last condition does not apply in cases where the County Administrative Board has decided that a parent should not be registered on the electoral roll on the grounds that they are not considered Sámi (Sveriges Riksdag, 2025).

The Sámi Parliament represents the Sámi and provides the state with advisory opinions on matters concerning the Sámi, particularly regarding the use of natural resources, land management, and the environment. The Parliament may support Sámi language and cultural activities, initiate and manage projects focused on education and culture, and administer funds allocated for these purposes. It also organizes elections for its members and ensures representative functions in relation to state authorities. The Parliament has the authority to take measures concerning the traditional Sámi way of life, including reindeer herding, fishing, and hunting.

The Parliament’s capacity to function as a representative body of the Sámi is limited by its role as a Swedish government agency rather than an independent legislature, meaning it possesses no law-making powers (Kyllönen *et al.*, 2024). Ownership rights over land, resources, and the administration of public affairs remain under state control. As a result, Sweden effectively equates the Sámi right to self-determination with the right to consultation, rather than realizing it through genuine political autonomy for the Indigenous population. (Larsen, 2025)

2.3 Finland

Sámi Parliament Act (974/1995)

This Act (Finnish: Laki Saamelaiskäräjistä) establishes the Sámi Parliament (Sámediggi, Finnish: Saamelaiskäräjät) as the representative body of the Sámi in Finland. The Act regulates the organization, internal functioning, and electoral process of the Parliament, thereby creating a legal framework for political participation and the protection of Sámi identity in their traditional territories (Ministry of Justice, 2025a). The significance of the Act lies

primarily in its enshrinement of the constitutional right of the Sámi, as an Indigenous people, to preserve and develop their own culture and language.

The Parliament is authorized to submit opinions and requests and to actively participate in consultations with public authorities on all matters concerning them. Its main role is to function as an autonomous institution in promoting cultural and linguistic rights and to participate in the legislative process with respect to Sámi-related issues. The Act stipulates that all state authorities are obliged to consult the Sámi Parliament when making decisions that directly affect their status as an Indigenous people. This mechanism constitutes an important element in the realization of their right to self-determination and participation.

Following the amendment of 27 June 2025 (effective since 1 August 2025), the Act explicitly states that the Sámi, “as an Indigenous people,” have the right to self-determination for the purpose of preserving their language and culture in their traditional territories. This provision is significant as it constitutes an explicit recognition of the right of Indigenous peoples to self-determination - a central element of international standards on Indigenous rights (e.g., UNDRIP). In practice, however, the scope of this right is limited by legislation and implementation, as the Parliament does not possess full legislative or executive authority over territory, resources, or the direction of state policy concerning the Sámi.

According to Larsen (2025), despite the constitutional recognition of the Sámi Parliament and the cultural rights of the Sámi in Finland, their self-determination remains limited and narrowly defined, and in practice does not correspond to international standards regarding Indigenous rights, particularly concerning control over land, natural resources, and genuine autonomy.

The Sami Parliament does not have state-recognized decision-making powers on land, water, and natural resources, which are crucial to Sámi culture and the traditional way of life. Initially, it was assumed that Sami self-government would gradually develop and the powers of the Sami Parliament would expand in accordance with their own cultural values (Larsen, 2025).

Effective since 1 August 2025, the Sámi Parliament Act was amended, introducing several changes. The criteria for inclusion on the electoral roll were revised so that the roll now serves exclusively to determine the right to vote and stand as a candidate in Sámi Parliament elections and will no longer be used as a criterion for determining who is considered a member of the Sámi population. To strengthen the independence and objectivity of decision-making, an autonomous review commission was established to act as the first-instance authority in matters concerning the electoral roll. (Larsen, 2025)

Until recently, even non-Sámi individuals were able to vote in the Parliament, which is a highly unorthodox approach to recognizing the Sámi right to self-determination. The electoral rolls included persons whom the Sámi Parliament authorities did not recognize as members of the Sámi community. The Sámi Parliament has never accepted the so-called “Lapp criterion,” which referred more to traditional livelihoods than to ethnic affiliation. (Sámediggi, 2025) Finland is, in fact, the only Nordic country that allows reindeer herding to be carried out by non-Indigenous residents.

Currently, a person has the right to be registered on the electoral roll if they identify as Sámi, provided that the person themselves, or at least one of their parents, grandparents, or great-grandparents, learned the Sámi language as their first language; or at least one of the person’s parents is or was registered on the electoral roll for Sámi Parliament elections held on 1 January 2027 or later.

However, the Act still does not grant the Sámi Parliament full authority to independently determine the criteria for ethnic affiliation, as the final decision remains within Finland’s legal mechanisms - the registration is decided by the Election Commission. From the perspective of the right to self-determination, this represents more a procedural recognition of autonomy

(in cultural matters and electoral self-governance) rather than a full executive power to determine who is Sámi without state intervention.

Another change clarifies the obligation of state authorities to consult with the Sámi Parliament, aiming to align domestic procedures with the principles of good governance and participatory administration for Indigenous peoples (Ministry of Justice, 2025b).

Public authorities and other entities performing public administrative functions are obliged to consult with the Sámi Parliament during the preparation of legislation, administrative decisions, and other measures that may have particular significance for the Sámi, with the aim of reaching consensus with or obtaining the consent of the Sámi Parliament before adopting a decision.

The duty to cooperate and consult applies to measures carried out within the Sámi homeland or affecting it, as well as to other measures that specifically concern the Sámi language, culture, status, or the rights of the Sámi as an Indigenous people.

This provision (Article 9 of the Sámi Parliament Act, as amended and effective 1 August 2025) represents a strengthening of the consultation obligation - compared to the previous version of the Act, it explicitly aims at achieving consensus or obtaining the Sámi Parliament's consent, thus approaching the principle of free, prior, and informed consent (FPIC) under the United Nations Declaration on the Rights of Indigenous Peoples (UNDRIP).

However, it remains questionable whether this constitutes an effective instrument for genuine participation in state decision-making processes, as the Act does not prescribe any sanctions for non-compliance nor any obligation to decide in accordance with the Sámi Parliament's decision.

3 The Legal Framework of Reindeer Husbandry

3.1 Norway

Reindeer Husbandry Act (Reindriftsloven, 1978 No. 40)

This Act provides the key legal framework for regulating traditional reindeer herding, which constitutes a fundamental economic and cultural pillar of Sámi society. It sets out the conditions for exercising herding rights, defines grazing areas, and governs the organization and rights of individual herders and their associations. The Act also protects traditional forms of management from excessive economic and environmental pressures and provides mechanisms for resolving disputes between herders or in relation to other land users (Ministry of Agriculture and Food, 2007).

Its purpose is to ensure ecologically, economically, and culturally sustainable reindeer herding based on Sámi culture, traditions, and customs. The Act applies throughout Norway, except in specific areas where special rules are in force. Since reindeer herding is a traditional way of life that existed prior to the establishment of modern state borders, its preservation and development naturally require regional cooperation. For example, reindeer owners in Sweden are permitted to graze their herds on selected pastures in Norway (Government.No, 2025a).

Reindeer herding represents the most distinctive feature separating the Sámi from other populations. In Norway and Sweden, this distinction is both recognized and reinforced through national legislation, which stipulates that the right to engage in reindeer herding is reserved exclusively for the Sámi (Anaya & Åhrén, 2025).

Within the Sámi reindeer grazing area, which includes the counties of Finnmark, Troms, Nordland, Nord-Trøndelag, Sør-Trøndelag, and Hedmark, the Sámi hold historical rights to engage in reindeer herding. These rights are based on customary law and are presumed to exist under this Act, unless otherwise provided by other legal provisions.

The Act also addresses issues such as the compulsory acquisition of land and rights to secure grazing areas, the protection of Sámi rights when their interests are affected, and the provision of suitable living conditions for domestic reindeer. The state may expropriate land

and rights related to reindeer herding if necessary to ensure the continuation of herding within the Sámi area, provided that the expected benefits outweigh any potential harm (Ministry of Agriculture and Food, 2007).

According to the report by the Special Rapporteur on the Rights of Indigenous Peoples, James Anaya, the right to reindeer husbandry constitutes a usufruct right that applies to specific lands, regardless of their ownership (Human Rights Council, 2011).

Under this Act, the right to own reindeer is reserved exclusively for individuals from Sámi families. They are entitled to a reindeer earmark, which serves as proof of ownership. To obtain a reindeer earmark, the individual must be Sámi, and either they themselves, their parents, or their grandparents must have practiced reindeer herding as their primary occupation.

Another requirement is that they must be, or become, members of a *siida* - a traditional Sámi organizational unit that collectively manages reindeer herding and the use of pastures; essentially, a herding community. This ensures that rights are exercised collectively and in accordance with customary law. Membership in a *siida* allows for effective regulation of reindeer numbers and pasture use, helping to prevent conflicts and overexploitation of resources while preserving traditional practices.

Siidas are officially recognized as legal entities under the relevant reindeer herding laws of the Nordic countries, which also acknowledge the rights of these communities to historically used land and natural resources, although the precise scope of these rights may be subject to dispute. (Anaya & Åhrén, 2025) The 2007 amendments strengthened the role of the *siida* as a key mechanism for reindeer management, bringing Norwegian law closer to the traditional Sámi practices of managing land and natural resources. (United Nations, 2011)

The Act stipulates that for each summer *siida*, a maximum number of reindeer must be determined based on the available pastures and the conditions justifying this number. If necessary, a specific number may also be set for winter *siidas*, and a winter *siida* or other group may request its determination. Should the number of reindeer in a *siida* exceed the established limit, the *siida* is required to prepare a plan to reduce the herd size. This practice has been subject to frequent criticism and has led to legal disputes, such as *Jovsset Ánte Sara v. Ministry of Agriculture and Food in Norway*, and similarly *Koskela and Others v. Finland* (known as the *Nellim Case*) in Finland.

The Reindeer Husbandry Act underwent a significant amendment in 2014. The amendment abolished the regional bodies that had included representatives of reindeer herders on their boards and transferred their authority to the County Governor (*Fylkesmannen*). This change was criticized by the Sámi Parliament and reindeer herders' organizations, as it was perceived as an encroachment on the Sámi right to self-determination and self-governance. (Ravna, 2020)

3.2 Sweden

Reindeer Husbandry Act (1971:437)

This Act forms the foundation for the Sámi right to reindeer herding and establishes the legal status of a *sameby* (Sámi village) as a collective entity with the right to use the land, water, and resources necessary for traditional activities. It includes provisions on the doctrine of immemorial prescription and regulates hunting and fishing rights within the territories of a *sameby* (Sveriges Riksdag, 1993).

The right to engage in reindeer herding is legislatively granted exclusively to individuals of Sámi origin. This entitlement is further conditioned on membership in a reindeer herding *sameby*, with individuals permitted to herd only within the *sameby* to which they belong organizationally. A *sameby* is not an ordinary village in the geographic sense, but a legal entity responsible for managing reindeer herding within a defined territory.

The right to reindeer herding, considered perpetual, encompasses not only the care of the herds but also grants members the authority to hunt and fish within the territory of the respective sameby. These are ancient rights, based on the long-standing and uninterrupted use of land by the Sámi, without substantial interference or restriction from other parties. No other economic activities are permitted within a sameby apart from reindeer herding (Sveriges Riksdag, 1993).

With the establishment of the Swedish Sámi Parliament (Sámediggi), the need arose to determine who would be eligible to vote. Proof of ancestry was not considered a sufficient criterion, so in addition to self-identification as Sámi, a language-based rule—similar to that applied in Norway - was introduced: individuals themselves, or one of their parents or grandparents, had to have used Sámi as a domestic language, or one of their parents had to be or have been registered on the electoral roll. The result is two distinct definitions of who may be considered Sámi, as set out in two different legislative acts: the Reindeer Herding Act and the Sámediggi Act (Nilsson, 2019).

Anyone of Sámi origin may, under the provisions of this Act, use land and water to sustain themselves and their reindeer. The Act establishes the areas where grazing may take place (reindeer herding areas), the conditions under which timber may be harvested or game threatening reindeer may be hunted, how the costs of reindeer herding are allocated, the establishment of a board representing the village externally, compensation for damage caused by reindeer, and other matters related to reindeer herding.

Under Swedish legislation, reindeer grazing is permitted in designated areas - so-called reindeer herding areas - which are divided into year-round and seasonal zones. Outside Lapland, year-round grazing is allowed only with a special permit.

The term “reindeer herding” refers to the narrowly defined, day-to-day activity, whereas “reindeer husbandry” encompasses the broader traditional Sámi economic system, including herding, hunting, and fishing, which together form an integral part of the traditional Sámi livelihood system (Reindeer Herding, 2025).

In the past, Sweden implemented a state policy toward the Sámi that combined elements of segregation and assimilation. The segregationist approach primarily targeted Sámi engaged in reindeer herding, explicitly aiming to prevent their social and cultural integration with the Swedish majority. Under this policy, they were prohibited from settling in permanent residences and were provided with special nomadic schools designed to preserve their distinct way of life outside the dominant society. Conversely, Sámi who did not engage in reindeer herding were considered a group that should be assimilated into Swedish society as quickly as possible, through educational and social policies aimed at gradually abandoning their traditional lifestyle (Nilsson, 2019).

Over the course of Swedish legislative development, the connection between Sámi identity and reindeer herding was increasingly emphasized. Since Sámi rights were treated as privileges, the group to which these rights applied gradually narrowed.

Under the Reindeer Grazing Act of 1898, the criteria were language, ancestry, and general recognition as Sámi. A 1917 amendment added reindeer herding as a primary occupation, which became the principal criterion codified in the Reindeer Grazing Act of 1928. This Act divided the Sámi into two groups - those who herd reindeer (reindeer herders, samebyar) and those who do not. Rights to grazing, hunting, fishing, and forestry were granted exclusively to reindeer herders. The current 1971 Act provides that people of Sámi descent may be members of a Sámi reindeer herding community, and as such, they are entitled to herd reindeer and exercise other customary rights, including fishing, hunting, and related traditional activities (Nilsson, 2019).

Since Sámi rights in Sweden are essentially equated with the right to reindeer herding, almost all of these rights are governed by the Reindeer Herding Act (SFS 1971:437), where the

right to herd reindeer is recognized as a customary property right. This recognition has been reinforced by recent Supreme Court cases, including *Girjas* (Supreme Court of Sweden, 2021), *Nordmaling* (NJA 2011), and *Skattefjäll* (NJA 1981) (Kyllönen. et al., 2024).

3.3 Finland

Reindeer Husbandry Act (848/1990)

Finnish legislation differs from the situation in Norway and Sweden in one crucial respect. Reindeer herding in Finland is not an exclusive right of the Sámi, as Finnish settlers and farmers began engaging in this activity relatively early. (Allard, 2011) As a result, under the law, any person with permanent residence in a reindeer herding area and citizenship of a country within the European Economic Area (EEA) has the right to own and herd reindeer. This distinction has significant legal and political implications, as it sets the Finnish model apart from the Norwegian and Swedish systems, where reindeer herding is ethnically restricted to the Sámi and regarded as an integral part of their cultural and economic self-determination. In Finnish practice, the right is therefore more territorial than ethnic, affecting the legal regulation, management of land, and interpretation of property and usage rights for pastures. This approach has long been criticized by the Sámi, who argue that it weakens their status as an indigenous people and reduces their ability to exercise real control over a traditional activity that is central to their identity.

The Reindeer Husbandry Act provides the key legal framework regulating the rights and obligations of the Sámi and other persons involved in reindeer herding in Finland. The law does not recognize reindeer herding as a specific collective right of the indigenous population but as a general economic activity open to all residents of reindeer herding areas regardless of ethnicity.

Sámi may engage in reindeer husbandry on both public and private land, with the Act establishing rules for sustainable management and organizing the activity through reindeer herding cooperatives. The law protects reindeer husbandry both as an economic activity and as an integral part of Sámi culture, promoting ecologically balanced use of pastures and natural resources (Ministry of Agriculture and Forestry, 1990).

The Act further regulates the territorial management of reindeer husbandry by designating areas where grazing may take place and by allocating pastures among herders, while respecting traditional land use and environmental protection needs.

Only citizens of countries within the European Economic Area (EEA) who have permanent residence in a reindeer herding area, as well as reindeer herding cooperatives, may own reindeer. If a person without permanent residence in a reindeer herding area acquires ownership of reindeer, they may retain it only temporarily and are obliged to ensure that an authorized person or cooperative cares for the reindeer. Upon expiration of the period set by law, the reindeer must be sold or transferred to an eligible owner. The law also provides an exception allowing EEA citizens without permanent residence in a reindeer herding area to own draught reindeer.

Although this legal framework formally protects the traditional character of reindeer husbandry, in practice it does not grant the Sámi any special or preferential right to engage in the activity and thus does not strengthen their status as an indigenous people. The right to herd reindeer is defined territorially rather than ethnically, meaning that non-Sámi residents may also participate. This approach, often criticized by the Sámi themselves, weakens their cultural and economic rights and allows the state to maintain control over an activity that constitutes a key element of their identity and traditional way of life. Compared to the Norwegian and Swedish models, the Finnish regulation contributes the least to preserving the Sámi's cultural and economic autonomy.

4 Linguistic Rights and Cultural Preservation

4.1 Norway

The basic legal framework for the protection and development of Sámi languages is provided by the Sámi Act. Chapter 3 of the Act establishes the principle of linguistic equality between Sámi and Norwegian within the designated administrative area for Sámi languages, which includes municipalities divided into three categories – language development, revitalization, and stimulation municipalities (Ministry of Local Government And Regional Development, 2025).

Public authorities must allow the use of Sámi in administrative and legal contexts. The Education Act ensures Sámi language instruction where applicable.

Responsibility for protecting, developing, and financing language policy lies with the Sámi Parliament, which allocates funds to municipalities and counties for implementing the law.

The Norwegian model of Sámi language rights is among the most developed in Northern Europe. Unlike Finland and Sweden, where the protection of Sámi languages is primarily focused on education and public communication in limited regions, Norwegian legislation establishes a comprehensive system of language self-governance. It defines precise administrative areas, imposes binding obligations on public authorities, and integrates linguistic equality into local administration, the judiciary, healthcare, and the church. While the Swedish Language Act (2009:600) and the Sami Parliament Act (1992:1433) recognize Sámi as a “national minority language,” the Norwegian Sámi Act explicitly establishes equality between Sámi and Norwegian in designated areas (Section 3-9 of Sámi Act), going beyond the standard minority protection model and approximating the principle of territorially linked bilingualism.

4.2 Sweden

The National Minorities and National Minority Languages Act (2009:724) establishes rights for national minorities, including the Sámi, in the areas of minority language use, education, and culture, and provides legal protection for their cultural identity. It defines the geographic areas in which minority languages may be used in interactions with public authorities. (Ministry of Culture, 2009a)

For the Sámi, the Act is particularly significant because it guarantees the right to use Sámi in dealings with public authorities, in education, and when accessing services in traditionally Sámi-inhabited areas. The law also provides a framework for preserving cultural heritage, supporting educational programs in minority languages, and enabling minority participation in decision-making processes that directly affect them. The legislation aligns with European frameworks on minority rights.

The Act establishes a duty for public authorities to consult on matters affecting national minorities. Authorities are required to engage in structured dialogue with minority representatives, ensuring that their perspectives and needs are considered in decision-making. Of particular importance is the Act on Consultations Regarding the Sámi Population (2022:66), which guarantees the Sámi, as an indigenous people, the right to be heard on issues concerning their culture, traditional territories, and way of life. This framework strengthens the principles of participation and self-determination in accordance with Sweden’s international commitments.

The Language Act (2009:600) protects national minority languages, including Sámi, and ensures their use in public administration and education. Its main purpose is to define the position of Swedish as the primary societal language while ensuring the protection of linguistic diversity, including the rights of national minorities and users of Swedish Sign Language. The Act explicitly recognizes five minority languages - Finnish, Meänkieli, Sámi, Romani Chib, and Yiddish - and imposes duties on public institutions to protect these languages,

promote their development, and facilitate their practical use, particularly in official interactions. (Ministry of Culture, 2009b)

This is a supplementary law aimed at strengthening language rights, ensuring that national minority languages (including Sámi) are supported in official contexts, education, and public services. It enables individuals belonging to national minorities to use their language in interactions with public authorities.

The Committee of Ministers of the Council of Europe, in its resolution CM/ResCMN(2013)2 (11 June 2013), welcomed the constitutional recognition of the Sámi as an indigenous people (2011) and the adoption of the National Minorities and Minority Languages Act (2009:724) and the Language Act (2009:600), which enhanced the use of minority languages, including Sámi, and established mechanisms for minority participation in decision-making. However, the resolution also pointed out shortcomings: the absence of an explicit prohibition of discrimination based on language, limited availability of professionals proficient in minority languages, lack of measures in housing and healthcare, and legal uncertainty regarding the Sámi's rights to winter pastures following the court decision of 27 April 2011. The Committee urged Sweden to minimize negative impacts on the traditional Sámi way of life in spatial and urban planning (The UN Refugee Agency, 2013).

4.3 Finland

Sámi Language Act (1086/2003) represents a modern instrument for protecting the Sámi language and strengthening their status as an indigenous people in Finland. The law focuses primarily on language rights and administrative protection of the language rather than political autonomy. While Finnish and Swedish are recognized as official languages of Finland, Sámi retains the status of a regional minority language.

The law expands the constitutional right of the Sámi to use their own language by establishing specific procedural guarantees in administrative proceedings. It applies mainly to public authorities and courts operating in municipalities traditionally inhabited by the Sámi (the Sámi Homeland – Enontekiö, Inari, Sodankylä, and Utsjoki), as well as to other state authorities whose jurisdiction extends to these areas. (Ministry of Justice, 2003) In addition, the law imposes on public authorities the obligation to ensure the availability of interpretation services and the publication of official documents in Sámi. This law is of fundamental importance for protecting the Sámi language, as language is a key element of their cultural continuity.

Under the law, members of the indigenous population have the right to use the Sámi language in administrative and judicial proceedings, and this right cannot be denied even if they also speak another language (Finnish or Swedish). In municipalities with a significant Sámi population, authorities must provide bilingual forms, public notices, and other official documents. The law also guarantees the right to translation and free interpretation if the authority does not have personnel proficient in Sámi.

An important element is the obligation of public authorities to actively promote the exercise of language rights and to take them into account in daily operations. The Sámi Parliament plays a significant role in implementation through its language department, which provides translation services and monitors compliance with the law.

Skolt Act (253/1995) focuses on the protection of the Skolts, a sub-ethnic Sámi group residing in the eastern Lappish area of Inari. It regulates the Skolts' rights to land and natural resources, supports traditional activities such as reindeer herding, fishing, and hunting, and establishes the Skolt Village Assembly as a local decision-making body for community matters. At the same time, it provides financial and organizational support for the preservation of Skolt culture and language, ensuring the maintenance of their identity and communal autonomy (Ministry of Agriculture and Forestry, 1995).

A Skolt is defined as a person who self-identifies as a Skolt and meets at least one of the criteria related to language use or ancestry.

The Act (Article 56) requires that in matters significantly affecting Skolts or their territory, public authorities must take their views into account or conduct consultations with the Skolt Village Assembly.

The territory constitutes the core of Skolt self-determination, as it provides space for the preservation of their traditional culture and economy. Although the Skolt Act does not establish full territorial autonomy, it recognizes the specific cultural and economic connection of the Skolts to this territory - similar to how Finnish legislation recognizes the “Sámi homeland” under the Sámi Parliament Act.

Overall, the legislation of each state reflects a balance between the constitutional recognition of the Sámi, the protection of cultural identity, and the practical opportunities for language use. A comparison shows that Norway provides the highest level of language self-governance, Sweden a medium level with greater emphasis on education, and Finland a relatively limited, territorially specific form of protection.

Conclusion

The legal frameworks governing the rights of the Sámi across Norway, Sweden, and Finland reflect varying approaches to recognizing and supporting the Sámi as an indigenous people, balancing cultural protection, political representation, and practical implementation of rights.

Norway provides the most comprehensive legal recognition, particularly in the areas of language rights, land use, and reindeer husbandry. The Sámi Parliament (Sámediggi) plays a central role in representing Sámi interests, and mechanisms such as the Finnmark Act and the Reindeer Herding Act ensure collective rights to land and resources, although full ownership and legislative autonomy remain limited. Norway also guarantees extensive language rights through the Sámi Act, ensuring the use of Sámi in administration, education, and public services within designated Sámi areas.

Sweden grants the Sámi political representation via the Sámediggi, but legislative and resource control remains firmly under the state. Reindeer herding is strictly regulated and ethnically restricted to Sámi, preserving a key aspect of Sámi culture and identity. Language rights are acknowledged, particularly in education and administrative contexts, but the scope of practical implementation is narrower than in Norway. Recent legislation enhances consultation and participatory mechanisms, yet full self-determination over land, resources, and traditional livelihoods remains limited.

Finland offers a markedly different model, where political representation, language rights, and land use are territorially rather than ethnically defined. The Sámi Parliament (Saamelaiskäräjät) provides cultural and linguistic advocacy and advisory functions, but reindeer husbandry is legally open to all residents of the herding area regardless of ethnic background. Language rights are concentrated in the traditional Sámi homeland and primarily target administrative and educational contexts. While Finland recognizes the Sámi as an indigenous people, practical mechanisms for self-determination and control over traditional livelihoods are more limited compared to Norway and Sweden.

Across all three countries, a recurring theme is the tension between recognition of Sámi rights as an indigenous people and the practical limitations imposed by state structures. Norway exemplifies the closest approach to integrating traditional Sámi rights into national law, while Sweden emphasizes cultural and economic privileges, and Finland focuses on territorial management with limited ethnic differentiation. The comparison highlights that, despite legal recognition, Sámi self-determination and control over their lands, resources, and economic

activities remain partial, necessitating continued attention to implementing international standards such as UNDRIP and ILO Convention 169.

References:

- Allard, C. (2011). The Nordic countries' law on Sámi territorial rights. *Arctic Review on Law and Politics*, 2(2), 159–183. <https://www.jstor.org/stable/48710157>
- Anaya, S. J., & Åhrén, M. (2025). The Right of Self-Determination, the Sámi Indigenous People, and the Norwegian Finnmark Act. *Arctic Review on Law and Politics* (published online ahead of print 2025). <https://doi.org/10.1163/23874562-20250003>
- Government.no. (2025a). Reindeer husbandry [online]. <https://www.regjeringen.no/en/topics/food-fisheries-and-agriculture/reindeer-husbandry/reindeerhusbandry/id2339774/>
- Government.no. (2025b). What defines an Indigenous People? [online]. <https://www.regjeringen.no/en/topics/indigenous-peoples-and-minorities/Sami-people/midtspalte/What-Defines-an-Indigenous-People/id451320/>
- Human Rights Council. (2011). Report of the Special Rapporteur on the rights of indigenous peoples, James Anaya: Addendum The situation of the Sami people in the Sápmi region of Norway, Sweden and Finland [online]. https://unsr.jamesanaya.org/docs/countries/2011-report-sapmi-a-hrc-18-35-add2_en.pdf
- Johnstone, R. L. (2020). The impact of international law on natural resource governance in Greenland. *Polar Record*, 56, e21. <https://doi.org/10.1017/S0032247419000287>
- Josefsen, E., & Saglie, J. (2024). The Sámi Parliament in Norway: A “breaking in” perspective. *The Polar Journal*, 14(1), 109–128. <https://doi.org/10.1080/2154896X.2024.2342122>
- Koivurova, T., Holi, L., Duyck, S., & Stepien, A. (2015). Legal protection of Sami traditional livelihoods from the adverse impacts of mining: A comparison of the level of protection enjoyed by Sami in their four home states. Arctic Centre, University of Lapland [online]. <https://arcticreview.no/index.php/arctic/article/view/76/84>
- Kyllönen, K. M., Kirchner, S., Poelzer, G., et al. (2024). Indigenous rights, social media and protest movements in Sápmi. *Miner Econ*. <https://doi.org/10.1007/s13563-024-00445-y>
- Larsen, E. (2025). Implementation of the Sámi People's Rights under International Law. The Saami Council | Sámi University of Applied Sciences | IWGIA [online]. https://indigenournavigator.org/files/media/document/The%2BState%2BOf%2BSápmi%2B01_2025.pdf
- Ministry of Agriculture and Food. (2007). Act relating to Reindeer Husbandry (The Reindeer Husbandry Act) [online]. <https://www.pileosapmi.com/wp-content/uploads/2017/11/reindeer-husbandry-act-english.pdf>
- Ministry of Agriculture and Forestry. (1990). Reindeer Husbandry Act (848/1990; amendments up to 54/2000 included) [online]. <https://www.finlex.fi/api/media/statute-foreign-language-translation/689034/mainPdf/main.pdf?timestamp=1990-09-13T21%3A00%3A00.000Z>
- Ministry of Agriculture and Forestry. (1995). Skolt Act (253/1995) [online]. <https://www.finlex.fi/en/legislation/1995/253>
- Ministry of Culture. (2009a). Act on National Minorities and Minority Languages (2009:724) [online]. <https://www.minoritet.se/6714>
- Ministry of Culture. (2009b). Language Act (2009:600) [online]. <https://www.government.se/contentassets/16ba706f40854a87b910941caf3891d1/language-act-in-english.pdf>
- Ministry of Justice. (1999). The Constitution of Finland 11 June 1999 (731/1999, amendments up to 817/2018 included) [online]. <https://www.finlex.fi/api/media/statute-foreign-language-translation/688686/mainPdf/main.pdf?timestamp=1999-06-10T21%3A00%3A00.000Z>
- Ministry of Justice. (2003). Sámi Language Act (1086/2003) [online]. <https://ospcom>.

- wordpress.com/wp-content/uploads/2011/10/ldr3.pdf
- Ministry of Justice. (2025a). Act on the Sámi Parliament [online]. <https://www.finlex.fi/fi/lainsaadanto/1995/974>
- Ministry of Justice. (2025b). Reformed Act on the Sámi Parliament [online]. <https://valtioneuvosto.fi/en/-/1410853/reformed-act-on-the-sami-parliament>
- Ministry of Justice and Public Security. (2005). Act relating to legal relations and management of land and natural resources in Finnmark [online]. <https://lovdata.no/dokument/NLE/lov/2005-06-17-85>
- Ministry of Justice and Public Security. (2024). The Constitution of the Kingdom of Norway [online]. <https://lovdata.no/dokument/NLE/lov/1814-05-17>
- Ministry of Local Government and Regional Development. (2025). The Sámi Act [online]. <https://www.regjeringen.no/en/dokumenter/the-sami-act/-id449701>
- National Norwegian Human Rights Institution. (2025). International Conventions and Their Status in Norwegian Law [online]. <https://www.nhri.no/en/report/human-rights-protection-against-interference-in-traditional-sami-areas/2-international-conventions-and-their-status-in-norwegian-law>
- Reindeer Herding. (2025). Sámi – Sweden [online]. <https://reindeerherding.org/sami-sweden>
- Sámediggi. (2025). The Parliament of Finland has passed the amendment to the Sámi Parliament Act – Thirty years of work by the Sámi Parliament pays off [online]. <https://samediggi.fi/en/news/the-parliament-of-finland-has-passed-the-amendment-to-the-sami-parliament-act-thirty-years-of-work-by-the-sami-parliament-pays-off/>
- Spitzer, A. J., & Selle, P. (2023). A Sami land-claims settlement? Assessing Norway's Finnmark Act in a comparative perspective. *Scandinavian Political Studies*, 46, 289–310. <https://doi.org/10.1111/1467-9477.12260>
- Sveriges Riksdag. (1993). Reindeer Husbandry Act (1971:437) [online]. https://www.riksdagen.se/sv/dokument-och-lagar/dokument/svensk-forfattningssamling/rennaringslag-1971437_sfs-1971-437/
- Sveriges Riksdag. (2023). The Constitution of Sweden. The Fundamental Laws and the Riksdag Act [online]. <https://www.riksdagen.se/globalassets/03.-dokument-och-lagar/bestall-och-ladda-ner/other-languages/grundlagar-2023-engelsk-web.pdf>
- The UN Refugee Agency. (2013). Resolution CM/ResCMN (2013)2 on the implementation of the Framework Convention for the Protection of National Minorities by Sweden [online]. <https://www.refworld.org/legal/resolution/coeministers/2013/en/43669>
- United Nations. (2011). Report of the Special Rapporteur on the rights of indigenous peoples on the situation of the Sami people in the Sápmi region of Norway, Sweden and Finland [online]. <https://docs.un.org/fr/A/HRC/18/35/Add.2>
- Zeldin, W. (2011). Sweden: Sami Indigenous Rights [online]. <https://www.loc.gov/item/global-legal-monitor/2011-04-22/sweden-sami-indigenous-rights/>

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BETWEEN TOLERANCE AND PROTECTION: THE THEORETICAL LOGIC OF MILITANT DEMOCRACY¹

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Abstract: This article examines the theoretical and normative foundations of militant democracy, focusing on the tension between democratic self-preservation and liberal tolerance. Employing qualitative methods normative legal analysis and democratic theory the study examines how various democratic models conceptualize the limits of tolerance and mechanisms of protection. It finds that while militant democracy offers a defensible logic of conditional tolerance, it risks drifting into authoritarianism without clear safeguards. The article argues that any legitimate application must remain proportionate, procedurally bounded, and legally accountable. It contributes to debates on how democracies can resist internal threats without undermining their own constitutional and normative commitments.

Keywords: militant democracy, democratic self-defence, rule of law, democracy

JEL: F50, K33

Introduction

Within liberal democratic constitutionalism lies a deep and enduring paradox: the imperative to preserve democratic integrity may, in exceptional circumstances, necessitate the temporary suspension or restriction of the very civil rights upon which democratic governance is built. This dilemma is at the heart of the doctrine of militant democracy, a concept developed in the 1930s by Karl Loewenstein, who argued that democracies must not succumb to “suicidal tolerance” in the face of totalitarian threats exploiting democratic openness for authoritarian ends (Loewenstein, 1937a, 1937b). Militant democracy, in this sense, asserts that democracies are normatively justified indeed obligated to restrict certain rights and exclude anti-system actors when those rights are weaponized to dismantle the democratic order from within (Kirshner, 2014; Sajó, 2006). Loewenstein’s theory of militant democracy emerged in direct response to the collapse of the Weimar Republic and its legalistic failure to prevent fascist subversion through democratic procedures. His work explicitly rejected the assumption that constitutional democracies could remain ideologically neutral in the face of existential threats.

Militant democracy is primarily rooted in the European continental democratic tradition rather than the American one. The American model is far more permissive toward freedom of thought and speech. In contrast, the European experience with totalitarianism has led to a more preventive approach, allowing restrictions on anti-democratic movements before they threaten the democratic order itself. Although militant democracy remained a significant constitutional principle in Germany (*streitbare Demokratie* or *wehrhafte Demokratie*) and featured prominently in landmark cases such as *Refah Partisi* (Turkey, 2003) and *Batasuna* (Spain, 2009), two emerging contexts in the early twenty-first century reignited scholarly and

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political interest in the concept (Ellian & Rijpkema, 2018). First, in the post-Cold War context, liberal democracies faced new types of internal threats, particularly from religious extremism and terrorist groups operating largely outside formal political institutions. This shift led some scholars, notably Sajó (2004), to reinterpret militant democracy as evolving into a broader of “counterterrorism” or “preventive state” (Ellian & Rijpkema, 2018). Second, the rise of populist and illiberal movements, which increasingly operate within democratic frameworks and, in some cases, ascend to power – as seen in Turkey, Hungary, Poland, or the United States – has challenged the traditional logic of militant democracy (Bourne & Rijpkema, 2022; Kaltwasser, 2019).

Militant democracy is the subject of intense and evolving academic debate. Scholars are divided over whether such measures are justified, effective, or risk undermining the very democratic values they aim to protect. Key debates focus on the legitimacy and scope of restrictions, the risk of authoritarian backsliding, the role of institutions versus citizens, and the expansion of militant democracy’s targets from fascism to populism, religious extremism, and illiberalism (Bourne & Rijpkema, 2022; Croce, 2025; Invernizzi Accetti & Zuckerman, 2017; Macklem, 2006; Malkopoulou & Kirshner, 2019; Müller, 2016; Nitzschner, 2025; Stahl & Popp-Madsen, 2022). The debate also extends to the international level, with questions about the role of supranational bodies like the EU in defending democracy (Elkins, 2022; Feisel, 2022; Müller, 2016). Overall, the field is marked by a lack of consensus on the best balance between self-preservation and openness, and on the most legitimate and effective institutional arrangements (Elkins, 2022; Kuo, 2024; Stahl & Popp-Madsen, 2022).

In the Part 1, we examine how different theories of democracy conceptualize the relationship between tolerance and protection, focusing on their respective approaches to the defense of democracy. By situating the concept of militant democracy within this broader theoretical spectrum, the section seeks to clarify how diverse democratic traditions – from republican and liberal to deliberative, agonistic, and radical – define the legitimate boundaries of tolerance and the permissible forms of defense against internal threats. In doing so, it highlights a fundamental dilemma at the heart of democratic thought: whether democracy is best protected by institutional safeguards, civic virtue, rational consensus, or by embracing conflict and continuous transformation. Part 2 aims to examine the normative boundaries of militant democracy as articulated in the writings of international legal scholars, and to assess whether legal mechanisms designed to protect democratic constitutional orders remain reconcilable with the international rule of law framework. This part employs a qualitative methodology, combining elements of normative legal analysis, comparative jurisprudence, and theoretical legal interpretation.

1 The Tolerance–Protection Dilemma in Democratic Theory

There is a fundamental question at stake: How far is democracy able to go in defending itself without negating its own principles? The idea of self-defensive democracy thus brings to the forefront the enduring philosophical tension between tolerance and protection: between the moral openness that defines democratic life and the defensive measures required for its survival. Different theories of democracy and approaches to democracy studies have addressed this tension in markedly distinct ways, each defining the proper limits of tolerance and the legitimate forms of protection according to its underlying normative logic. To clarify these conceptual tensions, it is useful to situate militant democracy within the broader spectrum of democratic theories, each offering a different answer to the question of how democracy should live with, or defend itself against, its internal adversaries.

Militant democracy constitutes a genuine democratic response to the problem of self-preservation. Introduced by Karl Loewenstein (Loewenstein, 1937a, 1937b), the concept assumes that democracy may, at times, need to act illiberally in order to remain liberal. Its logic

of tolerance is conditional: openness must end where it would enable forces that seek to destroy the democratic order itself. The protective measures like party bans, restrictions on extremist speech, or dissolution of anti-system groups, are justified by reference to the survival of democracy. Subsequent theorists, such as Samuel Issacharoff (2007) and Jan-Werner Müller (2012), have refined this logic, emphasizing the need for proportionality and procedural safeguards. Yet, as Invernizzi Acetti and Zuckerman (2017) or Khramova and Troitskaya (2020) warns, militant democracy always risks drifting into what it opposes: an authoritarian form of self-defense. Moreover, the procedural institutionalism that shapes many contemporary understandings of militant democracy proves problematic insofar as it risks turning a mechanism of democratic self-defense into one of self-restraint—protecting stability at the expense of genuine democratic transformation, as pointed out by Nitzschner (2025).

Republican democracy grounds its defense of democracy in the ideal of civic virtue and the collective good. Drawing on the tradition of Rousseau, Machiavelli, and more recently Philip Pettit (1999) or Quentin Skinner (2012), republican thought holds that the survival of democracy depends on citizens' capacity for civic responsibility and moral judgment. Tolerance, in this model, is not unlimited but subordinated to the maintenance of civic integrity. Protection arises from education, public participation, and the cultivation of virtù – civic virtue. However, the republican vision risks moral paternalism: those deemed “unvirtuous” may be excluded in the name of preserving the polity's moral structure. Elites, or the so-called “virtuous citizens,” may claim the right to determine who is sufficiently moral, or responsible to be perceived as a full member of the political community. This can lead to the marginalization of groups with different political values within political deliberation, resulting in the exclusion of minorities or politically non-conformist groups.

Within liberal democracy, the balance is leaning towards maximal tolerance. Rooted in the thought of John Locke, John Stuart Mill, and later John Rawls (1971), liberalism entrusts the protection of democracy to procedural neutrality and the marketplace of ideas. Conflict and dissent are managed through legal equality and freedom of expression, under the assumption that truth and moderation will prevail in open debate. This logic finds its most pronounced expression in the United States, where the principle of free speech embodies the liberal conviction that even offensive or extremist opinions must be tolerated in order to safeguard the integrity of democratic discourse. The virtue of this model lies in its commitment to rights and individual autonomy; its weakness lies in its vulnerability to internal subversion, as anti-democratic actors can exploit liberal freedoms to dismantle the system from within (Mudde, 2019; Urbinati, 2014).

Deliberative democracy, developed by Jürgen Habermas (1962, 1996) and Joshua Cohen (1997), reframes the problem through communicative rationality. It tolerates all arguments that can be reasonably justified within a framework of public reason, while excluding those that reject discourse itself. Protection thus becomes normative rather than coercive: it rests on shared commitment to rational dialogue and mutual justification. However, as critics have argued, deliberative democracy's reliance on communicative rationality admits only arguments deemed universally “reasonable,” thereby excluding passions and particular identities (Jones, 2014). Chantal Mouffe (2000) argues that this pursuit of consensus suppresses the inherently conflictual nature of politics, ignoring deep social antagonisms that cannot be resolved through rational discourse and thus risking ideological polarization or populist backlash.

Instead, Mouffe (2000, 2005), together with Ernesto Laclau (1985), introduce the agonistic model of democracy. It embraces political conflict as constitutive of democratic life. Tolerance here means accepting the permanence of disagreement and recognizing opponents as legitimate adversaries rather than enemies. Protection is achieved through symbolic and institutional mechanisms that channel antagonism into legitimate contestation. The central

challenge, as Mouffe stresses, lies in managing this agonism without sliding into antagonism – that is, without letting political struggle degenerate into existential hostility. In the agonistic understanding, the defense of democracy is not primarily about suppressing enemies or protecting institutions from “threats,” but about maintaining an open space for legitimate conflict. Democracy thus protects itself not by prohibiting extremes, but by enabling the articulation of conflicts within the public sphere, preventing unexpressed frustrations from spilling over into authoritarian or populist forms.

Finally, radical democracy, also associated with Laclau and Mouffe (Laclau & Mouffe, 1985) but further developed by thinkers like Jacques Rancière (1999) and Bonnie Honig (1993), radicalizes the notion of democratic openness. Democracy is understood as an ongoing process of contestation, constantly reconstituting itself through struggles for equality and inclusion. Tolerance is dynamic, an evolving practice of negotiating hegemony. Protection lies not in institutions but in mobilization and the capacity for renewal through dissent. From this perspective, democracy protects itself by remaining open to new subjects, identities, and demands that challenge existing power structures. The defense of democracy, therefore, does not lie in its preservation or closure, but in its radical capacity for self-transformation – in its willingness to continuously expand the space of equality and inclusion. Yet this model faces a crucial dilemma: how to preserve plurality and vitality without collapsing into fragmentation or instability.

Figure 1: Comparative Models of Democracy and the Tolerance–Protection Dilemma

Model	Core Principle	Approach to Conflict / Threat	Logic of Tolerance	Mechanism of Protection	Main Conceptual Tension
Militant democracy	Self-preservation of democratic order	Restricts anti-democratic actors and movements	Conditional – tolerance ends where it endangers democracy	Legal and institutional exclusion (party bans, speech limits, dissolution of groups)	Balancing self-defense with openness to democratic transformation; risk of authoritarian drift
Republican democracy	Civic virtue and collective good	Promotes active citizenship, defends polity through civic responsibility	Subordinated – tolerance within moral and civic boundaries	Education, participation, and civic oversight	Risk of moral paternalism or exclusion of “unvirtuous” citizens
Liberal democracy	Individual rights and procedural neutrality	Negotiates conflict through legal equality and free expression	Unconditional – trust in open debate and marketplace of ideas	Minimal coercion, procedural safeguards	Vulnerability to internal subversion by anti-democratic actors
Deliberative democracy	Rational consensus and communicative reason	Resolves conflict through dialogue and justification	Inclusive – all reasonable arguments heard	Normative commitment to discourse ethics	Excluding “unreasonable” actors without coercion
Agonistic democracy	Pluralist contestation	Institutionalizes political antagonism	Productive – conflict as democratic vitality	Discursive and symbolic containment of antagonism	Managing escalation without domination

Radical democracy	Transformative struggle and equality	Embraces antagonism as constitutive of democracy	Dynamic – tolerance as ongoing negotiation of hegemony	Political mobilization, permanent contestation	Sustaining pluralism without disintegration

Source: Own compilation

2 Conceptual Tensions Between Militant Democracy, Rule of Law and International Law

Loewenstein (1937) famously argued that “democracy must become militant” if it is to avoid being destroyed by its own tolerance. (Loewenstein, 1937a) The central function of this doctrine is thus preemptive exclusion: the legitimization of constitutional mechanisms designed to restrict or neutralize actors, parties, and movements whose explicit or implicit aim is to dismantle the democratic state from within. This normative posture has generated significant debate among constitutional and international legal scholars, particularly regarding its compatibility with international human rights law, pluralist legal orders, and the rule of law as a structuring principle of global governance.

As Kuo (2024) argued, militant democracy presupposes a “democratic and normative version of constitutional ordering,” (Kuo, 2024) in which a singular vision of constitutional identity justifies the deployment of exclusionary tools. This assumption stands in marked contrast to what Kuo describes as the “non-democratic albeit representative and deeply pluralist character of the international legal order,” in which such normative closure is neither presumed nor easily sustained. As Kuo further underscores, “not only the concept of militant democracy but also the very idea of constitutional self-defense has difficulty finding its place in international law,” (Kuo, 2024) given the prevailing emphasis on inclusivity, equality, and multilateral legitimacy in global legal regimes.

At the heart of this conceptual disjuncture lies a critical tension between the constitutional logic of militant democracy, which seeks to secure a bounded normative identity, and the international legal conception of the rule of law, which centers on procedural fairness, legal predictability, and the protection of individual rights from arbitrary power. In international legal thought, the rule of law functions as both a normative ideal and an institutional constraint, a principle meant to ensure that all public authority is exercised within a transparent and accountable legal framework. Documents such as the Venice Commission’s Rule of Law Checklist (2016), the UN Secretary-General’s Report on the Rule of Law and Transitional Justice (2004), and the jurisprudence of the European Court of Human Rights (ECtHR) all emphasize the core requirements of legality, foreseeability, and proportionality as conditions for any restriction on fundamental rights, particularly those pertaining to political expression, association, and participation.

However, the doctrine of militant democracy by explicitly authorizing legal constraints on democratic rights for normative reasons challenges the liberal premise that procedural legality alone can sustain democratic legitimacy. As militant democracy prioritizes substantive democratic survival over procedural neutrality, it opens the legal field to teleological reasoning, in which the end (preserving democracy) may justify the means (limiting rights). This doctrinal elasticity raises urgent and unresolved questions: To what extent can militant democratic measures remain faithful to rule-of-law values such as equality, impartiality, and legal certainty? And how can states ensure that the instruments of constitutional self-defense do not transform into tools of political repression or constitutional degradation?

On the surface, militant democracy and the rule of law appear fundamentally misaligned. The former, as articulated by Loewenstein, involves restrictive constitutional measures - party bans, speech limitations, dissolution of extremist associations that are justified

on the grounds of preventing democratic collapse. By contrast, the latter, as articulated in international legal doctrine, emphasizes the impartial application of law, even to actors with controversial or anti-systemic views. This apparent contradiction, however, is more complex than it first appears. As András Sajó (2005) contends, militant democracy does not necessarily abandon rule-of-law principles but rather reflects a shift in how those principles function under conditions of democratic threat. In his framework, the legal order evolves from reactive constitutional self-defense toward a more anticipatory and sometimes discretionary mode of governance. In his words, “the current institutional arrangements offer little control over the legitimacy (and appropriateness) of restrictive measures that increase the power of state agencies over the citizens.” (Sajó, 2006) In his work, Sajó further introduced a three-part typology to explain the evolution of militant democratic logic in modern states: the militant democracy model, the preventive state, and the counter-terror state. The militant model is legally bound and reactive, triggered by identifiable threats to constitutional order. The preventive state, by contrast, expands the temporal logic of self-defense by authorizing legal action based on perceived or speculative threats. This model increasingly relies on risk assessments, ideology-based profiling, and administrative discretion, weakening traditional rule-of-law safeguards. The counter-terror state, the final and most expansive model, institutionalizes a permanent state of exception, using national security imperatives to normalize emergency legalism and broad executive power. In such regimes, legality remains formally intact, but normative legitimacy is hollowed out a development aptly described by Scheppele (2018) as “autocratic legalism”, wherein “legal tools are used to dismantle democracy step by step, all the while claiming fidelity to law” (Autocratic Legalism | The University of Chicago Law Review, n.d.).

Within the architecture of international human rights law, particularly as expressed in the International Covenant on Civil and Political Rights (ICCPR) and ECtHR jurisprudence, militant democracy can only be justified under stringent conditions: restrictions must be “prescribed by law,” necessary in a democratic society, and proportionate to a legitimate aim. As Macklem (2006) argues, the scope and limits of constitutional self-defense are “sites of contestation” that expose divergent values and interests within and between legal systems (Macklem, 2006). Macklem specifically highlights how cases such as *Refah Partisi v. Turkey* become loci for debating “the constitutional boundaries of legal pluralism and militant democracy,” rather than establishing unambiguous rules (Macklem, 2006). Thus, while international public law invokes requirements of legality and proportionality, it seldom offers precise and universally accepted answers to when and how militant democracy is justified. Rule of law principles, particularly those concerning equality and impartiality, are also complicated by the discretionary nature of militant measures. As Tyulkina noted, the legitimacy of militant democracy “depends on genuine and impartial application,” with political selectivity undermining both democratic values and rule of law commitments (Tyulkina, n.d.). She discusses the risk that, especially in transitional or less stable democracies, militant democracy can be abused for political purposes, emphasizing the need for careful judicial scrutiny and balanced protection of rights (Tyulkina, n.d.).

Perhaps the most difficult normative challenge lies in reconciling democratic defense with core political rights such as freedom of association, speech, and political participation. Macklem cautions that the shifts in legal doctrine and practice that militant democracy justifies often “create conditions for the abuse of power” by both states and non-state actors, precisely because of the contested and shifting grounds for limiting rights in the name of democracy (Macklem, 2006). This highlights the necessity for external oversight and institutional safeguards within international public law but also exposes its limits.

Conclusion

The analysis of the key and most prominent approaches in democratic theory reveals that the tension between tolerance and protection is not a marginal problem but a constitutive feature of democracy itself. Each model – liberal, republican, deliberative, agonistic, or radical – offers a distinct strategy for coping with the paradox of democratic self-defense. While liberal and republican approaches prioritize stability through procedural or moral limits, they risk constraining democracy's transformative potential. Conversely, agonistic and radical perspectives emphasize openness and contestation as the very means of safeguarding democracy, yet they struggle to balance pluralism with societal cohesion. Militant democracy, situated at the intersection of these approaches, illustrates both the necessity and the peril of defensive measures: democracy must sometimes draw boundaries to survive, but it endangers itself when those boundaries harden into exclusion or institutional rigidity. Ultimately, the defense of democracy cannot rely solely on prohibitions or procedural safeguards; it depends on a political culture capable of transforming conflict into a continuous process of democratic renewal.

From international legal point of view, the normative architecture of militant democracy, grounded in constitutional identity and democratic self-preservation, frequently diverges from the pluralist and procedural orientation of international legal norms. The evolving typologies outlined by Sajó from reactive defense to preventive and counter-terror models reveal how legal systems can gradually shift from protecting democracy to eroding it under the guise of security. In reconciling the protective impulses of militant democracy with the procedural rigor of the rule of law demands careful navigation along a fragile boundary: ensuring that democracy does not succumb either to authoritarian capture or to its own excessive defensiveness. This balance, precarious and contested, is likely to remain a central challenge in both constitutional and international legal theory. The central normative challenge, therefore, is not simply whether democracies can defend themselves, but whether they can do so in ways that remain faithful to the legal ideals of equality, foreseeability, and accountability that underpin the international rule of law. This remains an open question, one that demands continued scrutiny in an era of rising constitutional stress.

References:

- Bourne, A. K., & Rijpkema, B. (2022). Militant Democracy, Populism, Illiberalism: New Challengers and New Challenges. *European Constitutional Law Review*, 18(3), 375–384. <https://doi.org/10.1017/S1574019622000281>
- Cohen, J. (1997). Deliberation and Democratic Legitimacy. V J. Bohman & W. Rehg (Ed.), *Deliberative Democracy. Essays on Reason and Politics* (s. 67–92). The MIT.
- Croce, M. (2025). Procedural containment vs. substantive entrenchment: Two early models of militant democracy. *History of European Ideas*, 51(3), 529–544. <https://doi.org/10.1080/01916599.2024.2378031>
- Elkins, Z. (2022). Militant democracy and the pre-emptive constitution: From party bans to hardened term limits. *Democratization*, 29(1), 174–198. <https://doi.org/10.1080/13510347.2021.1988929>
- Ellian, A., & Rijpkema, B. (2018). Introduction. V A. Ellian & B. Rijpkema (Ed.), *Militant Democracy – Political Science, Law and Philosophy* (Roč. 7, s. 1–20). Springer International Publishing. https://doi.org/10.1007/978-3-319-97004-2_1
- Feisel, F. M. (2022). Thinking EU Militant Democracy beyond the Challenge of Backsliding Member States. *European Constitutional Law Review*, 18(3), 385–411. <https://doi.org/10.1017/S1574019622000220>
- Habermas, J. (1962). *The Structural Transformation of the Public Sphere*. The MIT Press.

- Habermas, J. (1996). *Between Facts and Norms. Contributions to a Discourse Theory of Law and Democracy*. The MIT Press.
- Honig, B. (1993). *Political Theory and the Displacement of Politics*. Cornell University Press.
- Invernizzi Accetti, C., & Zuckerman, I. (2017a). What's Wrong with Militant Democracy? *Political Studies*, 65(IS), 182–199. <https://doi.org/10.1177/0032321715614849>
- Invernizzi Accetti, C., & Zuckerman, I. (2017b). What's Wrong with Militant Democracy? *Political Studies*, 65(1_suppl), 182–199. <https://doi.org/10.1177/0032321715614849>
- Issacharoff, S. (2007). *Fragile Democracies*. *Harvard Law Review*, 120(6), 1405–1467.
- Jones, M. (2014). Chantal Mouffe's Agonistic Project: Passions and Participation. *Parallax*, 20(2), 14–30. <https://doi.org/10.1080/13534645.2014.896546>
- Kaltwasser, C. R. (2019). Militant Democracy Versus Populism. V A. Malkopoulou & A. S. Kirshner (Ed.), *Militant Democracy and Its Critics*. Populism, Parties, Extremism (s. 72–91). Edinburgh University Press.
- Khramova, T., & Troitskaya, A. (2020). Constitutional Defence Against the “Enemies” of Democracy: Theoretical Considerations and the Russian Experience. *Russian Law Journal*, 8(2), 28–48. <https://doi.org/10.17589/2309-8678-2020-8-2-28-48>
- Kirshner, A. S. (2014). *A Theory of Militant Democracy: The Ethics of Combatting Political Extremism*. Yale University Press. <https://doi.org/10.2307/j.ctt5vkwpg>
- Kuo, M.-S. (2024). Militant Democracy Unmoored? The Limits of Constitutional Analogy in International Law. *European Journal of International Law*, 35(2), 411–440. <https://doi.org/10.1093/ejil/chae023>
- Laclau, E., & Mouffe, C. (1985). *Hegemony and Socialist Strategy. Towards a Radical Democratic Politics*. Verso.
- Loewenstein, K. (1937a). Militant Democracy and Fundamental Rights, I. *The American Political Science Review*, 31(3), 417–432. <https://doi.org/10.2307/1948164>
- Loewenstein, K. (1937b). Militant Democracy and Fundamental Rights, II. *The American Political Science Review*, 31(4), 638–658. <https://doi.org/10.2307/1948103>
- Macklem, P. (2006). Militant democracy, legal pluralism, and the paradox of self-determination. *International Journal of Constitutional Law*, 4(3), 488–516. <https://doi.org/10.1093/icon/mol017>
- Malkopoulou, A., & Kirshner, A. S. (2019). *Militant Democracy and Its Critics*. Populism, Parties, Extremism. Edinburgh University Press.
- Mouffe, C. (2000). *The Democratic Paradox*. Verso.
- Mouffe, C. (2005). *On the political*. Routledge, Taylor & Francis Group.
- Mudde, C. (2019). *The Far Right Today*. Polity.
- Müller, J.-W. (2012). Militant Democracy. V M. Rosenfeld & A. Sajó (Ed.), *The Oxford Handbook of Comparative Constitutional Law* (s. 1253–1269). Oxford University Press. <https://doi.org/10.1093/oxfordhb/9780199578610.001.0001>
- Müller, J.-W. (2016). Protecting Popular Self-Government from the People? New Normative Perspectives on Militant Democracy. *Annual Review of Political Science*, 19(1), 249–265. <https://doi.org/10.1146/annurev-polisci-043014-124054>
- Nitzschner, P. (2025). On militant democracy's institutional conservatism. *Philosophy & Social Criticism*, 51(1), 29–49. <https://doi.org/10.1177/01914537221150462>
- Pettit, P. (1999). *Republicanism: A Theory of Freedom and Government*. Oxford University Press.
- Rancière, J. (1999). *Disagreement: Politics and Philosophy*. Minneapolis.
- Rawls, J. (1971). *A Theory of Justice*. Harvard University Press.
- Sajó, A. (2006). From militant democracy to the preventive state? *Cardozo Law Review*, 5(March), 2255–2294. <https://m2.mtmt.hu/api/publication/221372>

- Sajó, A. (ed.). (2004). *Militant Democracy* (Roč. 9). Eleven International Publishing.
https://brill.com/view/journals/mpyo/9/1/article-p703_.xml
- Skinner, Q. (2012). *Liberty before liberalism*. Cambridge University Press.
- Scheppele, Kim Lane (2025, október): *Autocratic Legalism* | The University of Chicago Law Review. (n.d.). Cit 13. October 2025, <https://lawreview.uchicago.edu/print-archive/autocratic-legalism>
- Stahl, R. M., & Popp-Madsen, B. A. (2022). Defending democracy: Militant and popular models of democratic self-defense. *Constellations*, 29(3), 310–328. <https://doi.org/10.1111/1467-8675.12639>
- Tyulkina, S. (2015). Militant Democracy: An Alien Concept for Australian Constitutional Law? *AdelLawRw* 23; (2015) 36(2) *Adelaide Law Review* 517.
- Urbinati, N. (2014). *Democracy Disfigured. Opinion, Truth, and the People*. Harvard University Press.

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INTRODUCTION TO FINANCIAL SANCTIONS AGAINST MEMBER STATES FOR INFRINGEMENTS OF EUROPEAN UNION LAW

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Abstract: The paper examines the EU's infringement procedure, focusing specifically on the application of Article 260 TFEU, which allows for the imposition of financial sanctions on Member States. It analyses the effectiveness of enforcing compliance with EU law through financial sanctions, highlighting their practical limitations. Despite these challenges, the paper concludes that Article 260 TFEU remains a vital tool for ensuring compliance among Member States.

Keywords: European Union, infringements, compliance, financial sanctions

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Introduction

European Union (EU) Member States are legally obliged to take all necessary national measures to ensure the application of EU law. If a Member State fails to fulfil this obligation, for example, by failing to transpose directives, enacting conflicting national laws or through administrative inaction, the EU has an infringement procedure to enforce compliance. This procedure is regulated by Articles 258-260 of the Treaty on the Functioning of the European Union (TFEU) (European Union, 2016) and allows the European Commission (EC) in its role as the "guardian of the Treaties" to take formal action against Member States for breaches of EU law. Although another Member State may initiate infringement proceedings under Article 259 TFEU, such interstate actions are extremely rare due to political sensitivities. Therefore, this paper focuses exclusively on procedures initiated by the EC.

The Treaties distinguish between two procedures initiated by the EC, each with its own subject matter. The procedure set out in Article 258 TFEU is designed to obtain a declaration from the Court of Justice of the European Union (CJEU) that a Member State has breached EU law. The procedure set out in Article 260 TFEU is intended to enforce compliance with an infringement judgment by imposing financial sanctions on Member States, in the form of a lump sum and/ or daily penalty payments. While many cases are resolved before reaching the judicial phase, those that proceed to the CJEU often involve systemic or politically sensitive violations.

This paper focuses specifically on the application of Article 260 TFEU, exploring its legal framework, procedural stages, and the criteria used to determine financial sanctions. Drawing on relevant legislation, case law, and academic literature, the study analyses how the EU uses financial sanctions in infringement cases to secure compliance from Member States, and the effectiveness of such measures in practice.

1 Procedure under Article 258 TFEU

Article 258 TFEU is the foundational legal provision that empowers the EC to initiate infringement proceedings against a Member State suspected of violating EU law. The EC distinguishes four main types of infringements of EU law: failure to notify (when a Member State does not notify the EC on time of its measures to turn a directive into national law), non-conformity/ non-compliance (when the EC considers that a Member State's law are not in

line with the requirements of EU directives), infringement of the Treaties, regulations or decisions (when the EC considers that a Member State's laws are not in line with the requirements of the Treaties, EU regulations or decisions), incorrect application (when EU law is not applied correctly, or not applied at all, by national authorities) (European Commission, 2022). However, the correction of any breaches remains the full responsibility of the Member States. The EC uses various tools and procedures to ensure that Member States correctly transpose and apply EU law, and to detect and address potential breaches. The EC can initiate an infringement procedure based on its own initiative, based on a complaint, or by default in cases where a Member State fails to inform the EC of its national transposition measures for a new directive. The EC has both substantive and procedural discretion when deciding whether to initiate infringement proceedings against a Member State. If preventive measures are ineffective and a breach is suspected, the EC may initiate infringement procedures (European Court of Auditors, 2024).

The entire Article 258 TFEU procedure consists of an administrative phase and a judicial phase. During the administrative phase, the Member State is given an opportunity to justify its behaviour or its legislation (Gormley, 2017). But before launching formal proceedings, the EC often engages in informal dialogue through the EU Pilot system. This enables the EC and the Member State to clarify potential issues and resolve misunderstandings before initiating a legal process (European Court of Auditors, 2024). If these informal steps fail and the EC decides to initiate infringement proceedings, it will send a "letter of formal notice" to the relevant Member State. This letter defines the subject matter of the dispute and sets out the EC's position, enabling the Member State to prepare its defence. If the reply from the Member State is unsatisfactory, or if the Member State does not reply at all, the EC will address a more formal document called a "reasoned opinion" to the relevant Member State. It provides a detailed and definitive evaluation of the alleged infringement and includes an operative section with a precise description of the Member State's actions and the EU laws that the EC believes have been violated. It also considers any response from the Member State to the letter of formal notice and seeks to rebut any arguments put forward by the Member State (Gormley, 2017). If, after all the mandatory administrative procedures have been carried out and the EC still considers that the Member State is in breach, the EC can ask the CJEU to intervene. This means that it is not always necessary to involve the CJEU in the procedure, and that the EC has wide discretion in this matter. The judicial phase begins with a request from the EC addressed to the CJEU to rule that the Member State has failed to fulfil its obligations in the matter in question and has not ceased such action by the compliance deadline set out in the reasoned opinion. If the CJEU finds that the Member State has failed to fulfil its obligations, the result of the procedure under Article 258 TFEU is a declaratory judgment. However, the CJEU provides no guidance on the measures that the Member State must take to remedy the infringement. These measures can include repealing the offending instrument or changing the practice that has been found to be incompatible with EU law (Gormley, 2017). This multi-stage process reflects the EU's preference for cooperative enforcement, emphasising dialogue while ensuring robust legal accountability when necessary.

2 Procedure under Article 260 TFEU

While Article 258 TFEU establishes a mechanism for determining whether a Member State has breached EU law, Article 260 TFEU is the enforcement tool used when a Member State fails to comply with a CJEU judgment. Therefore, the scope of the procedure set out in Article 260 TFEU is much narrower than that of Article 258 TFEU (Falkner, 2016). It enables financial sanctions to be imposed on Member States for infringements of EU law, thereby ensuring compliance with the legal framework.

Prior to 1992, the EU lacked the means to respond effectively to persistent non-compliance by Member States, even with CJEU judgements (Falkner, 2016). The only outcome of an infringement procedure was a CJEU judgment declaring that a Member State had violated EU law. However, compliance with these judgments was not always achieved. Therefore, financial sanctions were introduced by the Maastricht Treaty. The EC may propose financial sanctions when referring a Member State to the CJEU for a second time if that Member State has failed to implement a judgment establishing an infringement. This subsequent mechanism is now set out in Article 260(2) TFEU, and "is a potentially effective instrument for securing compliance with EU law which has yet to materialise" (Wennerås 2017, 79). The subject matter of the procedure under Article 260(2) TFEU is not the original infringement itself, but rather whether the Member State failed to subsequently take the necessary measures to comply with the judgment that declared the infringement (Wennerås 2017). As with Article 258 TFEU, the procedure under Article 260(2) TFEU comprises an administrative phase and a judicial phase. However, the Lisbon Treaty introduced significant procedural simplifications. Notably, it abolished the requirement for the EC to issue a reasoned opinion during the administrative phase, thereby streamlining the process. This reform effectively introduced a fast-track mechanism, enabling the EC to respond more quickly to cases of non-compliance with CJEU judgements and impose sanctions more swiftly. Through Article 260(3) TFEU, the Lisbon Treaty introduced a further innovation, providing for the imposition of financial sanctions on Member States that fail to fulfil their obligation to notify the EC of national measures transposing a directive. Unlike the traditional procedure under Article 260(2), this provision enables the EC to request penalties at the initial stage of infringement proceedings under Article 258 TFEU. In such cases, the CJEU may impose financial sanctions in its initial ruling, eliminating the need for a separate non-compliance procedure (Wennerås 2017). This bypasses the usual two-step approach and significantly accelerates enforcement, particularly in situations where delayed transposition undermines the uniform application of EU law.

Article 260 TFEU outlines two types of financial sanctions that can be imposed: a lump sum and a penalty payment. According to the CJEU, the purpose of these sanctions is to encourage a Member State to comply with a judgment that has found them to have failed to fulfil their obligations, thereby ensuring that EU law is applied by that Member State. "While the imposition of a penalty payment seems particularly suited to inducing a Member State to put an end as soon as possible to a breach of obligations which, in the absence of such a measure, would tend to persist, the imposition of a lump sum is based more on assessment of the effects on public and private interests of the failure of the Member State concerned to comply with its obligations, in particular where the breach has persisted for a long period since the judgment which initially established it." These two sanctions can be applied cumulatively, "in particular where the breach of obligations both has continued for a long period and is inclined to persist". (Court of Justice of the European Union, 2005, para. 80-82). Both sanctions are intended to be dissuasive and have a general preventive effect (Burelli, 2023).

Financial sanctions under Article 260 TFEU are not imposed automatically, nor are the amounts fixed by the Treaties. Instead, the EC considers a combination of legal and factual elements in its proposal, and the CJEU considers these elements in its judgment to determine appropriate, proportionate and effective penalties. The EC proposes the amount of the sanctions and is bound by the Communications it has issued (Augustyniak, 2020). Since 1996, the EC has published several Communications setting out its policy and the methodology it uses to calculate financial sanctions. The most recent Communication was issued in 2023 and updated in 2025 (European Commission, 2025). The EC considers that the financial sanctions imposed should be based on three fundamental criteria: the seriousness of the infringement, its duration, the need to ensure that the financial sanction itself is a deterrent to further infringements (European Commission, 2023). However, settled CJEU case law established

within the framework of proceedings instituted pursuant to Article 260 TFEU states that the EC Communications are only a useful reference point that contributes to transparency, predictability and legal certainty and they are not binding on the CJEU (Court of Justice of the European Union, 2018). The CJEU itself has broadly defined the scope of its discretion in sanctioning, and its powers in this regard are unconditional upon the prior issuance of Communications in this area by the EC (Court of Justice of the European Union, 2005). The CJEU may impose financial sanctions in an amount and form it deems appropriate to encourage the Member State to comply with its obligations under the CJEU's first judgment (Court of Justice of the European Union, 2016).

3 The development of imposing financial sanctions against Member States

The imminent risk of referral to the CJEU and the imposition of financial sanctions often accelerates compliance at a national level. Therefore, referral to the CJEU is considered a last resort for enforcing compliance with EU law (European Court of Auditors, 2024). However, obtaining a judgment from the CJEU confirming a breach of EU law by a Member State is only one element of ensuring the effectiveness of this legal order. The second, and much more significant, stage of these proceedings involves prompting a Member State to comply with a judgment confirming an infringement under threat of appropriate sanctions (Augustyniak, 2020).

Due to continued non-compliance, no decision was taken regarding a second referral to the CJEU between November 1993 and early 1997. "During that time, the EC chose exclusively "soft" means to raise awareness for its new powers and to premonish the governments that the new instrument might actually be used in the future" (Falkner, 2016, p. 38).

Research by the European Court of Auditors shows that most cases are resolved before the EC proposes financial sanctions in the second proceeding. However, some Member States have been paying for several years without addressing breaches of EU law. By 31 December 2023, the CJEU had imposed sanctions on Member States in 47 cases. As of December 2023, 31 of these cases had been resolved through amendments to national legislation, while 16 were still active due to ongoing infringements of EU law. In 31 closed cases, Member States amended their national legislation to comply with EU law, on average 1.3 years after sanctions were imposed by the CJEU. For all closed cases between 1992 and 2023, Member States paid financial penalties totalling EUR 258.9 million, with France, Spain, Greece, Belgium, and Portugal paying the most. As of December 2023, Member States were still infringing EU law in 16 active cases, for which they were subject to financial sanctions totalling EUR 1,406.8 million. Italy, Greece, Spain, Ireland and Romania must pay the largest share of this sum (European Court of Auditors, 2024).

The following cases have been selected for their relevance and significance in illustrating the CJEU's evolving approach to the imposition of financial sanctions under Article 260 TFEU. Together, they reflect the gradual development of the CJEU's jurisprudence, particularly in relation to the scope, purpose, and calculation of penalties.

In the case *EC v Greece* (C-387/97, judgment of 4 July 2000), the CJEU ordered a Member State to pay financial penalties for the first time. This case is historically significant because it sent a clear message that the CJEU would not tolerate prolonged defiance of its rulings. The case concerned Greece's failure to comply with a previous CJEU judgment (*EC v Greece*, C-45/91, judgment of 7 April 1992), which found that Greece had not properly implemented EU waste management directives, particularly regarding the illegal waste dump at Kouroupitos on the island of Crete. Despite being given time to remedy the situation, Greece did not take effective measures, even years later. The CJEU therefore imposed periodic penalty payments of EUR 20,000 on Greece for each day of delay in implementing the measures

necessary to comply with the 1992 judgment (Court of Justice of the European Union, 2000). As the Greek authorities adopted the necessary measures on 26 February 2001, Greece paid a total of EUR 5,400,000 in penalty payments for the period from July 2000 to March 2001 (Commission of the European Communities, 2002). In this case, only a daily penalty was imposed, not a lump sum. This dual sanction practice became more common later on. Compared to other Member States in later cases, Greece complied relatively quickly.

The possibility of imposing both a lump sum and a periodic penalty at the same time was established in the CJEU's ruling in the case *EC v France* (Case C-304/02, judgment of 12 July 2005). This important decision "made second judgments a more powerful tool than originally provided" (Falkner, 2016, p. 40). France had failed to comply with an earlier CJEU judgment (*EC v France*, Case C-64/88, judgment of 11 June 1991), which required it to enforce EU fisheries conservation rules. These rules require Member States to monitor and inspect fishing activities in order to protect fish stocks under the Common Fisheries Policy. Despite the 1991 judgment, France continued to allow illegal fishing and failed to sanction its own vessels. France was sentenced to pay a lump sum of EUR 20 million and a penalty payment of EUR 57,761,250 per period of six months from the date of the judgment for failure to fully implement the EU rules (Court of Justice of the European Union, 2005). After 14 years of being in breach of the 1991 judgment, the EC closed the case in 2006. "It is surprising, considering the longstanding problems of non-application and non-enforcement of fish protection rules in France, that the imposed "periodic" payment was only paid once" (Falkner, 2016, p. 46). The case elevated the profile of EU law enforcement in terms of environmental and resource protection.

For the first time, the CJEU interpreted and applied the sanction scheme of Article 260(3) TFEU in the *EC v Belgium* case (C-543/17, judgment of 8 July 2019). Belgium had not fully transposed Directive 2014/61/EU on high-speed electronic communications networks by 1 January 2016, nor had it notified the EC of all the required national transposing measures. The EC imposed a daily penalty of EUR 5,000 on Belgium from the date of the judgment. The CJEU clarified that Article 260(3) TFEU may also be applied to cases of partial failure to adopt and communicate transposition measures and provided an extensive interpretation of the notification obligation. Furthermore, when notifying national transposition measures to the EC, Member States must provide clear and precise information and identify the national provisions ensuring the transposition of each directive provision (Court of Justice of the European Union, 2019).

Case *EC v Italy* (Case C-196/13, judgment of 2 December 2014) is an example of an ongoing case in which Italy has been subject to financial sanctions for several years without achieving full compliance with EU law. Italy failed to comply with an earlier CJEU judgment (*EC v Italy*, Case C-135/05, judgment of 26 April 2007) concerning hundreds of illegal landfill sites. The CJEU ordered Italy to pay a lump sum of EUR 40 million, as well as a half-year penalty in degressive form, with an initial amount set at EUR 42.8 million (Court of Justice of the European Union, 2014). The total amount paid by 31 December 2023 was EUR 261.8 million, and the case was still open (European Court of Auditors, 2024). Italy was subjected to one of the highest fines ever imposed by the CJEU on an EU Member State in the environmental area, underlining the seriousness and difficulty of the problem. At the time the appeal was presented to the CJEU, there were 218 illegal dumping sites. This was a significant improvement on the 4,866 sites that existed at the time the first procedure was opened. Although the penalty amount is still high, the procedure is ongoing, albeit slowly (Burelli, 2023).

Although environmental policy is one of the areas in which the CJEU most frequently imposes sanctions on Member States, new problematic areas have recently emerged. In the case *EC v Hungary* (C-123/22, judgment delivered on 13 June 2024), the CJEU imposed

a substantial fine on Hungary for failing to comply with a previous judgment (EC v Hungary, case C-808/18, judgment delivered on 17 December 2020) concerning a serious and persistent breach of EU asylum and return legislation. The CJEU ordered Hungary to pay a record lump sum of EUR 200 million and an additional penalty payment of EUR 1 million for each day of continued non-compliance (Court of Justice of the European Union, 2024). By doing so, the CJEU has sent a clear signal that it is willing to utilise the full potential of the financial sanctioning powers set out in Article 260 TFEU in order to protect the authority of its judgements, and by extension, the rule of law within the EU legal order (Pohjankoski, 2025). Hungary has strongly criticised the ruling. Having missed payment deadlines, the EC has invoked the offsetting procedure to deduct the EUR 200 million lump sum from Hungary's share of the EU budget. The daily penalty of EUR 1 million continues to accrue until Hungary complies with the CJEU judgment. However, due to the Hungarian government's reluctance, it remains to be seen whether the penalties will actually be enforced (Molnár, 2025).

Although the infringement procedure and the current system of imposing financial sanctions on Member States remain the primary legal mechanisms for enforcing EU law, their overall effectiveness is the subject of ongoing academic and institutional debate. The procedure's capacity to ensure timely and full compliance is limited by several systemic challenges, especially in complex or politically sensitive cases. Falkner discusses the slow development of the use of infringement powers under Article 260 TFEU by the EC, and the comparatively small number of penalisation judgements to date (Falkner, 2016). Wennerås argues that the EC lacks the necessary monitoring powers and resources to adequately control the compliance of 27 Member States and bring a representative number of infringement proceedings before the CJEU. Furthermore, the period before an infringement is liable to attract sanctions is too long to act as an effective deterrent (Wennerås, 2017). The above cases demonstrate that resolving certain breaches of EU law can take many years. Burelli distinguishes between "normative" and "structural" infringements. Normative violations can occur in the presence or absence of a regulatory act and can be easily identified and eradicated through targeted legislative intervention. However, structural violations are not limited to national regulations. These include shortcomings, organisational difficulties, and administrative practices of a general and systematic nature. Such infringements cannot be corrected by mere ad hoc regulatory intervention. Furthermore, addressing these issues is often extremely costly (e.g. waste management or the reclamation of illegal dumpsites) and requires suitable infrastructure, proper management and the ability to navigate institutional relationships (Burelli, 2023). Despite these challenges, the procedural innovations introduced by the Lisbon Treaty, particularly the removal of the reasoned opinion stage under Article 260(2) TFEU and the introduction of Article 260(3) TFEU, have made enforcement more efficient, especially in cases of delayed transposition of directives. These improvements have enhanced the Commission's ability to respond more swiftly.

Conclusion

This paper examines how the role of Article 260 TFEU in enforcing compliance with EU law through financial sanctions is evolving. Under this procedure, the infringement process is transformed by replacing the declaratory judgement model with a system of enforceable obligations that carry economic consequences. This emphasises the principle that non-compliance comes at a cost and that EU Member States can be held financially accountable for breaching EU law. This procedure has been applied not only in cases of environmental non-compliance, but also in politically sensitive disputes, such as violations of asylum law. Despite the ongoing challenges in ensuring timely and effective enforcement, Article 260 TFEU remains a vital mechanism for promoting adherence to EU law.

References:

- Augustyniak, Ł. (2020). Financial Sanctions for EU Member States – Execution of Supervision Function by the Court of Justice of the European Union. *Kontrola Państwowa*, 65(1), 34-59. <https://bibliotekanauki.pl/articles/2038012>
- Burelli, C. (2023). The Deterrent Effect of Financial Sanctions Pursuant to Article 260(2) TFEU in the Context of Violations of Environmental Obligations. *The Italian Review of International and Comparative Law*, 3(2), 367–388. <https://doi.org/10.1163/27725650-03020011>
- Court of Justice of the European Union. (2000). *Case C-387/97, EC v Greece*, ECLI:EU:C:2000:356
- Court of Justice of the European Union. (2005). *Case C-304/02, EC v France*, ECLI:EU:C:2005:444
- Court of Justice of the European Union. (2014). *Case C-196/13, EC v Italy*, ECLI:EU:C:2014:2407.
- Court of Justice of the European Union. (2016). *Case C-557/14, EC v Portugal*, ECLI:EU:C:2016:471
- Court of Justice of the European Union. (2018). *Case C-626/16, EC v Slovakia*, ECLI:EU:C:2018:525
- Court of Justice of the European Union. (2019). *Case C-543/17, EC v Belgium*, ECLI:EU:C:2019:573.
- Court of Justice of the European Union. (2024). *Case C-123/22, EC v Hungary*, ECLI:EU:C:2024:493.
- Commission of the European Communities. (2002, July 28). *Nineteenth annual report on monitoring the application of community law (2001)*. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52002DC0324>
- Commission of the European Communities. (2006, July 24). *Commission staff working document: annex to the 23rd annual report from the Commission on monitoring the application of community law (2005)*. https://commission.europa.eu/document/download/d18cc059-5065-48ec-b1cb-cb0467204e72_en?filename=Situation_sectors_2005%5BSEC%282006%29999%5D_en.pdf
- European Commission. (2022, July 15). *Commission Staff Working Document. General Statistical Overview, accompanying the document: Report from The Commission. Monitoring the application of European Union law: 2021 Annual*. https://commission.europa.eu/system/files/2022-07/2021-swd-annual-report-eulaw-overview_en.pdf
- European Commission. (2023, January 4). *Communication from the Commission Financial sanctions in infringement proceedings*. [https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023XC0104\(01\)](https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX:52023XC0104(01))
- European Commission. (2025, March 5). *Communication from the Commission – Modification of the calculation method for financial sanctions proposed by the Commission in infringement proceedings before the Court of Justice of the European Union*. https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=OJ:C_202501481
- European Court of Auditors. (2024). *Special report: Enforcing EU law: The Commission has improved its management of infringement cases but closing them still takes too long*. https://www.eca.europa.eu/ECAPublications/SR-2024-28/SR-2024-28_EN.pdf
- European Union. (2016). Consolidated version of the Treaty on the Functioning of the European Union. *Official Journal of the European Union*, C 202.
- Falkner, G. (2016). Fines against Member States: An effective new tool in EU infringement proceedings? *Comparative European Politics*, 14(1), 36-52. <https://doi.org/10.1057/cep.2015.8>

- Gormley, L. W. (2017). Infringement proceedings. In A. Jakab and D. Kochenov (Eds.), *The Enforcement of EU Law and Values* (pp. 65-78). Oxford, UK: Oxford University Press.
- Molnár, T. (2025). European Commission v. Hungary (Reception of Applicants for International Protection II) No. C-123/22. *American Journal of International Law*, 119 (3), 556-564. doi:10.1017/ajil.2025.10080
- Pohjankoski, P. (2025). Bolstering federal execution of EU law: Case C-123/22 Commission v. Hungary (Reception of applicants for international protection II). *Maastricht Journal of European and Comparative Law*, 32(1), 89-100. <https://doi.org/10.1177/1023263X251329803>
- Wennerås, P. (2017). Making effective use of Article 260 TFEU. In A. Jakab and D. Kochenov (Eds.), *The Enforcement of EU Law and Values* (pp. 79–98). Oxford, UK: Oxford University Press.

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MAPPING THE LANDSCAPE OF KNOWLEDGE: A BIBLIOMETRIC REVIEW OF EUROPEAN INTELLECTUAL CAPITAL STUDIES

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Abstract: This study performs a comprehensive bibliometric analysis of IC research from 1995 to 2025, with a primary focus on the European Union. Using Bibliometrix and Biblioshiny, 1,842 documents from 467 sources were analysed. Results reveal steady growth in publications and a shift from conceptual to applied viewpoints. Innovation, knowledge management, and intellectual property emerge as the main research areas. European countries, notably the United Kingdom, Germany, and Italy, lead in scholarly output and collaboration. Thematic mapping shows increasing integration between legal, economic, and organisational aspects. Intellectual property remains the central linking concept across thematic clusters. The findings confirm the field's development towards policy relevance and practical application.

Keywords: intellectual capital, national intellectual capital, intellectual property, EU

JEL: O34

Introduction

Over the past thirty years, the rapid shift towards a knowledge-based economy has reshaped the foundations of economic growth and competitiveness. In this new framework, intellectual capital (IC) has become a key concept connecting innovation, knowledge management, and value creation. Although the theoretical basis of IC is now well established, the field has continued to evolve quickly in scope, methodology, and policy significance—especially within the European Union (EU), where innovation and knowledge-based strategies are central to economic policy.

Despite increasing scholarly attention, IC research remains highly fragmented, covering diverse disciplines such as management, economics, law, and information science. The variety of perspectives has enriched the field but also added conceptual complexity, making it difficult to determine its intellectual structure, main research streams, and emerging trends. A systematic bibliometric mapping of the field thus provides a useful way to consolidate existing knowledge and track its development over time.

- The main aim of this research is to deliver a comprehensive bibliometric analysis of intellectual capital studies published between 1995 and 2025, with a primary emphasis on the European research landscape. Specifically, the study seeks to:
- Analyse the publication trends and growth patterns of IC-related research;
- Identify the most influential countries contributing to the field;
- Map the collaboration networks and the extent of international co-authorship;
- Investigate the conceptual and thematic development of IC research through co-occurrence analysis, Multiple Correspondence Analysis (MCA), and thematic mapping.

To achieve these goals, the analysis uses a quantitative bibliometric method with the Bibliometrix R-package and its Biblioshiny interface (Aria & Cuccurullo, 2017). By combining descriptive and network analysis techniques, this study provides a clear overview of the intellectual landscape of IC research, showing how themes have evolved, merged,

and diversified over time. The results aim to clarify Europe's role as a major contributor to global IC scholarship and to lay a foundation for future interdisciplinary and policy-focused research on managing and valuing intellectual capital.

1 Literature review

The expansion of the knowledge economy, propelled by rapid scientific and technological advancements, has fundamentally transformed the foundations of economic value creation at both macroeconomic and microeconomic levels (Dosso & Vezzani, 2019). In recent decades, economies have experienced a steady rise in investments aimed at intangible assets and research and development initiatives (Andersson & Saiz, 2018). An increasing body of literature consistently highlights the ability of intangible assets to boost competitiveness and deliver long-term value for organisations (Sullivan, 2000; Firer, 2005; Madhani, 2012; Berezinets et al., 2016).

In an environment characterized by constant change and digital transformation, organizations must develop the competencies and capabilities required not only to create new knowledge but also to effectively exploit existing knowledge resources. Within this context, intellectual capital (IC) represents a crucial strategic asset that enables firms to convert knowledge into value added and sustain innovation-driven growth.

Over the past decades, intellectual capital has attracted increasing scholarly attention, resulting in a rich body of research exploring its role in organizational performance and knowledge management. The IC framework offers an analytical lens for understanding how knowledge-based assets contribute to corporate value creation (Kianto et al., 2017). Its conceptual development reflects an interdisciplinary synthesis of economics, management, and organizational theory. Edvinsson & Malone (1997) were among the first to formalize the concept, defining IC as a multidimensional relationship between people, ideas, and knowledge—a resource that allows organizations to “measure the immeasurable.” They emphasized IC as a renewable and recyclable asset that requires continuous cultivation within a specific organizational and contextual setting.

From a microeconomic perspective, Brooking (1996) viewed IC as a combination of intangible assets that enable a company to function effectively and create value. Similarly, Moore & Craig (2008) described IC as “intellectual assets” that stimulate business development and economic growth. These perspectives underscore IC as a foundation of firm-level competitiveness, linking knowledge utilization with tangible performance outcomes.

From a strategic standpoint, IC provides essential insights into the sources of future profitability. Marr (2008) argued that sustainable success depends on a company's ability to ensure that accumulated knowledge is accessible and shareable across the organization, thereby transforming intellectual resources into a persistent competitive advantage.

In terms of innovation dynamics, Al-Ali (2003) identified IC as the driving force behind innovation and economic performance in the knowledge economy. Building on this view, Kelly (2004) emphasised IC as a relational and organisational capability arising from stakeholder interactions, knowledge sharing, and responsiveness to environmental change. Effective management of IC thus creates the internal infrastructure necessary for the transfer of competencies, learning, and innovation within firms.

Finally, the intangible nature of IC has been underlined by Webster & Jensen (2006), who defined it broadly as intangible capital, encompassing all non-physical assets that contribute to value creation. Stewart (1997) further described IC as the collective wisdom and energy of organisations—an invisible yet decisive source of corporate wealth.

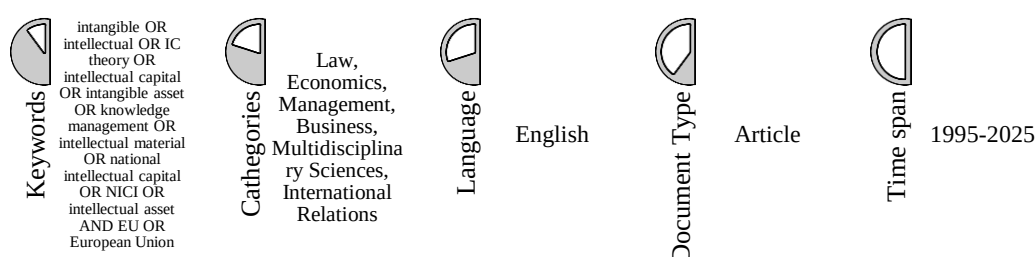
Recent studies have demonstrated the significant capacity of intellectual capital to positively influence firms' market value and economic performance, particularly when evaluated through accounting-based indicators. Empirical evidence confirms that corporate

intellectual capital can substantially affect financial performance, as a firm's ability to generate profit and sustain revenue growth is largely determined by how effectively it utilizes its intellectual resources (Pal & Soriya, 2012; Rossi & Celenza, 2014; Xu & Wang, 2018; Poh et al., 2018; Haris et al., 2019). However, it is equally recognized that the individual components of intellectual capital cannot independently create added value without the complementary interaction of other assets. From an investment perspective, understanding how human, physical, and financial resources interact becomes essential for management decision-making. These interactions determine a firm's ability to exploit growth opportunities and enhance cash flow generation, thereby reinforcing the strategic importance of intellectual capital as a driver of sustainable value creation.

2 Research design

The primary methodology employed to examine the progression of research within the domain of intellectual capital is bibliometric analysis. The bibliometric analysis was conducted following the methodological framework proposed by Pritchard (1969), who first introduced the concept of *bibliometrics*. Using the Biblioshiny application developed by Aria & Cuccurullo (2017) for the *bibliometrix* R package, we employed several tools of bibliometric analysis to systematically explore publication trends, authorship patterns, and research collaboration networks.

Figure 1: Data selection criteria



Source: Own elaboration

Our dataset spans from 1995 to 2025, including data up to the latest year available. The analysis involves 467 sources, resulting in 1,842 documents authored by 5,912 researchers. The selected publications were identified based on keywords related to intellectual capital within the European Union, as shown in Figure 1, and were limited to documents in English. Before analysis, the dataset was carefully cleaned and checked for duplicates to ensure data accuracy and reliability. Using a de-duplicated sample is essential in academic research, as it reduces data bias, improves the validity of results, and protects scientific integrity. Removing duplicate records enables accurate interpretation, valid conclusions, and reproducible, trustworthy findings.

The dataset includes 2,084 Keywords Plus (ID) and 3,802 Author Keywords (DE), reflecting a broad range of themes and topics within the field of intellectual capital research. The author base comprises 5,912 contributors, of whom 682 are responsible for single-authored works. Collaboration metrics show 951 single-authored documents, with an average of 3.76 co-authors per paper, and 26.93% of publications involve international co-authorship, emphasising a strong level of cross-border collaboration. Over the 30-year period, the dataset exhibits an annual growth rate of 17.76%, with documents averaging 6.99 years in age. On average, each document has received 13.24 citations, and the collection includes a total of 75,096 references.

Table 1: Data description

<i>Main information about data</i>	
Timespan	1995:2025
Sources (Journals, Books, etc)	467
Documents	1842
Annual Growth Rate %	17.76
Document Average Age (Years)	6.99
Average citations per document	13.24
References	75096
<i>Document contents</i>	
Keywords Plus (ID)	2084
Author's Keywords (DE)	3802
AUTHORS	
Authors	5912
Authors of single-authored docs	682
<i>Authors collaboration</i>	
Single-authored docs	951
Co-Authors per Doc	3.76
International co-authorships %	26.93
<i>Document type</i>	
Article	1546

Source: Own elaboration

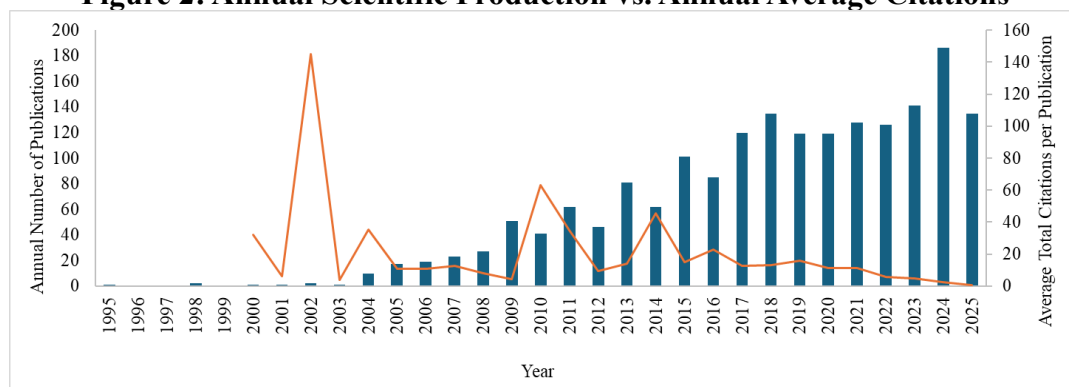
Our analysis addressed several research questions. First, we examined research productivity at the national level. Second, we analysed thematic evolution to identify dominant themes and current topics.

3 Results

Over the years, there has been a growing trend in annual scientific production in the field of intellectual capital research, as shown in Figure 3. As can be observed from Figure 3, during the mid-1990s, the topic of intellectual capital was emerging, as indicated by lower publication numbers, and this trend continued into the new millennium. This issue has been addressed by an increase in the average number of citations per article, as many researchers now cite older, yet significant and influential publications that helped shape the current understanding of the concept of intellectual capital. The rising number of publications since 2004 shows ongoing growth in research activity in the field. However, the fluctuating citation pattern indicates that the surge in publications hasn't led to a corresponding increase in citation impact, as shown in Figure 2. This could be due to topic saturation, fragmentation of research themes, or the fact that many studies are recent and haven't had enough time to gather citations.

From the perspective of scientific production of individual countries, there are a few top leading nations that have produced the most articles on the topic of intellectual capital over the selected period. The leader is the United Kingdom with 988 articles, followed by the USA with 786 articles. In third place is Germany with 686 articles, while Italy and Spain occupy the fourth and fifth positions with 574 and 491 articles, respectively. Figure 3 illustrates the global distribution of scientific output.

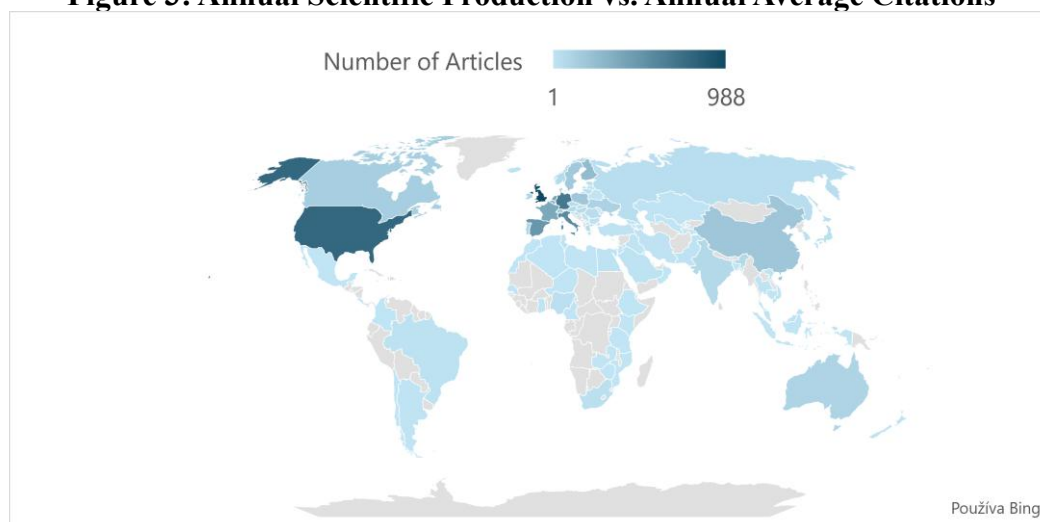
Figure 2: Annual Scientific Production vs. Annual Average Citations



Source: Own elaboration

The least productive countries are mainly found in regions with developing or emerging economies, limited access to advanced infrastructure, and often political or economic instability. These countries typically produce only one or a few publications. They include several African nations such as Algeria, Cameroon, Ghana, Kenya, Libya, Morocco, Mozambique, Niger, Rwanda, Senegal, Tanzania, Zambia, and Zimbabwe. In the Middle East and Central Asia, low performers are Kuwait, Lebanon, Tajikistan, and Uzbekistan.

Figure 3: Annual Scientific Production vs. Annual Average Citations



Source: Own elaboration

A few European countries also rank among the least productive, including Georgia, Liechtenstein, and North Macedonia—generally smaller or less economically integrated states. Mexico is the only North American country in this lowest category. Collectively, these nations are called Least Productive Countries, mainly comprising low-output nations from Sub-Saharan Africa, the Middle East, Central Asia, and peripheral Europe. Overall, European countries mostly occupy higher rankings. Western and Northern European nations such as the UK, Germany, the Netherlands, France, Finland, and Sweden are among the most productive, reflecting high levels of economic development, digital infrastructure, and global integration, as shown in Table 2's top ten most productive countries. Central and Eastern European countries like Poland, Hungary, Slovakia, and Romania are mid-ranked, demonstrating moderate yet respectable output.

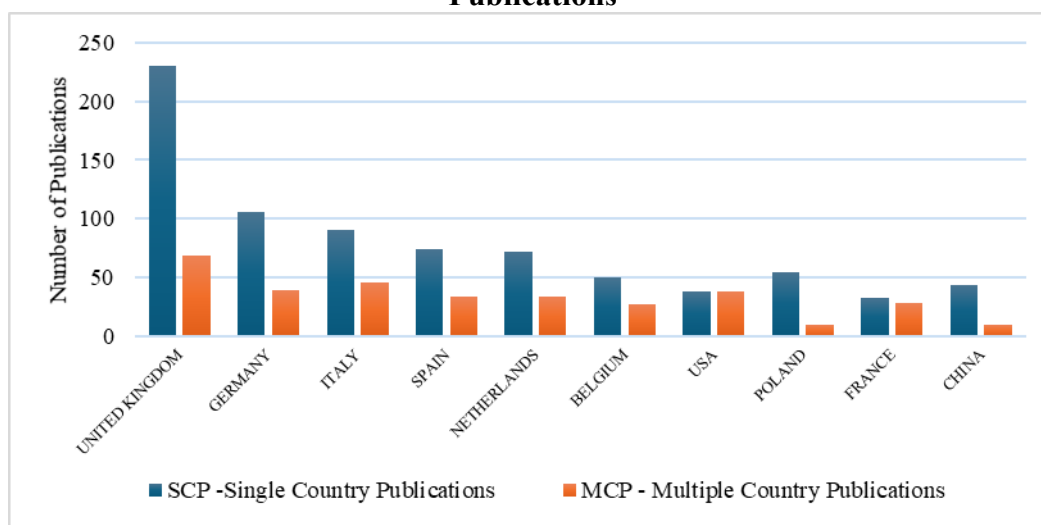
Table 2: Top 10 Most Productive Countries

No.:	Country	Number of Articles
1	UK	988
2	USA	786
3	GERMANY	686
4	ITALY	574
5	SPAIN	491
6	NETHERLANDS	427
7	FRANCE	378
8	BELGIUM	273
9	FINLAND	260
10	CHINA	189

Source: Own elaboration

Only a few small or marginal European nations fall into the lowest category, indicating that Europe is largely a high-performing continent, with some notable exceptions on its economic and geographic peripheries.

It is important to highlight that the presented results indicate European scholars and institutions mainly drive research in the field of intellectual capital. A closer look at collaboration patterns, illustrated in Figure 4, reveals that the topic continues to be predominantly shaped by European researchers' institutions.

Figure 4: Top 10 Most Productive Countries by Single- and Multiple Country Publications

Source: Own elaboration

A closer examination of collaboration patterns reveals that single-country publications (SCP) are prevalent in most European nations. For example, the United Kingdom, Germany, Italy, and Spain each contribute a significant share to their national research output, indicating well-developed domestic research communities and institutional focus on examining intellectual capital within their economic and policy frameworks. The dominance of national publications may also reflect country-specific interpretations of intellectual capital—such as its connection to innovation systems, competitiveness, or human capital growth—domains often shaped by national policies and local data availability.

In contrast, multiple-country publications (MCP) demonstrate the rise of international collaboration, with MCP % (Multiple-Country Publications Percentage) indicating the ratio

of internationally co-authored papers to total country publications, notably in Belgium (35.1%), France (45.9%), and Italy (33.8%). These data points suggest that, although European research remains primarily national, there is an increasing trend toward cross-border projects and comparative research. Such collaborations are likely driven by EU-funded initiatives (e.g., Horizon programs) and the necessity to examine intellectual capital from a transnational perspective, considering its importance in knowledge exchange and regional innovation across Europe.

Interestingly, the United States and China, despite not being European countries, also rank among the top ten in collaboration patterns, but their behaviours differ significantly. The United States has an equal share of national and international publications (50% MCP), reflecting its extensive global research networks. In contrast, China's collaboration rate (18.5% MCP) is comparatively low, possibly due to language barriers, domestic research priorities, or limited involvement in European research consortia.

One interesting perspective we considered is the bilateral collaboration among different countries. As shown in the results above, bilateral collaboration in intellectual capital research is primarily driven by European countries. The collaboration map, depicted in Figure 5, illustrates this pattern. Notably, the strongest pairs often connect Europe with a few key non-European hubs.

Figure 5: Collaboration Network Map

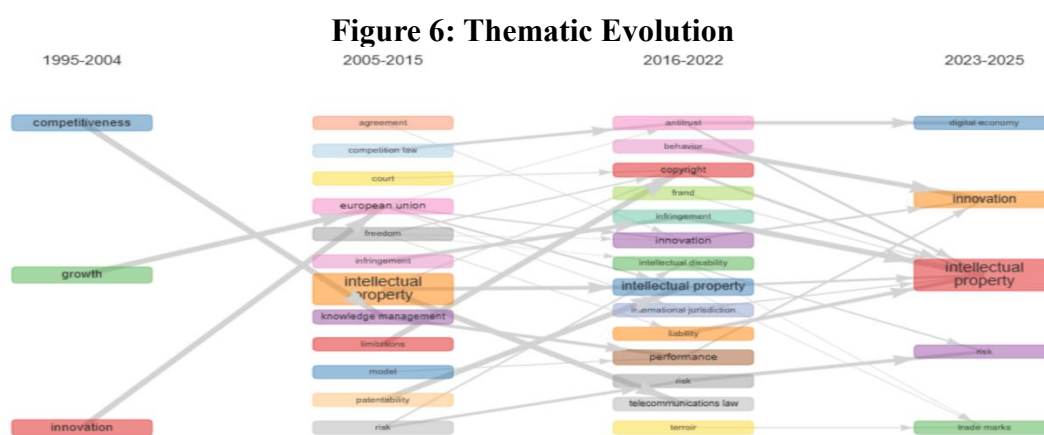


Source: Own elaboration

On average, collaborations between European nations and major global partners such as New Zealand, Japan, Australia, and South Korea total approximately 143 publications per country pair. This trend underscores Europe's ongoing cooperation with leading research centres across the Asia-Pacific and English-speaking regions. For example, collaborations like United Kingdom–New Zealand (171) and Germany–Japan (138) demonstrate how linguistic proximity, combined with transcontinental academic networks and funding programmes, facilitates cross-regional knowledge sharing. Within Europe, collaboration is quite widespread, but it tends to be dispersed rather than concentrated among a few country pairs. The most productive intra-European collaborations include pairs like the United Kingdom–Italy and

Germany–Italy, each with 12 publications, followed by the United Kingdom–Germany with 10. A second group of moderately active connections encompasses Germany–Netherlands, Italy–Netherlands, Spain–Netherlands, and United Kingdom–Netherlands, each with around 5 publications. Additionally, collaborations such as France–Belgium, Germany–Belgium, Italy–Belgium, Netherlands–Belgium, and Spain–Belgium each have approximately 4 to 5 publications. This pattern suggests that EU research tends to be network-focused, characterized by many medium-strength collaborations rather than a few dominant bilateral partnerships. Such a pattern reflects the EU’s multi-country consortia approach. The Europe-centered research network is notably led by the United Kingdom, which demonstrates the widest range of bilateral partnerships both within Europe and internationally. In contrast, Poland exhibits the lowest level of international collaboration, indicating a more nationally oriented research focus within the field of intellectual capital.

Research development on intellectual capital in the European Union has shown a clear progression aligned with Europe's shifting socio-economic, legal, and policy environment over the past thirty years. Examining the thematic shifts, in Figure 6, we see how key topics changed over four periods: 1995–2004, 2005–2015, 2016–2022, and 2023–2025. These periods mark important turning points in the field's growth, correlating with major policy, economic, and institutional changes in the EU—each influencing how intellectual capital is defined, managed, and utilised. Starting from the initial phase of conceptual development (1995–2004), moving through institutionalisation (2005–2015) and specialisation (2016–2022), to digital transformation and integration (2023–2025), the thematic path indicates both the field's maturation and its alignment with EU strategic goals over time.



Source: Own elaboration

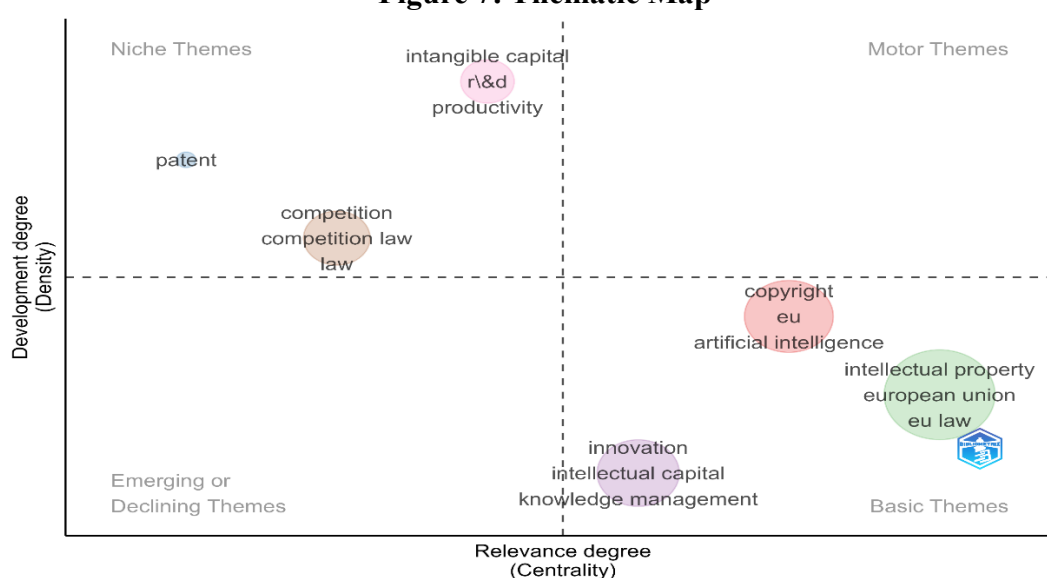
Between 1995 and 2004, key themes like competitiveness, growth, and innovation took centre stage, reflecting the rise of the knowledge economy and the EU’s strategic focus on innovation-led competitiveness after the Maastricht Treaty and Lisbon Strategy. This period laid the groundwork both conceptually and economically for research into intellectual capital, emphasising how intangible resources boost productivity and regional growth.

Between 2005 and 2015, the thematic landscape expanded to include key topics like intellectual property, knowledge management, and the European Union. This change shows how the ideas of intellectual capital became more institutionalised through EU innovation policies, efforts to harmonise laws, and the increasing significance of intellectual property rights in safeguarding intangible assets. The rise of themes like competition law, courts, and freedom reflects a legal shift in the discourse, matching the EU’s efforts in regulatory integration and the development of knowledge governance structures.

Between 2016 and 2022, research in this field matured and became more specialized, with intellectual property solidifying its key position while overlapping with themes such as performance, liability, and risk. This shift mirrors the post-crisis focus on value creation, transparency, and accountability in managing intangible assets, alongside the ongoing digital transformation of European economies. The emergence of innovation and copyright as separate but related clusters shows how research on intellectual capital has increasingly incorporated digital rights, creative industries, and technological innovation into its analysis.

The 2023–2025 phase signals a move towards a more future-focused and policy-oriented approach. Key themes like the digital economy, innovation, and trademarks highlight the EU's current emphasis on digital transformation, data-based growth, and safeguarding intellectual property amid global technological rivalry. The continued prominence of intellectual property across all periods reinforces its fundamental role as the conceptual link connecting past economic and legal structures with today's digital and innovation strategies.

Figure 7: Thematic Map



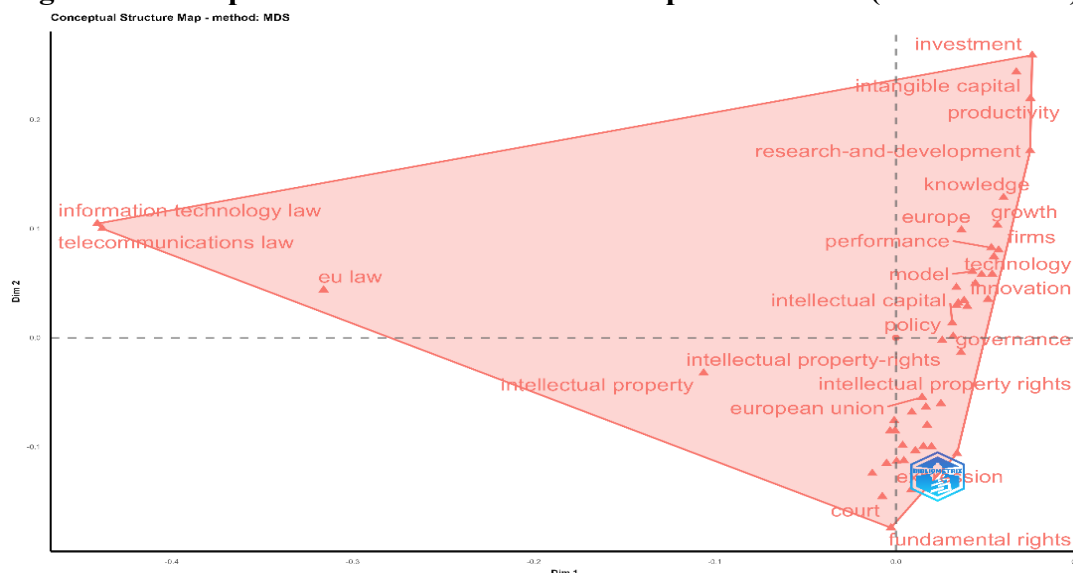
Source: Own elaboration

The current thematic map shows the organization and development of research topics in intellectual capital in the European Union, categorised by relevance (centrality) and progress (density). The four quadrants—motor themes, niche themes, basic themes, and emerging or declining themes—highlight the relationships and prominence of key research areas. Figure 7 illustrates the existing intellectual framework of research on intellectual capital within the EU. In the basic themes quadrant, intellectual property, the European Union, and EU law form the conceptual core of the field, reflecting Europe's emphasis on legal frameworks and policy integration for managing intangible assets. Closely related themes—such as copyright, the EU, and artificial intelligence—highlight the field's growing engagement with digitalization, digital rights, and technological governance.

In contrast, the niche themes—such as intangible capital, R&D, productivity, and patents—represent more specialized areas focused on innovation performance and the valuation of knowledge. Meanwhile, themes like innovation, intellectual capital, and knowledge management are emerging or stabilizing, indicating that these foundational concepts now serve as theoretical pillars supporting new research directions. Overall, the map depicts a mature yet evolving field that is increasingly oriented toward the intersection of intellectual capital, law, and digital transformation within the European context.

Building on the thematic evolution and current topic framework, the conceptual structure map visually displays how research ideas related to intellectual capital cluster and connect within the European Union. Utilising Multiple Correspondence Analysis (MCA), a multivariate technique that simplifies complex co-occurrence data into two dimensions, this map emphasises the closeness and association strength among common keywords and research themes.

Figure 8: Conceptual Clusters of Intellectual Capital Research (MCA Method)



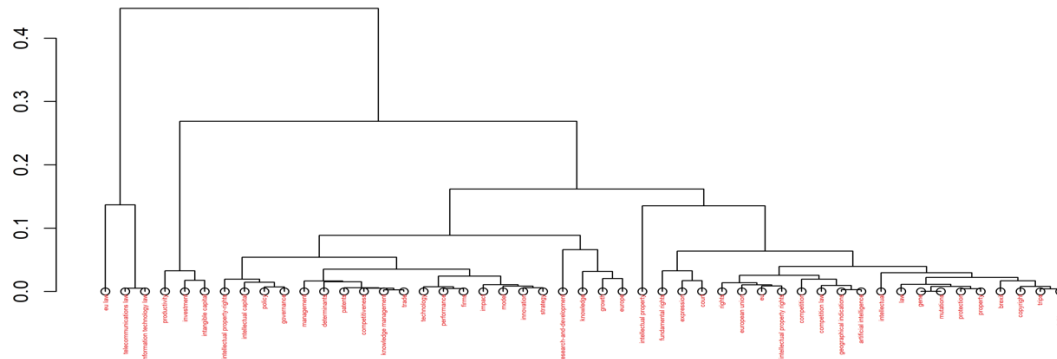
Source: Own elaboration

The conceptual structure map in Figure 8 illustrates how key themes in intellectual capital research are interconnected. Two primary clusters are evident: on the right, a dense group includes intangible capital, productivity, innovation, research and development, and governance, representing the economic and managerial aspects centred on value creation and performance. On the left, legal and regulatory themes such as information technology law, telecommunications law, and EU law highlight governance, data protection, and intellectual property rights. At the centre, concepts like intellectual property, European Union, and intellectual capital serve as links between these areas, connecting innovation with regulation. In sum, the map depicts a research landscape where European intellectual capital studies revolve around the interaction of economic performance and legal frameworks, reflecting a balanced focus on policy and innovation.

Following the conceptual structure map, the hierarchical clustering dendrogram further enhances the understanding of relationships between key themes in European intellectual capital research, as shown in Figure 9. Using co-word analysis, the figure categorises related terms based on their co-occurrence, unveiling broader thematic groups and their relationships. Two main clusters stand out. The first links EU law, telecommunications law, and information technology law, forming a legal–regulatory axis centred on governance, digitalization, and intellectual property protection. The second, larger cluster links innovation, research and development, intangible capital, and performance, representing the economic–innovation dimension focused on knowledge creation and organizational value.

Concepts like intellectual property and European Union act as connecting nodes, linking both areas. Overall, the dendrogram emphasises the dual structure of the field, showing how European intellectual capital research lies between policy regulation and innovation-driven growth.

Figure 9: Conceptual Clusters of Intellectual Capital Research (MCA Method)



Source: Own elaboration

Figure 10 provides a word cloud visualisation of the most prominent keywords, representing the most frequently used terms in the literature on intellectual capital. The central prominence of intellectual property, innovation, and the European Union highlights their crucial role in shaping academic discourse, reflecting the intersection of knowledge creation, legal frameworks, and regional economic governance. Surrounding keywords such as copyright, law, knowledge management, and research and development indicate the coexistence of legal protection with innovation management perspectives. The repeated appearance of terms like technology, growth, investment, and intangible capital further emphasises the link between intellectual capital and economic performance, underlining both the protection and active use of knowledge assets, and positioning intellectual property as a cornerstone of innovation-driven competitiveness.

Figure 10: Word Cloud of Dominant Keywords

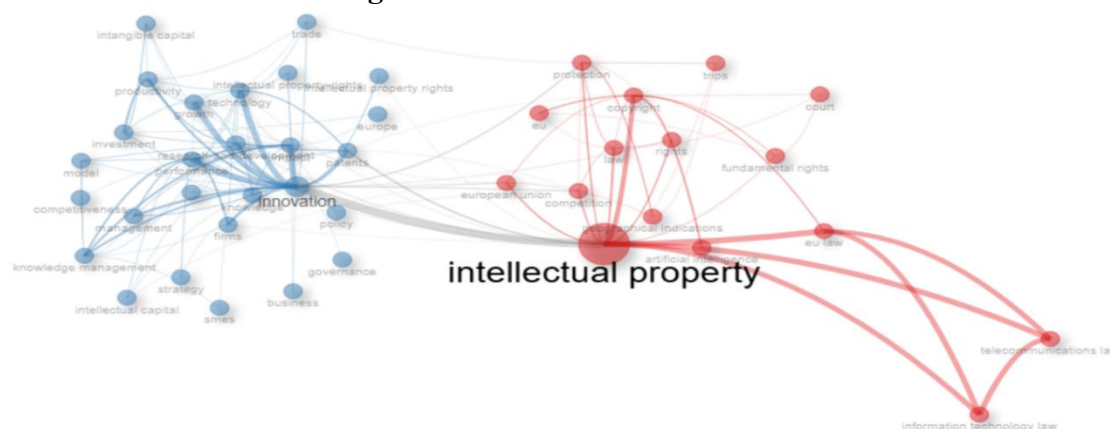


Source: Own elaboration

Going beyond the frequency of terms shown in the word cloud, the next phase of analysis explores their conceptual connections. Mapping the key terms in the analysed field through a co-occurrence network, as shown in Figure 11, reveals two main clusters. The blue cluster focuses on innovation, intellectual capital, and knowledge management, highlighting the economic and organizational aspects related to value creation, performance,

and productivity. Conversely, the red cluster centres on intellectual property, copyright, EU law, and fundamental rights, representing the legal–institutional dimension that deals with regulation, protection, and governance of intangible assets.

Figure 11: Co-occurrence network



Source: Own elaboration

The term intellectual property acts as a bridge, linking the legal and innovation-driven sectors, symbolising the integration of economic performance with regulatory frameworks. It is important to note an interesting fact that the network highlights: European research on intellectual capital is multidimensional, centred around the dynamic interaction between innovation systems and legal protection mechanisms.

Conclusion

This bibliometric study offers a detailed overview of the evolution, thematic trends, and collaborative networks in intellectual capital research, with a primary focus on contributions from within the European Union from 1995 to 2025. Findings show not only an increase in the number of publications but also a notable diversification of research subjects, indicating the field's development. While early research mainly addressed conceptual definitions of intellectual capital, more recent studies highlight measurement models, national intellectual capital, and the strategic management of intangible assets.

Citation trends indicate that the most influential publications often link economic performance, innovation capacity, and policy frameworks. This suggests that intellectual capital has become a unifying concept across various fields, including economics, management, and public policy. The data also emphasise a robust yet selective international collaboration network, with Europe remaining a key hub in global intellectual capital discourse.

Collaboration patterns show that European countries—especially the United Kingdom, Germany, Italy, and Spain—are key contributors and hubs of international cooperation, though significant partnerships also extend beyond Europe, notably with Asia-Pacific regions. However, disparities in participation suggest that research on intellectual capital remains unevenly distributed across countries.

Methodologically, this study demonstrates the potential of bibliometric mapping tools such as Bibliometrix and Biblioshiny to reveal hidden structures in scholarly communication. However, limitations arise from the exclusive use of English-language and Web of Science data, which may underrepresent national-level or non-academic outputs.

Future research could adopt comparative cross-regional analyses, explore policy-driven applications of intellectual capital, and integrate text-mining or machine-learning approaches to trace evolving narratives of knowledge-based value creation within and beyond Europe.

References:

- Al-Ali, N. (2003). *Comprehensive Intellectual Capital Management: Step-by-Step*. John Wiley & Sons.
- Andersson, M., & Saiz, L. (2018). Investment in intangible assets in the euro area. *Economic Bulletin Boxes*, 7. <https://ideas.repec.org/a/ecb/ecbbox/201800073.html>
- Aria, M., & Cuccurullo, C. (2017). bibliometrix: An R-tool for comprehensive science mapping analysis. *Journal of Informetrics*, 11(4), 959–975. <https://doi.org/10.1016/j.joi.2017.08.007>
- Berezinets, I., Garanina, T., & Ilina, Y. (2016). Intellectual capital of a board of directors and its elements: Introduction to the concepts. *Journal of Intellectual Capital*, 17(4), 632–653. <https://doi.org/10.1108/JIC-01-2016-0003>
- Brooking, A. (1996). *Intellectual Capital: Core Assets for the Third Millenium Enterprise*. International Thompson Business Press.
- Dosso, M., & Vezzani, A. (2020). Firm market valuation and intellectual property assets. *Industry and Innovation*, 27(7), 705–729.
- Edvinsson, L. and Malone, M.S. (1997) *Intellectual Capital Realizing Your Company's True Value by Finding Its Hidden Brainpower*. Harper Business, New York. - References—Scientific Research Publishing. (n.d.). Cit 14. 10. 2025, from <https://www.scirp.org/reference/referencespapers?referenceid=1927565>
- Firer, S. (2005). Using intellectual capital as a success strategy in South Africa. *Southern African Business Review*, 9(1), 1–20.
- Full article: Firm market valuation and intellectual property assets. (n.d.). Cit 14. 10. 2025, from <https://www.tandfonline.com/doi/full/10.1080/13662716.2019.1685374>
- Full article: On intellectual capital and financial performances of banks in Malaysia. (n.d.). Cit 14. 10. 2025, from <https://www.tandfonline.com/doi/full/10.1080/23322039.2018.1453574>
- Intellectual Capital Performance and Profitability of Banks: Evidence from Pakistan. (n.d.). Cit 14. október 2025, z <https://www.mdpi.com/1911-8074/12/2/56>
- Kelly, A. (2007). *The Intellectual Capital of Schools: Measuring and Managing Knowledge, Responsibility and Reward: Lessons from the Commercial Sector*. Springer Science & Business Media.
- Kianto, A., Sáenz, J., & Aramburu, N. (2017). Knowledge-based human resource management practices, intellectual capital and innovation. *Journal of Business Research*, 81, 11–20. <https://doi.org/10.1016/j.jbusres.2017.07.018>
- Madhani, P. M. (2012). Intangible Assets: Value Drivers for Competitive Advantage. V G. N. Gregoriou & N. Finch (Ed.), *Best Practices in Management Accounting* (s. 146–165). Palgrave Macmillan UK. https://doi.org/10.1057/9780230361553_10
- Marr, B. (2008) *Impacting Future Value How to Manage your Intellectual Capital*. Management Accounting Guideline (MAG) Jointly Published by CMA, AICPA, and CIMA. References—Scientific Research Publishing. (n.d.). Cit. 14. 10. 2025, from <https://www.scirp.org/reference/referencespapers?referenceid=1851860>
- Moore, L., & Craig, L. (2008). *Intellectual Capital in Enterprise Success: Strategy Revisited*. Wiley.
- Narwal, K., & Soriya, S. (2012). IC performance of Indian pharmaceutical and textile industry. *Journal of Intellectual Capital*, 13, 120–137. <https://doi.org/10.1108/14691931211196240>

- Pritchard, A. (1969). Statistical bibliography or bibliometrics? *Journal of Documentation*, 25(4), 348–349.
- Rossi, F., & Celenza, D. (2013). Intellectual Capital and Performance of Listed Companies: Empirical Evidence from Italy (SSRN Scholarly Paper No. 2557611). Social Science Research Network. <https://papers.ssrn.com/abstract=2557611>
- Stewart, T.A. (1997) *Intellectual Capital The New Wealth of Organizations*. Doubleday/Currency, New York. - References—Scientific Research Publishing. (n.d.). Cit 14. 10. 2025, from <https://www.scirp.org/reference/referencespapers?referenceid=1851806>
- Value-Driven Intellectual Capital: How to Convert Intangible Corporate Assets into Market Value | Wiley. (n.d.). Wiley.Com. Cit 14. október 2025, z <https://www.wiley.com/en-us/Value-Driven+Intellectual+Capital%3A+How+to+Convert+Intangible+Corporate+Assets+into+Market+Value-p-9780471351047>
- Webster, E., & Jensen, P. (2006). Investment in Intangible Capital: An Enterprise Perspective. *The Economic Record*, 82(256), 82–96. <https://doi.org/10.1111/j.1475-4932.2006.00296.x>
- Xu, J., & Wang, B. (2018). Intellectual Capital, Financial Performance and Companies' Sustainable Growth: Evidence from the Korean Manufacturing Industry. *Sustainability*, 10(12), 4651. <https://doi.org/10.3390/su10124651>

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SPECIFICS OF INTERNATIONAL LAW IN GAS TRADE

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Abstract: This article analyses the specific features of international law governing the global trade in natural gas. It outlines the legal framework that underpins cross-border gas transactions, including long-term contractual arrangements, investment protection mechanisms, and dispute resolution systems such as ICSID, SCC, and UNCITRAL arbitration. Special attention is devoted to the Energy Charter Treaty and its role in ensuring legal predictability and investment stability, as well as to the implications of recent EU case law (Achmea and Komstroy) limiting intra-EU arbitration. The study further examines the application of WTO rules, particularly Articles XX and XXI of GATT, to energy trade and national security measures. The analysis concludes that the gas sector's legal regime is shaped by a complex interplay of international, regional, and geopolitical factors, where law often interacts and at times conflicts with strategic interests and power dynamics.

Keywords: energy, international law

JEL: F53, P28, K33

Introduction

Natural gas represents one of the most strategically important energy resources in the modern global economy. Its dual role as both a commercial commodity and a geopolitical instrument makes the legal framework governing its trade exceptionally complex. Unlike other goods, natural gas requires an extensive, capital-intensive, and often transnational infrastructure comprising extraction sites, pipelines, LNG terminals, and storage facilities. The cross-border nature of this infrastructure inevitably brings questions of international law to the forefront particularly those related to state sovereignty, investment protection, energy transit, and dispute resolution.

The purpose of this paper is to explore the legal specificities of international gas trade within the broader framework of public international law, trade law, and investment law. The study examines the interplay between long-term contractual mechanisms and multilateral legal instruments, such as the Energy Charter Treaty, the General Agreement on Tariffs and Trade, and dispute settlement systems including ICSID, SCC, and UNCITRAL arbitration. It also analyses recent developments in the jurisprudence of the Court of Justice of the European Union, which have significantly altered the scope of investor–state arbitration within the EU. The paper aims to demonstrate how international law both facilitates and constrains the functioning of global gas markets. In doing so, it seeks to clarify the evolving balance between legal norms, state interests, and market dynamics

1 Legal Foundations and the Role of International Law

International trade in natural gas represents a complex system of contractual, institutional, and regulatory relations governed by both public and private international law. Due to the cross-border nature of gas supply chains, this sector is subject to multiple overlapping legal frameworks covering trade, investment protection, environmental measures, and dispute settlement.

These include the rules of the World Trade Organization (WTO), the General Agreement on Tariffs and Trade (GATT), the Energy Charter Treaty (ECT), the United Nations Commission on International Trade Law (UNCITRAL), the International Centre for Settlement of Investment Disputes (ICSID), and the Stockholm Chamber of Commerce (SCC). International law applicable to the trade in gas builds upon the fundamental principles of trade liberalization, non-discrimination, and transparency, as enshrined in the WTO legal system. Natural gas as a tradable commodity falls under the category of goods governed by the GATT 1994. According to Article XI GATT, members are obliged to eliminate quantitative restrictions on exports and imports, while Article XX provides exceptions for the protection of exhaustible natural resources and the environment. Similarly, Article XXI allows for restrictions justified by national security interests, which is relevant in the context of energy crises and sanctions regimes.

2 Frameworks and Legal Specificities

International gas trade is typically based on long-term contracts that contain detailed provisions regarding quantities, price formulas, delivery conditions, take-or-pay clauses (requiring the buyer to pay for agreed volumes even if not taken), ship-or-pay clauses (obliging the transporter to make capacity available and the shipper to pay for it whether used or not), destination clauses (prohibiting resale or re-export without supplier consent), and dispute resolution mechanisms. An important legal distinction must also be drawn between pipeline gas supplies and LNG deliveries. Pipeline gas tends to have a regional character and relies on long-term agreements for 15–25 years (S&P, 2025): offering a high degree of predictability and stability, often governed by international treaties and bilateral investment agreements. Short-term contracts (around four years) offer greater flexibility in responding to market fluctuations, seasonal demand, or geopolitical events, and are legally simpler, typically relying on standardized commercial templates with shorter obligations and less investment protection (ASON, 2022).

A significant political and legal framework is provided by the International Energy Charter, adopted in The Hague on 20 May 2015. Although not legally binding, it establishes political principles aimed at promoting international cooperation in energy, open and transparent markets, nondiscriminatory access to resources, technologies, and investments, and the promotion of energy efficiency and environmental protection (ASON, 2022). Building upon this framework, the Energy Charter Treaty (ECT), signed in 1994 and in force since 1998 (including for Slovakia) transforms these principles into binding legal norms. The ECT covers investment protection, nondiscriminatory and uninterrupted energy transit, trade in energy materials (aligned with WTO rules), and cooperation on energy efficiency and environmental sustainability (International Energy Charter, 2016). The treaty grants investors the right to bring disputes against host states before international arbitration, thereby strengthening legal predictability for companies managing strategic infrastructure such as Eustream a.s., Nafta a.s., or Pozagas a.s. In recent years, however, the European Union and several member states (including Germany, France, and Poland) have initiated a coordinated withdrawal from the ECT, citing incompatibility with EU climate objectives. Slovakia is observing this process but has not yet denounced the treaty. A potential withdrawal could undermine investor protection and legal certainty during the transition period (EP, 2023).

3 Dispute Resolution in the Gas Sector and GATT

International law provides several mechanisms for resolving disputes between investors and states in the energy sector. The International Centre for Settlement of Investment Disputes (ICSID), under the World Bank, handles such disputes under investment treaties (ICSID, 1966). Its decisions are binding and enforceable across member states. An example is the 2025 case

filed by a Dutch energy company against Ukraine over the revocation of its oil and gas extraction license due to sanctions on its former owner (GAR, 2025). Another important forum is the Arbitration Institute of the Stockholm Chamber of Commerce (SCC), which frequently adjudicates disputes arising from long-term supply or transit agreements and pricing formulas (SCC, 2023). A landmark case was the Naftogaz v. Gazprom dispute, which followed the deterioration of Russian-Ukrainian relations in 2014. The SCC tribunal adjusted the take-or-pay obligations to reflect market conditions and awarded Naftogaz a net compensation of USD 2.56 billion, setting an important precedent in the European context (NAFTOGAZ GROUP (2018). A crucial turning point in European investment law came with the *Achmea B.V. v. Slovakia* (2018) decision of the Court of Justice of the European Union, which declared arbitration clauses in intra-EU bilateral investment treaties (BITs) incompatible with EU law (EC, 2020). The CJEU later extended this reasoning in the *Komstroy v. Moldova* (2021) case, ruling that Article 26 of the Energy Charter Treaty, which allows EU investors to sue other EU member states before international tribunals is likewise incompatible with EU law (EUR-LEX, 2021). As a result, EU investors, including those in the gas sector, can no longer rely on international arbitration within the EU. Slovakia and other member states signed the Agreement for the Termination of Intra-EU BITs (2020), shifting the protection of energy investments into the jurisdiction of EU law and domestic courts (EC, 2018).

A more flexible mechanism is provided by UNCITRAL arbitration, operating under the United Nations Commission on International Trade Law. Unlike institutional forums such as ICSID or SCC, UNCITRAL offers procedural rules rather than a permanent structure, allowing parties greater autonomy in shaping proceedings. A relevant example is the *MOL v. Croatia* case, in which the UNCITRAL tribunal rejected Croatia's claims seeking to annul contract amendments granting MOL management control over INA, finding no evidence of bribery and upholding MOL's rights (Global Arbitration Review, 2017).

The legal regime of international trade in natural gas differs significantly from the regime governing other goods regulated under the framework of the World Trade Organization (WTO). Natural gas, as a strategic energy resource, is the subject of trade flows governed not only by the general rules of the General Agreement on Tariffs and Trade (GATT 1994), but also by specific exceptions and special regimes arising from its strategic importance and physical characteristics (GATT, 1947). The specific feature lies in the fact that the WTO legal regime applies only from the moment when natural gas becomes a tradable product ready for exchange, i.e., from the moment of its extraction either in the form of liquefied natural gas (LNG) or gas delivered through pipeline networks. Before this moment, gas is subject to the regime of permanent sovereignty of states over natural resources, which allows national decision-making on the volume of extraction and methods of utilization.

Article XX of the GATT establishes a list of situations in which a WTO Member may adopt trade measures that would otherwise be inconsistent with its GATT obligations. In the context of energy and gas, paragraph (g) is particularly relevant, as it allows measures relating to the conservation of exhaustible natural resources, provided that such measures are made effective in conjunction with restrictions on domestic production or consumption (GATT, 1947). This article therefore provides WTO Members with the possibility to restrict trade in natural gas if necessary to protect exhaustible natural resources or to achieve environmental objectives, under the condition that such measures are applied in a non-discriminatory manner and are not used as a disguised form of protectionism.

In the case of gas, Article XXI of the GATT is also of special importance, as it allows WTO Members to adopt measures that would otherwise be inconsistent with WTO rules, if such measures are considered necessary for the protection of essential security interests. It thus grants states broad discretion in interpreting the concept of "essential security interests." Its significance for the gas sector lies in the fact that energy security is increasingly interpreted

as part of national security (GATT, 1947). Accordingly, this article may be invoked by states to suspend exports or imports of gas, or to block infrastructure projects. An example of such conduct includes the statements of the United States (that the project represented a threat to European stability and energy security) and some EU Member States (that the project posed a risk to European energy security) regarding the Nord Stream 2 project, where objections were based not only on economic but also on security concerns (Atlantic Council, 2018). The imposition of sanctions and embargoes due to geopolitical conflict represents another example of the use of Article XXI GATT. This means that states may adopt sanctioning measures restricting or entirely prohibiting trade in gas with countries engaged in armed conflicts or violating international law. In practice, such examples include U.S. and EU sanctions against the Russian gas sector, introduced in 2014, which consisted mainly of bans on new investments, export of technologies, and restrictions on gas supplies, and which continue to the present day (CNAS, 2024) when in 2025 the EU adopted the 18th and 19th sanctions packages against Russia (European Council, 2025). The application of Article XXI GATT in the context of the energy sector was the subject of the legal dispute “Russia – Measures Concerning Traffic in Transit” between Russia and Ukraine in 2016, when Ukraine filed a complaint with the WTO, claiming that since 2014 Russia had adopted measures restricting the transit of Ukrainian goods through Russian territory to third countries, particularly Kazakhstan and Kyrgyzstan. These measures included a ban on the transit of certain categories of goods, the requirement to use designated border crossings, the obligation to apply special seals and GPS devices, and restrictions on the transit of gas and other energy commodities. Russia argued that its actions were consistent with Article XXI(b)(iii) of the GATT, which allows measures that a state considers necessary for the protection of its essential security interests “in time of war or other emergency in international relations.” Russia maintained that after the events in Crimea in 2014 and the armed conflict in Eastern Ukraine, an “emergency in international relations” had arisen, justifying the introduction of such restrictions. Russia also emphasized that the security exceptions under Article XXI are “self-judging,” meaning that a state has full discretion to determine when and how to invoke them (European Council, 2025). This dispute became a precedent, as for the first time a WTO Panel provided a detailed interpretation of the scope and limits of the security exception under Article XXI GATT. The Panel verified the existence of an “emergency in international relations,” recognizing the armed conflict and deep political tension between Russia and Ukraine as circumstances satisfying the criterion of Article XXI(b)(iii). The Panel also examined the necessity of the measures adopted, that is, whether they were implemented during that emergency and whether they had a sufficient connection to the protection of Russia’s security interests. On this basis, the Panel concluded that Russia’s measures fulfilled the conditions of Article XXI GATT, and that their application did not constitute a violation of the GATT. The decision thus became a precedent confirming the possibility of invoking the security exception even in economic disputes, while at the same time clearly establishing that its application remains subject to WTO judicial review.

The analysis of international trade in natural gas and of decision-making practice in key arbitral proceedings confirms that this segment of global energy has, compared to other commodities, a distinct legal, technical, and politico-economic character. Trade in natural gas is closely connected with capital-intensive infrastructure, and its functioning is inseparably linked to cross-border cooperation, long-term contracts, and intergovernmental agreements. As demonstrated by several cases analyzed in this study, arbitration has proven to be an effective mechanism for resolving complex disputes situated at the intersection of commercial, investment, and public law. In the field of energy, and particularly in the gas sector, arbitral proceedings often reflect not only legal and economic questions but also broader geopolitical contexts and issues of energy security. In this context, the Slovak Republic is a significant actor, as it has long participated, in its capacity as a transit country, in both

regional and international energy flows and is a signatory to all key multilateral treaties in the fields of international trade and investment that have a direct or indirect impact on the gas sector. At the same time, as a Member State of the European Union, Slovakia is bound by the obligations arising from EU law, which in many areas takes precedence over national legislation and determines the way international rules are applied within the Slovak legal system.

From the Slovak perspective as a transit country, however, international law has only a limited capacity to influence the actual redirection of energy flows. The example of the Nord Stream 2 project has shown that legal frameworks are unable to prevent transit shifts when these correspond to geostrategic reasoning and the interests of major powers, particularly Russia and Germany (Warsaw Institute, 2019). This project revealed that the decisive role in energy policy is played by the balance of power rather than legal norms, while transit countries such as Slovakia remain in a position where their status depends on the will of stronger actors.

Conclusion

The analysis of international gas trade and key arbitral decisions confirms that this sector of global energy possesses unique legal, technical, and geopolitical characteristics. The international trade in natural gas operates at the intersection of law, economics, and geopolitics. Its regulation reflects the tension between the liberal principles of international trade and the strategic imperatives of energy security and state sovereignty. While multilateral legal frameworks such as the GATT/WTO system, the Energy Charter Treaty, and international arbitration mechanisms provide a structured foundation for trade and investment protection, they are often constrained by the realities of geopolitical competition and national interests. Gas trade depends on capital-intensive infrastructure, long-term intergovernmental agreements, and international cooperation. Arbitration has proven to be an effective mechanism for resolving complex disputes at the intersection of commercial, investment, and public law. For Slovakia, as a key transit country and EU member state, international law provides both an opportunity and a constraint. While Slovakia benefits from multilateral legal frameworks ensuring the stability of energy flows, its real capacity to influence the direction of gas transit remains limited. The case of Nord Stream 2 demonstrates that in energy geopolitics, the balance of power often outweighs the force of legal norms, leaving smaller transit states dependent on the strategic interests of more powerful actors. The legal regime governing the international trade in natural gas is not static but continuously shaped by the interplay of market forces, political interests, and normative commitments. Its future will depend on the ability of international law to adapt—to reconcile energy security with environmental sustainability, to ensure fairness in investment protection, and to strengthen the resilience of global energy governance in an era of accelerating transition and uncertainty.

References:

- General Agreement on Tariffs and Trade (1994). https://www.wto.org/english/docs_e/legal_e/gatt47_e.htm
- World Trade Organization (2025). Legal texts and dispute settlement cases <https://www.wto.org/>
- WTO (2019). Russia — Measures Concerning Traffic in Transit. https://www.wto.org/english/tratop_e/dispu_e/cases_e/ds512_e.htm
- Energy Charter Treaty (1994). <https://www.energycharter.org/process/energy-charter-treaty-1994/energy-charter-treaty/>
- International Energy Charter (2015). <https://www.energycharter.org/process/international-energy-charter-2015/overview/>
- International Centre for Settlement of Investment Disputes (1966). <https://icsid.worldbank.org/>

United Nations Commission on International Trade Law (1966). <https://uncitral.un.org/en/texts/arbitration>

Arbitration Institute of the Stockholm Chamber of Commerce (1917). <https://sccarbitrationinstitute.se/en/>

United Nations (2015) Paris Agreement. <https://unfccc.int/process-and-meetings/the-paris-agreement>

European Commission (2023). “EU withdrawal from the Energy Charter Treaty. https://commission.europa.eu/energy-climate-change-environment_en

INFOCURIA (2018). Rozsudok Súdneho dvora (veľká komora) zo 6. marca 2018 Slowakische Republik (Slovenská republika) proti Achmea BV. <https://curia.europa.eu/juris/liste.jsf?num=C-284/16>

EUR-LEX (2021): Judgement of the Court, République de Moldavie v Komstroy LLC. Warsaw. <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=celex%3A62019CJ0741&>

Warsaw institute (2019). Ukraine–Nord Stream 2: Struggle Over Gas Transit. <https://warsawinstitute.org/ukraine-nord-stream-2-struggle-gas-transit/>

EC (2020): EU Member States sign an agreement for the termination of intra-EU bilateral investment treaties. https://www.europarl.europa.eu/RegData/etudes/BRIE/2023/754632/EPRS_BRI%282023%29754632_EN.pdf?

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CHANGING TRAJECTORIES: RETHINKING COOPERATIVE AND CONFRONTATIONAL SECURITY IN THE CONTEMPORARY WORLD ORDER¹

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Abstract: This article explores the divergent trajectories of cooperative and confrontational security practices in international law, analyzing how states engage with legal norms amid an increasingly fractured global order. Employing a non-doctrinal methodology, the study situates law within the broader socio-political and institutional structures that shape its interpretation and operationalization. Cooperative frameworks such as the OSCE and CWC emphasize multilateralism and legal restraint. In contrast, confrontational approaches rely on unilateralism and strategic legal reinterpretation. The article argues that legal authority is increasingly contingent on geopolitical asymmetries and evolving security paradigms.

Keywords: cooperative security, confrontational practices, international law, global security governance

JEL: K33, F50, F53

Introduction

In the early 21st century, the international community finds itself navigating a period of profound legal and political dislocation. Normative architecture established after 1945, centering on the UN Charter, sovereign equality, and the prohibition of the use of force, has not collapsed (yet), but its authority has become increasingly fractured. A growing number of states now oscillate between legal commitments to collective security and actions that undermine the very foundations of that order.

The international legal order is increasingly defined by competing trajectories of state behavior: one oriented toward cooperative engagement through legal and institutional mechanisms, and another characterized by confrontational, often unilateral, approaches to security and sovereignty. These trajectories reflect not only differences in diplomatic posture or geopolitical alignment, but more fundamentally, diverging conceptions of what the role of international law should be in the regulation of global security. While some states have embraced multilateral regimes for arms control, disarmament, conflict mediation, and economic interdependence, others have adopted positions of strategic resistance - renegotiating, suspending, or withdrawing from international obligations in pursuit of perceived national interests. This divergence raises critical questions about the durability of the rule-based international order, the flexibility of legal institutions in accommodating shifting power dynamics, and the capacity of law to function as a credible framework for global security governance. As Christine Gray explains, the credibility of the prohibition on the use of force under Article 2(4) is called into question when the international community fails to respond effectively to violations (C. D. Gray, 2018).

This article employs a non-doctrinal legal methodology, situating international legal norms within the broader socio-political and institutional contexts in which they are embedded and enacted. Unlike doctrinal approaches, which prioritize the internal coherence of legal texts, case law, and interpretive principles, this method treats law as a living practice, shaped by power

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relations, institutional design, and the asymmetrical capacities of states to access and influence legal regimes. The analysis draws up selected case studies that exemplify both cooperative and confrontational engagements with international legal norms in the security domain.

1 Competing Security Paradigms in a Fractured Legal Order

In the current geopolitical climate characterized by asymmetric power relations, regional conflicts, and legal uncertainty, the international community finds itself at a critical juncture regarding the role of law in shaping global security governance. States are increasingly aligning along divergent security trajectories, which can broadly be conceptualized as either cooperative or confrontational in their engagement with international legal norms. These trajectories do not simply reflect policy preferences, but reveal deeper contestations over the legitimacy, function, and enforceability of international law in the realm of peace and security.

Cooperative security refers to a model of international engagement where states seek to ensure their security through collaboration, legal restraint, institutional dialogue, and shared norms. It is rooted in the idea that security is indivisible, and that the insecurity of one state can become a threat to others and that legal mechanisms and multilateral institutions can mediate such risks. The notion gained prominence after the Cold War, particularly through the Organization for Security and Co-operation in Europe (OSCE) and the UN Charter system, which emphasized peaceful dispute resolution, arms control, and collective security frameworks.

In contrast, confrontational security denotes a posture where states prioritize unilateral action, military force, and sovereign prerogative, often at the expense of multilateral engagement or legal constraint. While not inherently unlawful, this trajectory involves a strategic marginalization of international law either through selective interpretation, withdrawal from institutions, or the invocation of exceptionalist doctrines (e.g., preemptive self-defense or vital interests).

As cooperative and confrontational security trajectories continue to reshape global legal dynamics, they do so against the backdrop of a deeper structural malaise the crisis of the contemporary international legal order. This crisis is not reducible to isolated violations or normative lapses but reflects a broader disintegration of the underlying architecture that once sustained post-war multilateralism. Scholars increasingly diagnose this condition as a multidimensional failure/erosion²: of enforcement, institutional legitimacy, normative coherence, and global trust in legal authority. It is this systemic fragility that conditions how states engage with, resist, or reinterpret legal obligations in the sphere of international security. Institutions tasked with upholding legal order are facing significant legitimate challenges. Susan Marks argues that international legal institutions may suffer from a legitimacy problem when their democratic claims obscure structural inequalities and ideological assumptions (Marks, 2003). This perception is intensified by the Security Council's frequent paralysis due to geopolitical deadlock, as well as declining confidence in the International Criminal Court and other adjudicative bodies. In addition, the fragmentation of international law into overlapping and sometimes competing legal regimes spanning human rights, trade, humanitarian law, and security governance has produced a system that lacks coherence and predictability. Nico Krisch identifies this as a shift toward a "pluralist structure

² In meaning of related concepts such as the "failure" of international law, its "erosion," "fragmentation," "legitimacy crisis," and "structural indeterminacies" as frequently discussed in the context of international law's limitations, systemic challenges, and normative gaps by international law scholars/ see e.g. Benson, S. (2020). Fragmentation or Coherence? Does International Dispute Settlement Achieve Comprehensive Justice? In: *International Journal of Law and Public Administration*. Or Istrefi, K. (2025, maret 3). Mind Your Attitude: The Erosion of International Law? In: *EJIL: Talk!*

of postnational law,” where no single normative or institutional authority holds primacy, and legal obligations vary across contexts (Krisch, 2010).

The way states position themselves within these divergent security paradigms is both a reflection of this fractured legal order and a driver of its continuing instability. Legal norms are not merely observed or violated; they are strategically navigated, instrumentalized, or resisted, depending on a state’s security outlook, perceived legitimacy of legal institutions, and geopolitical calculus. In sum, cooperative and confrontational security reflect not just strategic choices but foundational disagreements over the role, function, and authority of international law in global security governance. This conceptual typology of competing security paradigms provides the analytical lens through which subsequent case studies will be assessed, foregrounding the non-doctrinal dimensions of legal engagement in international security governance.

2 Cooperative Security Practices and International Law

Cooperative security practices represent a multilateral paradigm grounded in dialogue, consensus, and legal institutionalism. These practices seek to embed security within the framework of international law, emphasizing shared responsibility, transparency, and collective legitimacy. They exemplify the aspiration to transform law into a normative infrastructure for peace.

The cooperative security framework is underpinned by the foundational premise of security indivisibility, whereby the security of one state is understood to affect the security of all. This principle, formally articulated in the Helsinki Final Act (1975), has since become a cornerstone of OSCE’s normative architecture. According to Sacchetti (Sacchetti, 2014), the OSCE’s Platform for Co-operative Security was established to promote institutional coherence and strategic coordination among international and regional organizations, while grounding such cooperation in the legal authority and normative framework provided by the UN Charter. The Charter of the United Nations, particularly Chapter VIII, underpins these efforts, providing the legal basis for regional arrangements like the OSCE to operate in harmony with global peace and security structures.

According to Platise, Moser, and Peters (2019), while the OSCE lacks binding legal instruments or centralized enforcement mechanisms, it functions as a regional arrangement under the Charter through its structured political dialogue, institutionalized cooperation, and consensus-based commitments that seek to prevent conflict and promote peace. (Steinbrück Platise et al., 2019) The OSCE’s operations ranging from election monitoring and preventive diplomacy to arms control and civilian security fall squarely within the mandate envisaged by Article 52(1), which encourages the existence of regional arrangements or agencies for dealing with such matters relating to the maintenance of international peace and security as are appropriate for regional action (UN Charter, n.d.). Critically, Article 53(1) provides that enforcement action by such regional agencies must be authorized by the Security Council. In practice, however, the OSCE has not engaged in enforcement but rather in normative and operational cooperation, making its alignment with the Charter both functional and complementary. As Platise, Moser, and Peters (2019) observe in their analysis of the OSCE, the cooperative model rests not on binding enforcement, but on a soft law infrastructure whose authority is derived from political consensus, normative alignment, and the institutional expectation of compliance (Steinbrück Platise et al., 2019). This architecture reflects a deeper conceptual shift in international legal practice one where law functions not merely as a system of rules, but as a normative infrastructure for peacebuilding, norm diffusion, and political legitimacy. Sacchetti (2014) observes that the OSCE’s Platform for Co-operative Security was designed “to foster coherence and complementarity among regional and international

organizations,” embedding the OSCE’s actions within the legal framework of the UN Charter and strengthening the operational link between the two systems (Sacchetti, 2014).

The UN General Assembly and Security Council have repeatedly recognized OSCE’s role in regional conflict prevention and post-conflict rehabilitation, further confirming its *de facto* status as a Chapter VIII actor. In legal terms, this relationship reveals a structurally hybrid form of regionalism: while the OSCE lacks a formal legal status under Chapter VIII due to its non-treaty character, its function as a security actor is increasingly seen as normatively aligned with the Charter’s objectives. As such, it embodies a model of informal legal regionalism operating through political commitments rather than binding obligations yet maintaining international legal relevance through its integration with the multilateral system.

The Chemical Weapons Convention (CWC), and its operational arm, the Organization for the Prohibition of Chemical Weapons (OPCW), stand as both normative achievements and institutional embodiments of how international law can anchor and enable ongoing security cooperation. Rather than functioning merely as a static prohibition on chemical weapons, the CWC is structured as a living instrument, expressly designed for enduring multilateral engagement, legal adaptation, and mutual reassurance. From an international legal optic, the CWC/OPCW model reveals several essential attributes of cooperative security. First, it shows that legal frameworks are most resilient and effective when they mandate inclusive engaging states, scientific communities, and international bodies in continual norm and policy refinement. Second, the process-driven nature of cooperative legal security enhances legitimacy: parties perceive obligations not as externally imposed, but as outcomes of shared deliberation and ongoing consent. Finally, this model demonstrates how law can provide the infrastructure for habit-forming practices of restraint, fostering predictability even amidst changing interests and new actors.

Cooperative security frameworks, including those operationalized by the OSCE, CWC/OPCW, and UN Charter Chapter VIII arrangements, are grounded in ideals of transparency, consent, and shared responsibility. However, from a critical perspective, these ideals may serve to obscure the material inequalities in capacity, voice, and enforcement power among states. The Chemical Weapons Convention often cited as a flagship of cooperative security, embodies this paradox. While the CWC integrates science, law, and diplomacy in a unique verification regime, its implementation reflects the disproportionate influence of technologically advanced states in shaping compliance procedures, technical criteria, and enforcement thresholds. The OPCW’s attribution mechanisms while procedurally robust have faced accusations of politicization, particularly when used to isolate or sanction weaker states. Moreover, cooperative security practices are often shaped by geopolitical discretion, with participation framed as voluntary and opt-in yet failure to engage is frequently punished through diplomatic isolation or economic pressure. The legitimacy of such mechanisms, then, is not intrinsic to the law itself but is constructed through institutional narratives of consensus that may conceal coercive undercurrents.

3 Confrontational Security Practices and International Law

In the contemporary security environment, confrontational and/or hybrid security practices including cyber operations, disinformation campaigns, economic coercion, and the use of unmarked paramilitary forces have emerged as potent tools for statecraft. These measures often fall below the threshold of armed conflict, making them difficult to classify, attribute, or regulate under the traditional framework of *jus ad bellum* and *jus in bello*. Yet their cumulative effect can degrade state sovereignty, violate international obligations, and disrupt the legal order intended to govern the use of force and peaceful relations among states.

Confrontational security refers to a strategic posture wherein states prioritize unilateralism, deterrence, and sovereign discretion, often in tension with multilateral

institutions and normative legal constraints. Confrontational security practices in international law epitomize the tension between the assertion of state interests and the authority of the international legal order. Instances such as the Russian invasion of Ukraine, China's defiance of the South China Sea arbitral ruling, and sustained hostilities in Gaza are widely cited as breaches of core principles, namely sovereignty, non-aggression, and the lawful use of force. The voting procedure of the Security Council, privileging its permanent members, it means the statutory privilege of some of the most powerful states makes the 'rule of law' an elusive idea in the intergovernmental system of the United Nations. (Köchler, 2022) This is starkly evident in the paralysis around the Ukraine conflict, for which remedial action has shifted to alternative organs such as the UN General Assembly. The disregard for international legal judgments such as China's noncompliance with the Permanent Court of Arbitration's award on the South China Sea reinforces the observation by Taylor Fravel "China's commitment to its claims in the South China Sea is long standing and unlikely to change" (Fravel, 2011). This underscores the fragility of multilateral arrangements and the recurring risk of legal fragmentation in face of assertive state action.

From an international legal perspective, confrontational security challenges the integrity and universality of core legal principles, notably Article 2(4) of the UN Charter, which prohibits the use of force, and Article 51, which regulates self-defense. Perhaps the most emblematic case, the U.S.-led invasion of Iraq was justified through a confrontational security logic based on preemptive self-defense and alleged WMD threats. Despite widespread criticism and the absence of explicit UNSC authorization, the legal justifications were framed through selective interpretations of past resolutions (e.g., 678 and 1441). As Christine Gray (2018) explains, the credibility of the prohibition on the use of force under the UN Charter is significantly weakened when violations occur without consistent international enforcement. The lack of political consensus and institutional response risks eroding the authority and relevance of the Charter system itself (C. Gray, 2018) Russia's annexation of Crimea represents a strategic legal framing that employed protective intervention rhetoric, invoking ethnic kinship and historical claims. In international legal terms, these moves contradicted not only Ukraine's territorial integrity under the UN Charter and the 1994 Budapest Memorandum.

While covert information operations such as those attributed to Russia during the 2016 U.S. and 2017 French elections may not yet fall clearly within the scope of prohibited uses of force under existing international law, they raise serious concerns regarding the principle of non-intervention. The International Court of Justice, in its landmark *Nicaragua v. United States* judgment (1986), held that this principle protects a state's right to determine its "political, economic, social and cultural system" free from coercive external interference. (*Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, n.d.) Although the Court did not explicitly address cyber or informational tactics, legal scholars increasingly argue that systematic and targeted electoral interference through digital means may amount to a violation of the non-intervention norm when it reaches a threshold of coercion or manipulation affecting political sovereignty. This evolving interpretation seeks to adapt traditional doctrines to contemporary threats, including hybrid and informational warfare. (*Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America)*, n.d.)

At its core, confrontational security practice does not emerge merely as a rejection of international law but rather as a strategic recalibration of it. In this mode, law becomes less universally binding constraint and more a negotiated terrain, shaped by unequal power relations and institutional hierarchies. International law is thus neither static nor evenly applied; it is a contested and contingent structure, instrumentalized by states to advance specific geopolitical aims under the appearance of legality.

Conclusion

In the evolving landscape of global security governance, the last decade has witnessed an intensifying divergence between cooperative and confrontational security practices. These competing paradigms reflect not only divergent state preferences but also deeper structural tensions within the international legal order. The distinction is not merely normative but increasingly operational, as international law is alternately employed to institutionalize cooperation or to rationalize coercive action. Cooperative security should not be romanticized as inherently benign or universally equitable. While its normative ambition is to mitigate conflict through legal coordination and institutional engagement, in practice, cooperative security regimes often operate within a global legal-political landscape marked by asymmetrical relations, selective normative application, and structurally embedded inequalities. These frameworks may perpetuate rather than resolve imbalances, privileging the strategic interests of dominant actors while framing consensus as depoliticized legal rationality.

Confrontational security practices reflect a structural shift in global conflict. Law is used selectively to rationalize action or deny culpability. The failure to adapt legal doctrine to this reality undermines both the credibility and coherence of the international legal system. A non-doctrinal analysis reveals that the very mechanisms designed to ensure peace and legality are being repurposed or circumvented by actors engaging in hybrid actions. If international law is to remain relevant, it must evolve beyond the traditional dichotomy of war and peace, force and non-force, and recognize the strategic continuum of confrontation that now defines 21st-century security.

References:

- Benson, S. (2020). Fragmentation or Coherence? Does International Dispute Settlement Achieve Comprehensive Justice? *International Journal of Law and Public Administration*. https://www.academia.edu/128693775/Fragmentation_or_Coherence_Does_International_Dispute_Settlement_Achieve_Comprehensive_Justice
- Fravel, M. T. (2011). China's Strategy in the South China Sea. *CONTEMPORARY SOUTHEAST ASIA*, 33(3), 292. <https://doi.org/10.1355/cs33-3b>
- Goldblat, J. (2002). *Arms Control: The New Guide to Negotiations and Agreements with New CD-ROM Supplement*. SAGE.
- Gray, C. (2018). *International Law and the Use of Force*. Oxford University Press. <https://doi.org/10.1093/law/9780198808411.001.0001>
- Iraq SRES1441.pdf. (n.d.). Cit 21. 11. 2025, from <https://www.securitycouncilreport.org/atf/cf/%7B65BFCF9B-6D27-4E9C-8CD3-CF6E4FF96FF9%7D/Iraq%20SRES1441.pdf>
- Istrefi, K. (2025, marec 3). Mind Your Attitude: The Erosion of International Law? *EJIL: Talk!* <https://www.ejiltalk.org/mind-your-attitude-the-erosion-of-international-law/>
- Köchler, H. (2022). Can the Notion of the Rule of Law Be Applied to the UN System? *Acta Iuris Stetinensis*, 41, 49–60. <https://doi.org/10.18276/ais.2022.41-04>
- Krisch, N. (2010). *Beyond Constitutionalism: The Pluralist Structure of Postnational Law*. OUP Oxford. ISBN 9780191594793
- Marks, S. (2003). *The Riddle of All Constitutions: International Law, Democracy, and the Critique of Ideology*. Oxford University Press. <https://doi.org/10.1093/acprof:oso/9780199264131.001.0001>
- Military and Paramilitary Activities in and against Nicaragua (Nicaragua v. United States of America). (n.d.). Cit 24. 11. 2025, from <https://icj-cij.org/case/70>
- Nations, U. (n.d.). *United Nations Charter (full text)*. United Nations; United Nations. Cit 17. 11. 2025, from <https://www.un.org/en/about-us/un-charter/full-text>

- Nooy, G. C. de, & Haye), N. I. V. I. B. (La. (1996). Cooperative Security, the Osce, and Its Code of Conduct. Martinus Nijhoff Publishers.
- Ranganathan, S. (2016). Legality and lawfare in regime implementation. V N. M. Rajkovic, T. E. Aalberts, & T. Gammeltoft-Hansen (Ed.), *The Power of Legality: Practices of International Law and their Politics* (s. 287–319). Cambridge University Press. <https://doi.org/10.1017/CBO9781316535134.012>
- Sacchetti, S. (2014). The osce's Platform for Co-operative Security: An Opportunity for Multilateral Coherence. *Security and Human Rights*, 25(1), 119–129. <https://doi.org/10.1163/18750230-02501001>
- Steinbrück Platise, M., Moser, C., & Peters, A. (Ed.). (2019). *The Legal Framework of the OSCE*. Cambridge University Press. <https://doi.org/10.1017/9781108594028>
- UN. Security Council (45th year: 1990) (Ed.). (29). Resolution 678 (1990). UN. <https://digitallibrary.un.org/record/102245>

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ROLE OF THE TRADITIONAL ARMAMENT IN 21ST CENTURY WARFARE

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Abstract: The role of traditional armaments is different from what it was in the past. Whereas conventional weapons were crucial during the First and Second World Wars, their importance in twenty-first-century conflicts is evolving. By examining the U.S.-led intervention in Iraq in 2003 and Russia's invasion of Ukraine in 2022, it becomes evident that quantitative and/or qualitative technological superiority does not guarantee success in conflict. The article demonstrates that while conventional forces and the boots of soldiers on the ground continue to play a vital role in warfare, they do not ensure the achievement of strategic objectives unless they are accompanied by an appropriate set of modern warfare capabilities.

Keywords: conventional weapons, modern warfare, conflict, war

JEL: H56, F51, F52

Introduction

The concept of modern conflict has always been fluid. Human history is closely intertwined with the development of new technologies, weapons, and methods of warfare, reflecting the evolving nature of conflicts between tribes, nations, and military alliances. Warfare progressed from bows, arrows, and stone weapons through the revolutionary invention of gunpowder to rifles, artillery, tanks, missiles, and ultimately weapons of mass destruction, which pose an existential threat to humankind (Górnikiewicz, 2019). Technological advancement has also led to the development of chemical and radiological weapons, significantly expanding the range of threats faced by both soldiers and civilian populations (Gibradze et al., 2022).

Contemporary warfare differs fundamentally from the conflicts of the First World War, the Second World War, and even the Cold War. Although the development of drones was already evident in the late 1960s, today's unmanned aerial vehicles, unmanned surface vehicles, and other unmanned systems play a vital, if not decisive, role in modern conflicts (Gogua, 2023; Panait, 2024). Similarly, while jamming and electronic warfare were employed during the Second World War and the Cold War, their role in contemporary warfare has become far more pronounced. These capabilities can disrupt critical infrastructure, restrict communications, or even disable factories and power plants without the physical presence of soldiers on enemy territory (Gibradze et al., 2022; Panait, 2024). Disinformation, too, is not a new phenomenon; it was employed as early as the Roman era. Today, however, targeted information operations possess the capacity to destabilise entire societies, governments, and even alliances, thereby increasing their vulnerability to defeat. Finally, whereas Cold War strategists calculated response times before nuclear missiles reached their targets, the emergence of hypersonic nuclear weapons with significantly reduced flight times has sharply diminished opportunities for interception or evacuation (Górnikiewicz, 2019).

Vinod Anand, a Senior Fellow at the Institute for Defence Studies and Analyses (IDSA), examined the relationship between technological development and warfare as early as 1999. His analysis, however, focused primarily on the evolution of weapons from prehistoric systems to those in use at the end of the twentieth century. Anand concluded that technological superiority is a key determinant of conflict outcomes, while emphasising that the human factor remains paramount (Anand, 1999). Although this conclusion remains valid, subsequent

technological advances have introduced new dynamics into military operations, particularly through the integration of autonomous systems and artificial intelligence, which enhance the effectiveness of human decision-making. Moreover, Anand's research does not account for developments after 1999, despite the past two decades having been especially formative for contemporary warfare. A more recent perspective is offered by Giga Gogua of Caucasus International University in Georgia, who examines the role of modern technologies in today's security environment. His work highlights the growing importance of artificial intelligence, unmanned systems, space capabilities, information operations, and electronic warfare, including their application in the Russia–Ukraine war (Gogua, 2023). However, his analysis largely overlooks the continued significance of traditional conventional warfare in twenty-first-century conflicts.

This raises an important question: does the rise of modern means of warfare imply the replacement of traditional ones? Addressing this question requires deeper analysis. Accordingly, the aim of this article is to examine the development and continued relevance of traditional conventional weapons in modern warfare. To achieve this, the article assesses the use of selected categories of conventional weapons over the past twenty years and evaluates their role in contemporary conflicts. The article aims to lay the grounds for further research about the complementarity of modern warfare and traditional armament in the 21st century.

1 Warfare at the Start of the Millennium

The Iraq War began in 2003 following the assumption that Iraq had stockpiled and continued to develop weapons of mass destruction, including chemical, biological, and nuclear weapons, and that it harboured and supported members of Osama bin Laden's al-Qaeda terrorist network. The campaign was launched through a combination of extensive air operations and a ground invasion (Krepinevich, 2003). This case was chosen for the article since it offers a snapshot of the US warfare at the beginning of the century and its clash with the post-Soviet equipment, as well as the challenges linked with the military operations abroad.

At the outset of the conflict, the Iraqi Army relied largely on large quantities of combat-worn and increasingly obsolescent equipment. It fielded up to 2,000 tanks, including approximately 700 T-72 tanks, up to 300 T-62s, and smaller numbers of T-54 and T-59 tanks. In addition, Iraqi forces operated approximately 900 BMP-series armoured infantry fighting vehicles (AIFVs), around 2,200 armoured personnel carriers and reconnaissance vehicles, and more than 2,100 artillery systems, ranging from 122 mm to 155 mm, including 2S1, 2S3, and M109A1 self-propelled guns, most of which were employed in towed configurations, as well as multiple rocket launcher systems (Cordesman, 2003). Relatively modern coalition ground forces decisively overmatched this largely outdated arsenal. U.S. and UK units deployed M1A1 and M1A2 Abrams tanks, Challenger 2 tanks, M2/M3 Bradley, Warrior, and later Stryker infantry fighting vehicles, supported by systems such as the M109 Paladin, M270 MLRS, and M198 howitzers, alongside infantry weapons including the Javelin (Krepinevich, 2003). Due to the limited scope of this article, the analysis focuses on tank warfare, which effectively symbolises the broader dynamics of the initial phase of the Iraq War.

If we take tanks as a symbol of the imbalance, we can assess that Iraqi T-72 tanks, Soviet-era designs, were at a significant disadvantage when compared to the Abrams. The Abrams was capable of engaging targets at ranges of up to 3,000 meters, whereas the effective engagement range of the T-72 was approximately 1,500 meters (Cordesman, 2003; Krepinevich, 2003). In terms of firepower, Abrams' ammunition could penetrate 600–700 mm of rolled homogeneous armour (RHA), while the T-72's penetration capability was limited to approximately 450 mm RHA. This disparity was compounded by differences in protection: the frontal armour of the Abrams offered protection equivalent to approximately 700 mm RHA, compared to roughly 350 mm RHA on the T-72, reflecting the lower prioritisation of crew

survivability within Soviet tank design philosophy. Beyond armour and firepower, technological superiority proved decisive. Abrams tanks benefited from advanced laser rangefinding, thermal imaging, and the ability to fight effectively in darkness, smoke, and adverse weather conditions, capabilities that were largely absent from Iraqi T-72 variants. These technological advantages enabled coalition tank crews to detect, engage, and destroy Iraqi armour before being seen or targeted in return (Tanks-Encyclopedia.com, n.d.; Wikipedia, Ciar).

Coalition success, however, was not confined to ground operations. Airpower played a critical enabling role, although the initial intensity of the aerial campaign did not immediately result in the collapse of Saddam Hussein's regime (Cordesman, 2003; Krepinevich, 2003). . Despite the degradation of Iraq's integrated air defence system during Operations NORTHERN WATCH and SOUTHERN WATCH, coalition planners continued to regard Iraqi air defenses as a residual threat. During the opening phase of the invasion, U.S. Air Force aircraft recorded more than 1,000 anti-aircraft artillery (AAA) engagements and over 1,600 surface-to-air missile (SAM) launches. Nevertheless, coalition losses remained minimal: only one A-10 aircraft was lost to enemy fire, and just two Air Mobility Command aircraft were struck by SAMs out of 236 attempted engagements. Notably, the first air operation of Operation IRAQI FREEDOM, conducted on 9 March 2003, consisted of a psychological operation involving leaflet drops urging Iraqi forces not to interfere with coalition operations and emphasizing coalition support for the Iraqi population. During the initial weeks of the campaign, coalition air forces conducted nearly 1,000 intelligence, surveillance, and reconnaissance (ISR) sorties, collecting approximately 42,000 battlefield images and more than 3,000 hours of full-motion video. By 30 April 2003, coalition air power comprised 1,801 aircraft, including 863 U.S. Air Force platforms. Over the first six weeks of operations, coalition air forces flew more than 41,000 sorties, with the U.S. Air Force accounting for over 24,000 of these missions. In parallel, C-130 transport aircraft moved more than 12,000 short tons of materiel, while Air Force tanker aircraft executed over 6,000 sorties, delivering more than 376 million pounds of fuel. Although these activities were formally categorised as security, stability, transition, and reconstruction operations, they were conducted at a consistently high operational tempo, with continuous combat air patrols supporting ground forces alongside airlift, ISR, aerial refuelling, aeromedical evacuation, and combat search and rescue missions (U.S. Air Force Historical Research Agency, n.d.).

Despite the overwhelming technological and conventional superiority that enabled coalition forces to defeat Iraqi forces within weeks, this dominance did not translate into political victory. The war in Iraq lasted eight years and cost the United States alone approximately 823.2 billion USD. Conventional military superiority, while decisive in battle, proved insufficient in securing long-term success. Without an effective strategy to maintain influence politically, economically, and militarily, tactical and operational victories failed to deliver a stable and enduring outcome (Krepinevich, 2003; Degen, 2009).

2 Modern Conventional Conflict

Nearly two decades after Operation Iraqi Freedom, Russia's invasion of Ukraine served as a stark reminder that conventional military equipment remains a central component of modern warfare. Russia launched its full-scale invasion of Ukraine on 24 February 2022, relying primarily on conventional ground forces organized into approximately 140 Battalion Tactical Groups (BTGs) (Jamestown Foundation, 2022). These BTGs formed the backbone of a multi-axis offensive advancing from Belarus, Crimea, the Donbas, and Russian border regions toward Kyiv, Kharkiv, and major cities in southern Ukraine. Russian ground forces were equipped with T-72 and T-80 main battle tanks, BMP-2 and BMP-3 infantry fighting vehicles, and BTR-series wheeled armoured personnel carriers, which were employed in mechanized

thrusts along major road networks. Artillery support was provided by systems such as the 2S19 self-propelled howitzer, while anti-tank capabilities included RPG-series weapons (notably the RPG-7 and RPG-29). Engineer units were integrated to conduct breaching and mobility tasks in support of advancing formations (Mertens et al., 2023).

Ukraine mounted a determined conventional defence against the invasion, drawing on Soviet-era equipment upgraded through combat experience gained since 2014 in the Donbas (Washington Post, 2022). Ukrainian forces were organised into mechanised brigades and territorial defence units, fielding approximately 200,000 active personnel, supplemented by reserves. Their defensive approach emphasised anti-tank ambushes, urban fortifications, dispersed manoeuvre, and indirect fire, particularly around Kyiv and other critical fronts. Ukrainian ground forces fielded approximately 900 combatready tanks, predominantly T-64BV and T-64BM “Bulat” variants, organised across roughly 30 tank battalions within armoured and mechanised brigades. Infantry units were equipped primarily with AK-74 assault rifles, PK and PKM machine guns, RPG-7 grenade launchers, and anti-tank guided missiles (ATGMs) such as the 9K111 Fagot, supported by D-30 122 mm towed artillery and 2S1 Gvozdika self-propelled howitzers for counter-battery fire. Defensive operations emphasised anti-tank ambush tactics, employing domestically produced Stugna-P and Corsar ATGMs, while BMP-1 and BMP-2 infantry fighting vehicles and BTR-60/70/80 armored personnel carriers provided battlefield mobility. Although deliveries of Western systems—including the U.S. M1 Abrams, UK Challenger 2, and German Leopard 1 and Leopard 2 tanks (Jamestown Foundation, 2022).

As part of what was intended to be a rapid, decisive campaign, Russia committed approximately 150,000 troops to ground operations during the initial phase of the invasion. These forces were supported by the Russian Air Force, which conducted hundreds of sorties in the opening weeks, carried out limited airborne assaults, and launched thousands of air-to-ground munitions, including cruise missiles and drone strikes. Once the decision to invade Ukraine was taken, initial indicators suggested that Russian leadership anticipated a swift victory. This expectation was widely shared beyond Russia. Many military analysts worldwide predicted that overwhelming Russian airpower, combined with a large-scale ground invasion, would result in Ukrainian defeat within days or weeks. These assumptions proved incorrect. Instead, Russia’s flawed air operations in the opening phase of the war revealed an air force unable to conduct effective integrated air–ground operations or to achieve air superiority (Wiswesser, 2023). A central reason for this strategic surprise lay in erroneous assumptions regarding the duration of the conflict and a significant underestimation of Ukraine’s capacity to resist and adapt (Bronk, 2022; Panait, 2024).

Conclusion

The experiences of the United States in Iraq and Russia in Ukraine illustrate a common pattern in contemporary warfare: military superiority in conventional terms does not guarantee strategic success. In Iraq, the United States decisively defeated the Iraqi Army through overwhelming technological and operational superiority over Soviet-era equipment. However, this battlefield success did not translate into the ability to secure the country or achieve long-term political objectives. Nearly two decades later, Russia attempted to apply a similar logic in Ukraine. Although Russia employed a mix of obsolete Soviet-era systems and modernized equipment against a Ukrainian force that initially relied largely on legacy platforms, it likewise failed to achieve its strategic aims. Russia’s lack of success stemmed from multiple factors, including flawed strategy, operational miscalculations, and a significant underestimation of Ukrainian resistance. Yet these shortcomings mirror a deeper and more structural issue also evident in Iraq: traditional conventional warfare alone is no longer sufficient to determine the outcome of twenty-first-century conflicts. While tanks, artillery, and mechanized forces remain essential, they are no longer decisive in isolation. Both Ukraine and Russia have increasingly

adapted by integrating modern technologies into their military operations. Drones—particularly those enhanced by artificial intelligence and autonomous functions—have become central to reconnaissance, targeting, and strike missions. Cyber operations against critical infrastructure, the use of space-based capabilities, artificial intelligence-enabled decision-making, and information warfare now play roles as important as traditional battlefield maneuver. Crucially, both sides have recognized that modern conflict is defined by the interaction of conventional force with these emerging domains. At the strategic level, both actors possess distinct advantages. Russia continues to rely on its nuclear arsenal and emerging hypersonic weapons as tools of deterrence, constraining Ukraine and its allies from escalating the conflict directly onto Russian territory. Ukraine, by contrast, benefits from extensive Western support, including access to advanced military technologies, intelligence sharing, and economic sanctions imposed on Russia, which collectively offset Russia's quantitative advantages. The central conclusion of this article is therefore twofold. First, future conflicts will undoubtedly be shaped by the strength and technological sophistication of the states involved, but this alone will not be decisive in the way it once was. Second, success in modern warfare increasingly depends on a state's ability to integrate conventional military power with advanced technologies, resilient societies, effective cybersecurity, and strategic adaptability. The decisive question for contemporary and future militaries is no longer simply how advanced their weapons are, but whether their forces, institutions, and societies are prepared to operate—and endure—within the evolving character of modern warfare.

References:

- Anand, V. (1999). *Technology, war and the state*. Routledge. <https://doi.org/10.1080/09700169908455034>
- Bronk, J. (2022). *The failure of Russian air power in the Ukraine war*. Royal United Services Institute.
- CIAR.org. (n.d.). *T-72 main battle tank: Technical characteristics*. Retrieved September 26, 2026, from <http://ciar.org/ttk/mbt/t72.ru.html>
- Cordesman, A. H. (2003). *Iraqi armed forces on the edge of war*. Center for Strategic and International Studies.
- Degen, E. J. (2009). *Dominant land forces for 21st century warfare*. Institute of Land Warfare, AUSA.
- Gibradze, G. – Guchua, A., & Gogua, G. (2022). The role of modern technologies in military conflicts of the 21st century. *Ukrainian Policymaker*, 11, 26–34. <https://doi.org/10.29202/up/11/4>.
- Gogua, G. (2023). A revolution in military affairs and modern armaments in the Russia–Ukraine war of 2022–2023. *Future Human Image*, 20, 35–45. <https://doi.org/10.29202/fhi/20/4>.
- Górnikiewicz, M. (2019). Wars in the later 21st century: Forecast developments in the methods of warfare. *Security and Defence Quarterly*, 27, 22–35. <https://doi.org/10.35467/sdq/112930>.
- Jamestown Foundation. (2022). *Order of battle of the armed forces of Ukraine*. <https://jamestown.org>
- Krepinevich, A. F. (2003). *Operation Iraqi Freedom: A first-blush assessment*. Center for Strategic and Budgetary Assessments.
- Mertens, F. – de Heer, B. – Sweijs, T. – van Hooft, P. – Bekkers, F. (2023). *Lessons from land warfare: One year of war in Ukraine*. The Hague Centre for Strategic Studies.
- Panait, C. (2024). The evolution of aerial threats and their implications on army operations. *Land Forces Academy Review*, 29(4), 481–489. <https://doi.org/10.2478/raft-2024-0050>
- Tanks-Encyclopedia.com. (n.d.). *M1 Abrams*. Retrieved September 26, 2026, from https://tanks-encyclopedia.com/coldwar/us/m1_abrams.php

U.S. Air Force. (2003). *Operation Iraqi Freedom fact sheet*. <https://www.afhistory.af.mil>
Washington Post. (2022, February 28). *How Ukraine defended Kyiv*. <https://www.washingtonpost.com>.
Wikipedia contributors. (n.d.). *T-72*. Wikipedia. Retrieved September 26, 2026, from <https://de.wikipedia.org/wiki/T-72>
Wiswesser, S. M. (2023). Potemkin on the Dnieper: The failure of Russian airpower in the Ukraine War. *Journal of Strategic Studies*, 46(7), 1205–1234. <https://doi.org/10.1080/09592318.2023.2187201>.

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