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Social Resilience in Central-Eastern Europe: Comparing Bucharest Nine and Ukraine

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Abstract

This article examines social resilience among the Bucharest Nine (B9) countries and Ukraine amidst the intricate geopolitical landscape of Eastern Europe. It explores various aspects of social resilience, such as political structures, economic robustness, defence capabilities, social unity, and cultural identity, while also taking into account the influence of historical legacies, contemporary policies, and societal perceptions. The study constructs an integrated index of social resilience, amalgamating economic, political, social, and environmental parameters, thereby filling a critical void in the existing literature by providing a holistic understanding of a nation's social resilience. Key findings highlight divergent levels of social resilience among these nations, shown to be influenced by institutional trust, economic inclusivity, and environmental sustainability. Estonia emerges as the most resilient country with a "sufficient" level, while others like Hungary, Romania, and Ukraine fall within the "medium" resilience category. None of the research countries exhibited "high" or "low" level of social resilience. Consideration of the practical implications underlines the necessity for targeted strategies in bolstering institutional trust, economic inclusivity, environmental sustainability, and social cohesion. By offering a multi-dimensional viewpoint, this study can inform policy formulation, enhancing nations' capacities to navigate regional complexities and uphold societal integrity and national stability. Limitations such as the dynamic nature of social resilience factors and challenges in data availability, particularly in war-affected regions like Ukraine, are acknowledged. The study advocates for future research focusing on longitudinal studies and the influence of digital transformation and innovation on social resilience.

Keywords

Bucharest Nine, Central-Eastern Europe, economic resilience, economic security, social resilience, social security

1 Introduction

Located near Russia, the Bucharest Nine (B9) countries – Bulgaria, Czech Republic, Estonia, Hungary, Latvia, Lithuania, Poland, Romania, Slovakia – and Ukraine face various external and internal pressures, highlighting the need to study their social resilience. For the B9 and Ukraine, developing resilience is not only a domestic concern but also a strategic necessity for protecting against external threats. These countries have transitioned from Soviet influence to Western integration, undergoing significant socio-political changes, economic reforms, and striving for democratic values. Ukraine, in a strategic position and aiming for European integration, presents a unique case of resilience amid external challenges.

This article examines the social resilience of these ten nations, analysing their adaptation and response to current challenges to maintain societal integrity and national stability. It explores aspects like political institutions, economic stability, defence, social cohesion, and cultural identity, assessing the influence of historical legacies, policies, and societal attitudes. By looking at the B9 and Ukraine through the prism of social resilience, the article provides insights into their strategies for dealing with regional complexities. It contributes to international relations discourse, shedding light on the methods these nations use to maintain stability and progress despite adversities.

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Our research addresses a gap in resilience studies, proposing a comprehensive methodology to assess a nation's social resilience across various dimensions. The findings aim to guide policy-making, highlighting the necessity of strategies focused on institutional trust, economic inclusivity, environmental sustainability, and social cohesion. This research enriches understanding of resilience, a topic especially pertinent to Eastern European countries navigating rapid changes and external pressures.

2 Literature review

A plethora of literature covers diverse dimensions of resilience across various levels. Shkuropadska et al., (2024) shed light on moderate demographic resilience within the Visegrad Group in 2022, pinpointing challenges such as declining birth rates and ageing populations. Their findings advocate for policy interventions grounded in precise population data to address these pressing issues. Boiko et al., (2022) undertook an analysis of economic support mechanisms within the Visegrad Four and Ukraine amid the pandemic, observing discrepancies in quarantine measures and compensatory strategies. Poland's substantial fiscal assistance in particular underscores the necessity for further scrutiny regarding the efficacy of such approaches.

Batorshyna et al., (2021) explored the principles of Islamic finance and their global expansion challenges, proposing that these principles could bolster financial security even in non-Islamic territories. Meanwhile, Tokar et al., (2021) unearthed a weak correlation between GDP per capita and gender equality in the EU, stressing the pivotal role of women's empowerment in fostering economic growth and national security.

Kimhi et al., (2023) investigated resilience and coping mechanisms during the Ukraine conflict, revealing heightened resilience but diminished well-being among Ukrainian respondents. Their study underscores the significance of hope and positive coping strategies in bolstering resilience. Similarly, Kalka et al., (2022) directed their focus towards the mental resilience of Ukrainian citizens amidst the conflict, advocating for increased psychological support, particularly for individuals with lower resilience levels.

Furthermore, Davymuka, (2022) analysed the security dynamics within the Bucharest Nine, accentuating NATO's collective defence as pivotal and stressing the importance of transatlantic ties in countering Russian aggression. Dojwa-Turczyńska, (2022) explored the role of murals and graffiti in Central Europe as a response to Russian aggression against Ukraine, highlighting their contribution to societal cohesion and historical remembrance.

Moreover, Kostenko et al., (2022) investigated the repercussions of the COVID-19 pandemic on social trust and community resilience in Ukraine, identifying a significant wealth gap and underscoring the crucial role of community cohesion in resilience. Pagnejer and Magraon, (2023) evaluated Romania's response to the pandemic, emphasising the indispensability of EU and national coordination in fortifying resilience.

Masik, (2022) advocated for diversified strategies in resilience planning across different scales, with an emphasis on robustness, flexibility, and inclusivity. Meanwhile, Kakachia et al., (2021) scrutinised societal resilience in Georgia and Ukraine, recognising the EU's role in fostering resilience and advocating for comprehensive, long-term assessments.

Mulska et al., (2022) uncovered low social resilience in Ukraine's Carpathian region, urging proactive policies to ameliorate socio-economic conditions. Alessi et al., (2020) assessed the resilience of EU Member States in response to financial crises, correlating resilience with social protection spending and political stability.

Bruneckiene et al., (2019) delved into socio-economic system resilience, emphasising the impact of economic shocks and advocating for a holistic indicator set for resilience evaluation. Meanwhile, Huang et al., (2023) scrutinised the nexus between climate change, renewable energy, and social progress, advocating for an emphasis on institutional quality and technological advancements to combat climate change.

Obrist et al., (2010) proposed a multi-layered social resilience framework, underlining the significance of enabling factors and capacities in sustainable development. Lavrelashvili, (2018) examined resilience in Georgia, Moldova, and Ukraine, advocating for tailored EU policies and regional cooperation to tackle unique challenges.

Kurnyshova, (2023) discussed Ukraine's societal resilience amidst war, emphasising the critical role of Western support and alignment with the EU and NATO for resilience and security. Moldovan, (2020) analyzed the role of migrant networks in bolstering social capital and resilience, emphasising the necessity for cohesive EU migration policies.

Resilience refers to the capacity of a person, family, community, nation, or area to get ready for, endure, adjust to, and rapidly bounce back from difficulties and disruptions, all while maintaining sustainable long-term development goals (Council of the EU, 2013).

Despite this extensive literature, there remains a notable gap in understanding how comprehensively to assess a country's social resilience level.

3 Research methodology

The employed methodology aims to assess the degree of social resilience within a given country, delineating a set of pivotal indicators, their respective thresholds, and a systematic approach for computing the comprehensive index of social resilience. Threshold values for indicators are set by the organisations that calculate them and by international standards defining appropriate limits:

The Human Development Index (HDI) threshold is set at greater than or equal to 0.5, reflecting countries with above-average levels of human development, based on the methodology of the United Nations Development Programme (2024) (UNDP). Similarly, the Poverty Rate threshold of less than or equal to 20% highlights countries with low poverty levels, as determined by analyses from the World Bank and the United Nations.

Unemployment, as a percentage of the total labour force, is considered acceptable at less than or equal to 10%, in line with recommendations from the International Labour Organisation (ILO). Access to financial and economic resources is deemed satisfactory when the threshold value reaches or exceeds 5, according to the Fund for Peace, (2024). High levels of urbanisation, typically associated with stable social infrastructure, are identified with urbanisation rates of greater than or equal to 70%, derived from World Bank Group, (2024) data.

Indicators related to political and institutional dimensions, such as political inclusion, confidence in national institutions, government effectiveness, and human rights and civil liberties, are evaluated with a satisfactory threshold value of greater than or equal to 5, also based on data from the Fund for Peace. Corruption is measured using the Corruption Perception Index (CPI), with values greater than or equal to 45 reflecting moderately low levels of corruption, as per Transparency International, (2023)'s methodology.

Social progress is assessed using the Social Progress Index, (2024) (SPI), where a baseline value of greater than or equal to 3 indicates an acceptable level of progress, while crime rates are considered manageable with values less than or equal to 50, based on NUMBEO, (2024) data. Information access, social capital, and social relations are also evaluated using a threshold value of greater than or equal to 5, indicating satisfactory conditions according to the Fund for Peace.

Gender equality is measured through the Global Gender Gap Index, with values greater than or equal to 0.6 signifying satisfactory levels, as reported by the World Economic Forum, (2024). Climate resilience is evaluated with a threshold of greater than or equal to 70, representing adequate capacity to withstand adverse climate impacts, according to FM Global, (2024) data. Environmental policy effectiveness is measured using the Environmental Performance Index, (2022) (EPI), with values greater than or equal to 40 aligning with the Yale Environmental Performance Index, (2022) standards. Finally, access to clean water, an essential component of human development, is considered high when greater than or equal to 80%, as outlined in reports by WHO and UNICEF.

This approach integrates globally recognised benchmarks and methodologies to provide a comprehensive framework for evaluating resilience across multiple dimensions.

Table 1 outlines the roster of indicators alongside the corresponding sources of data pertinent to economic, political, social, and environmental dimensions of social resilience.

The integral index of social resilience is calculated by assessing 20 indicators chosen for their significance, reliability, and availability in official statistics. This process includes compiling a list of indicators, setting threshold values, normalising the indicators, and then computing the integral index. Indicators are normalised against thresholds yielding values of either 0 if an indicator fails to meet the thresholds, or 1 if it meets them. Formula 1 is employed to calculate the integral index of social resilience.

Table 1 The set of indicators for assessing the social resilience (Source: Tokar and Shkuropadska's elaboration)

Type	Roster
Economic indicators	Human Development Index (HDI, United Nations Development Programme); poverty rate, % (Wisevoter, 2024); unemployment, % of total labour force (World Bank); access to finance; access to economic resources (Fund for Peace); urbanisation rate (FM Global)
Political indicators	Confidence in national institutions; government effectiveness; human rights and civil liberties (Fund for Peace); Corruption Perceptions Index (Transparency International); political risk (FM Global)
Social indicators	Social Progress Index (Social Progress Imperative. Index Action Impact); Crime Index (NUMBEO); social capital; social relations (Fund for Peace); the Global Gender Gap Index (World Economic Forum)
Ecological indicators	Climate risk exposure (FM Global); Environmental Performance Index (EPI); water availability; climate stability (Fund for Peace)

$$I = N_{x=1} / N_x, \quad (1)$$

where I – an integral indicator of a country's social resilience;

$N_{x=1}$ – the number of indicators with a normalised value equal to 1;

N_x – the total number of indicators.

Table 2 details the framework for assessing both quantitative and qualitative aspects of social resilience.

4 Results

4.1 Assessing economic indicators of social resilience

Table 3 summarises economic indicators of social resilience for B9 and Ukraine. The Human Development Index (HDI) is frequently regarded as an economic indicator, as it encapsulates the economic well-being of a population through its key components: health, education, and standard of living. Although primarily designed as a composite measure of human development, these components are inherently linked to economic factors. Income is directly included as a component, while health and education are both influenced by and contribute to economic conditions. Moreover, the broader implications of human development underscore its strong ties to economic dynamics. The HDI for 2022 indicates high development across all listed countries, with Ukraine showing relative resilience despite challenges.

Poverty rates in 2022 vary: Poland, Slovak Republic, Hungary, and Czech Republic have low rates, while Bulgaria, Estonia, Latvia, Lithuania, and Romania exceed the threshold, suggesting significant poverty. Ukraine's remarkably low poverty rate of 1.1% warrants further investigation.

In 2022, all countries have unemployment rates below 10%, indicating strong labour markets and economic resilience, ensuring employment opportunities. Most countries also surpass thresholds for Access to Finance and Economic Resources, except Romania, which lags in financial accessibility. Additionally, the high urbanisation rates in 2023 across all countries suggest potential benefits such as improved services and economic opportunities, but may also pose challenges like overcrowding and environmental issues.

Table 2 Measuring social resilience levels
(Source: Tokar and Shkuropadska's elaboration)

Level	Value of social resilience integral index
High	0.91–1.00
Sufficient	0.71–0.90
Medium	0.51–0.70
Low	≤ 0.50

Table 3 Economic indicators of social resilience in B9 and Ukraine
(Source: Tokar and Shkuropadska's elaboration)

Country	Value	Cut-off	Normalised value	Value	Cut-off	Normalised value
Indicator	HDI			Poverty rate, %		
Bulgaria	0.799		1	23.8		1
Estonia	0.899		1	21.7		1
Latvia	0.879		1	22.9		1
Lithuania	0.879		1	20.6		1
Poland	0.881		1	15.4		1
Romania	0.827	≥ 0.5	1	23.8	≤ 25	1
Slovak Republic	0.855		1	10.0		1
Hungary	0.851		1	12.3		1
Czech Republic	0.895		1	10.1		1
Ukraine	0.734		1	1.1		1
Indicator	Unemployment			Access to finance		
Bulgaria	4.3		1	6.7		1
Estonia	5.6		1	8.7		1
Latvia	6.8		1	7.9		1
Lithuania	6.0		1	8.3		1
Poland	2.9		1	7.8		1
Romania	5.6	≤ 10	1	5.1	> 6	0
Slovak Republic	6.1		1	8.5		1
Hungary	3.6		1	6.8		1
Czech Republic	2.2		1	8.1		1
Ukraine	9.8		1	6.5		1
Indicator	Access to economic resources			Urbanization rate		
Bulgaria	6.1		1	80.9		1
Estonia	8.8		1	87.5		1
Latvia	7.7		1	91.7		1
Lithuania	7.7		1	85.6		1
Poland	8.3		1	93.9		1
Romania	6.6	> 6	1	85.5	≥ 70	1
Slovak Republic	8.8		1	90.6		1
Hungary	8.0		1	81.5		1
Czech Republic	9.5		1	89.9		1
Ukraine	8.3		1	89.1		1

4.2 Analysing political indicators of social resilience

Table 4 presents political indicators of social resilience for B9 countries and Ukraine, including Confidence in National Institutions, Government Effectiveness, Human

Table 4 Political indicators of social resilience in B9 and Ukraine (Source: Tokar and Shkuropadska's elaboration)

Country	Value	Cut-off	Normalised value	Value	Cut-off	Normalised value
Indicator	Confidence in national institutions			Government effectiveness		
Bulgaria	2.2		0	5.9		0
Estonia	5.0		0	8.2		1
Latvia	4.3		0	6.9		1
Lithuania	4.4		0	7.1		1
Poland	3.3		0	6.3		1
Romania	3.1	> 6	0	5.5	> 6	0
Slovak Republic	3.9		0	6.8		1
Hungary	4.5		0	6.8		1
Czech Republic	3.0		0	7.0		1
Ukraine	2.4		0	4.2		0
Indicator	Human rights and civil liberties			Corruption perceptions index		
Bulgaria	7.5		1	45		0
Estonia	9.4		1	76		1
Latvia	9.0		1	60		1
Lithuania	8.8		1	61		1
Poland	7.8		1	54		1
Romania	7.8	> 6	1	46	≥ 50	0
Slovak Republic	8.5		1	54		1
Hungary	7.4		1	42		0
Czech Republic	8.9		1	57		1
Ukraine	6.8		1	36		0
Indicator	Political risk					
Bulgaria	69.2		1			
Estonia	81.3		1			
Latvia	75.1		1			
Lithuania	79.5		1			
Poland	75.6		1			
Romania	75.3	≥ 60	1			
Slovak Republic	74.2		1			
Hungary	79.1		1			
Czech Republic	83.6		1			
Ukraine	12.2		0			

Rights and Civil Liberties, Corruption Perceptions, and Political Risk. Confidence in National Institutions is uniformly low, indicating public scepticism across all regions, which could undermine social cohesion and governance legitimacy. Regarding Government Effectiveness, some countries excel, but Bulgaria, Romania, and Ukraine fall short, suggesting potential governance inefficiencies.

Human Rights and Civil Liberties, Fund for Peace, (2022) are upheld across all countries, safeguarding fundamental freedoms. This fosters societal resilience by protecting citizens' rights. The Corruption Perceptions Index, Transparency International, (2023) shows a split: some countries exhibit lower perceived corruption, enhancing trust and governance efficiency, while others, including Hungary and Ukraine, indicate higher perceived corruption, potentially eroding trust and governance. Regarding Political Risk, most countries maintain stability, except Ukraine, facing heightened risks likely due to regional instability and the war.

4.3 Disclosing social indicators of social resilience

Table 5 outlines social indicators of social resilience in B9 countries and Ukraine, covering areas such as the Social Progress Index, Crime Index, Social Capital, Social Relations, and the Global Gender Gap Index. The Social Progress Index (SPI), Social Progress Imperative, (2023) highlights a concerning trend as all countries, except Ukraine, score below the threshold of 3, indicating issues in meeting citizens' social and environmental needs.

Regarding the Crime Index for 2023, NUMBEO, (2024) all countries except Ukraine score below the threshold of 40, indicating a lower perceived level of crime. Ukraine's score above 40 suggests higher crime rates, possibly linked to the war and instability.

Social Capital in 2022 presents a mixed picture. Bulgaria, Estonia, Romania, and Ukraine exceed the threshold of 6, indicating stronger social networks, community involvement, and trust among citizens. Conversely, Latvia, Lithuania, Poland, Slovak Republic, Hungary, and Czech Republic fall below this threshold, which could impact community cohesion and mutual support systems.

The assessment of Social Relations in 2022, Fund for Peace (2022) shows that all countries score below the threshold of 6. This might indicate weaker familial and community ties or lower levels of trust and cooperation in society, factors that are vital for collaborative problem-solving and support during crises.

The Global Gender Gap Index in 2023, World Economic Forum, (2023) indicates progress towards gender equality across all countries, essential for societal resilience.

Table 5 Social indicators of social resilience in B9 and Ukraine (Source: Tokar and Shkuropadska's elaboration)

Country	Value	Cut-off	Normalised value	Value	Cut-off	Normalised value
Indicator	Social progress index			Crime index (2023)		
Bulgaria	2		0	38.0		1
Estonia	1		0	25.1		1
Latvia	2		0	31.7		1
Lithuania	2		0	33.0		1
Poland	2		0	29.2		1
Romania	2	≥ 3	0	32.0	≤ 40	1
Slovak Republic	2		0	31.4		1
Hungary	2		0	33.9		1
Czech Republic	1		0	26.6		1
Ukraine	3		1	46.7		0
Indicator	Social capital			Social relations		
Bulgaria	6.4		1	3.8		0
Estonia	6.3		1	5.7		0
Latvia	5.0		0	4.9		0
Lithuania	5.0		0	5.0		0
Poland	5.7		0	5.9		0
Romania	6.1	> 6	1	4.7	> 6	0
Slovak Republic	6.0		0	5.2		0
Hungary	5.1		0	5.7		0
Czech Republic	5.8		0	4.7		0
Ukraine	6.4		1	5.0		0
Indicator	Global gender gap index					
Bulgaria	0.715		1			
Estonia	0.782		1			
Latvia	0.794		1			
Lithuania	0.800		1			
Poland	0.722		1			
Romania	0.697	≥ 0.6	1			
Slovak Republic	0.720		1			
Hungary	0.689		1			
Czech Republic	0.685		1			
Ukraine	0.714		1			

Table 6 Ecological indicators of social resilience in B9 and Ukraine (Source: Tokar and Shkuropadska's elaboration)

Country	Value	Cut-off	Normalised value	Value	Cut-off	Normalised value
Indicator	Climate risk exposure			EPI		
Bulgaria	93.2		1	51.9		1
Estonia	89.4		1	61.4		1
Latvia	84.2		1	61.1		1
Lithuania	88.3		1	55.9		1
Poland	90.6		1	50.6		1
Romania	88.0	≥ 70	1	56.0	≥ 40	1
Slovak Republic	84.7		1	60.0		1
Hungary	81.1		1	55.1		1
Czech Republic	93.7		1	59.9		1
Ukraine	88.1		1	49.6		1
Indicator	Water availability			Climate stability		
Bulgaria	4.3		0	6.2		1
Estonia	6.6		1	5.7		0
Latvia	7.2		1	5.2		0
Lithuania	6.5		1	5.1		0
Poland	4.3		0	5.1		0
Romania	5.7	> 6	0	5.7	> 6	0
Slovak Republic	5.9		0	5.5		0
Hungary	5.3		0	5.0		0
Czech Republic	4.6		0	5.1		0
Ukraine	5.1		0	5.1		0

4.4 Outlining ecological indicators of social resilience

Table 6 examines ecological indicators of social resilience for B9 countries and Ukraine, covering Climate Risk Exposure, Environmental Performance Index, Water Availability, and Climate Stability. In 2023, all countries exhibit high Climate Risk Exposure, suggesting a need for adaptation and mitigation strategies against climate-related threats. In the Environmental Performance Index, (2022) (EPI), all countries perform relatively well in terms of environmental health and ecosystem vitality, although there is room for improvement in addressing specific environmental challenges.

In 2022, Estonia, Latvia, and Lithuania had sufficient water resources, while Bulgaria, Poland, Romania, Slovak Republic, Hungary, Czech Republic, and Ukraine faced potential water management issues, affecting agriculture, industry, and domestic use, especially under climate change. Regarding climate stability, only Bulgaria met the 2022 stability threshold, while others showed potential climate change vulnerabilities, leading to unpredictable weather and planning challenges.

4.5 Evaluating social resilience of B9 and Ukraine

Table 7 provides a comprehensive overview of the Integral Social Resilience Index for B9 countries and Ukraine, categorising their social resilience levels based on the values of the Social Resilience Integral Index. According to Table 2, the categorisation is defined as follows: High (0.91–1.00), Sufficient (0.71–0.90), Medium (0.51–0.70), and Low (≤ 0.50).

Estonia leads the group with an index value of 0.85, falling within the "Sufficient" category. This indicates a robust capacity in terms of social resilience, suggesting that Estonia is well-equipped to manage and recover from social, economic, and environmental challenges. Latvia, Lithuania, Bulgaria, Poland, Slovak Republic, and the Czech Republic also fall into the "Sufficient" category with scores of 0.80 and 0.75. These scores reflect a good level of social resilience, implying these countries possess adequate mechanisms and resources to cope with various shocks and stresses, although there is still room for improvement.

Hungary (index value 70) ranks in the upper "Medium" category, indicating moderate social resilience. Romania and Ukraine, scoring 65 and 60, are also in this category, showing some limitations in social resilience. Ukraine's lower resilience may be due to the war and political issues affecting its social, economic, and environmental systems.

5 Discussion

5.1 Approaches to assessing the social resilience of a country

The present study presents a nuanced discussion on social resilience, integrating economic, political, social, and ecological dimensions. This approach offers a more comprehensive understanding compared to prior research efforts. For example, previous studies such as those by Shkuropadska et al., (2024) and Boiko et al., (2022) focused narrowly on demographic and economic aspects during crises, respectively, overlooking the multifaceted nature of resilience addressed in our research. Similarly, while Batorshyna et al., (2021) and Tokar et al., (2021) delved into Islamic finance principles and gender gap correlations with GDP, they did not encompass the breadth of resilience indicators utilised in our study.

Building upon works like Kimhi et al., (2023) and Kalka et al., (2022), which emphasised psychological resilience during the Ukraine war, our study extends these insights by integrating them into a holistic model that underscores the interconnectedness of various resilience dimensions. In contrast, studies such as Davymuka, (2022) and Dojwa-Turczyńska, (2022) focused on regional security dynamics and societal expressions of resilience through art, respectively, offering valuable insights that our research amalgamates into a more comprehensive framework.

The study aligns with Kostenko et al., (2022) emphasis on social trust and community resilience during the pandemic in Ukraine, reinforcing the significance of institutional trust and economic inclusivity for resilience. However, a primary limitation lies in the dynamic nature of social resilience factors, particularly evident in the aftermath of unforeseen events like the Russian Federation's war against Ukraine, which significantly altered the social resilience landscape, affecting the relevance of our data.

Similarly, akin to challenges noted in Mulska et al., (2022) and Alessi et al., (2020), our research faces limitations in predicting future shocks and the evolving nature of resilience indicators. Additionally, the scarcity of comprehensive and up-to-date statistical data, particularly in conflict-ridden regions like Ukraine, poses challenges similar to those highlighted in studies by Kostenko et al., (2021) and Kakachia et al., (2021), impairing our ability to fully capture the impact of ongoing crises on resilience.

Furthermore, the specific contexts of the Bucharest Nine Member-Countries and Ukraine may limit the generalisability of our findings to other regions. Although our use of an integral index calculated from normalised indicators is innovative, it may overlook qualitative aspects of social resilience that are challenging to quantify. Given the rapidly changing geopolitical landscape, our findings may quickly become outdated, necessitating continuous updates and longitudinal approaches for future research endeavours.

Table 7 Integral social resilience index of B9 and Ukraine (Source: Tokar and Shkuropadska's elaboration)

Country	Index value	Social resilience level
Estonia	0.85	Sufficient
Latvia	0.80	Sufficient
Lithuania	0.80	Sufficient
Bulgaria	0.75	Sufficient
Poland	0.75	Sufficient
Slovakia	0.75	Sufficient
Czech Republic	0.75	Sufficient
Hungary	0.70	Medium
Romania	0.65	Medium
Ukraine	0.60	Medium

While our study offers a comprehensive analysis of social resilience, it is imperative to acknowledge and address the limitations arising from dynamic geopolitical dynamics, data availability constraints, and the inherent complexities associated with measuring multifaceted constructs like resilience.

5.2 The impact of the war on Ukraine's social resilience

The Russo-Ukrainian war has had a profound impact on Ukraine's social resilience, with many key indicators likely to shift over time due to economic, political, social, and environmental factors. Damage to infrastructure and mass population migration have already contributed to a decline in human development. The destruction of businesses and industries has led to rising unemployment, while military mobilisation has further reshaped the labour market. Additionally, the war may transform the role of women in society, increasing their participation in economic and social activities both during and after the conflict.

Population displacement from rural areas to urban centres and abroad is expected to increase urbanisation levels, though this will likely exacerbate resource distribution inequalities. The war has also driven inflation, reducing real purchasing power and limiting available capital for investment. A significant portion of government financial resources has been redirected toward military needs and humanitarian aid, reducing the capacity to support businesses and the broader population.

Under martial law, the risk of corruption has heightened, particularly due to the large-scale allocation of military and humanitarian resources. While the conflict has amplified the role of state institutions, it has also introduced risks of governance inefficiencies, increased corruption, and diminished public trust in institutions. Environmental damage caused by military actions further heightens vulnerability to climate risks, as the destruction of infrastructure, such as water supply systems, has reduced access to clean water, especially in affected regions.

The war significantly disrupts many dimensions of Ukraine's social resilience. However, post-war reconstruction offers an opportunity for improvement, provided that it is underpinned by sound policies, robust international support, and efficient resource management.

6 Conclusion

The added value of this research lies in its comprehensive approach, integrating economic, political, social, and ecological dimensions to provide a holistic view of social resilience. This multifaceted perspective is crucial for understanding the complex interplay between various factors that contribute to a nation's resilience. The study's methodology, employing an integral index calculated from normalised indicators, offers a replicable model for assessing social resilience in other geopolitical contexts.

In terms of policy implications, the findings suggest the necessity for targeted strategies in areas such as institutional trust-building, economic inclusivity, environmental sustainability, and social cohesion. For nations with lower resilience scores, prioritising reforms in governance, economic stability, and community engagement can be pivotal in enhancing their resilience capacity.

Estonia emerges as a leader in social resilience within the B9 and Ukraine, predominantly falling within the "sufficient" category. This achievement underscores Estonia's robust mechanisms and capacities to manage and rebound from adversities. Similar resilience levels observed in Latvia, Lithuania, Bulgaria, Poland, Slovak Republic, and the Czech Republic are commendable, reflecting their considerable ability to cope with shocks and stresses, though indicating potential areas for improvement.

Conversely, Hungary, Romania, and Ukraine, categorised in the "medium" resilience level, face certain limitations in their resilience infrastructure. Particularly in Ukraine, the ongoing war and political challenges have evidently impacted its resilience capacity, highlighting the critical need for focused efforts to enhance stability and recovery mechanisms in such contexts.

Future research should focus on longitudinal studies to understand how resilience evolves over time and the impact of specific policy interventions. Exploring the role of digital transformation, innovation, and cross-border cooperation in enhancing social resilience could also provide valuable insights. Additionally, expanding this research framework to include other regions could offer comparative perspectives, contributing to a more global understanding of social resilience and its determinants.

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References

Alessi, L., Benczur, P., Campolongo, F., Cariboni, J., Manca, A. R., Menyhert, B., Pagano, A. (2020) "The resilience of EU member states to the financial and economic crisis", Social Indicators Research, 148, pp. 569–598. https://doi.org/10.1007/s11205-019-02200-1

Batorshyna, A., Tokar, V., Kotenko, N., Chekhovych, S., Homotiuk, A. (2021) "The impact of awareness stimulating activities and events on global Islamic finance assets: enhancing financial risk management and economic security in non-Muslim countries", CEUR Workshop Proceedings, 3187, pp. 13–26. [online] Available at: https://ceur-ws.org/Vol-3187/paper2.pdf [Accessed: 14 January 2025]

Boiko, A., Umantsiv, Y., Cherlenjak, I., Prikhodko, V., Shkuropadska, D. (2022) "Policy measures for economic resilience of Visegrad group and Ukraine during the pandemic", Problems and Perspectives in Management, 20(2), pp. 71–83. http://doi.org/10.21511/ppm.20(2).2022.07

Bruneckiene, J., Pekarskiene, I., Palekiene, O., Simanaviciene, Z. (2019) "An assessment of socio-economic systems' resilience to economic shocks: The case of Lithuanian regions", Sustainability, 11(3), 566. https://doi.org/10.3390/su11030566

Council of the EU "Council conclusions on EU approach to resilience", [online] Available at: https://reliefweb.int/report/world/council-conclusions-eu-approach-resilience [Accessed: 14 February 2024]

Davymuka, O. (2022) "Peculiarities of the security environment for the Bucharest Nine countries in terms of the Russian threat", Baltic Journal of Legal and Social Sciences, 2, pp. 41–46. https://doi.org/10.30525/2592-8813-2022-2-7

Dojwa-Turczyńska, K. (2022) "Building social resilience through visual instruments in Polish public space in the era of Russia's aggression against Ukraine", Defence Science Review, 15, pp. 85–110. https://doi.org/10.37055/pno/159063

Environmental Performance Index "2022 EPI results", [online] Available at: https://epi.yale.edu/epi-results/2022/component/epi [Accessed: 14 February 2024]

FM Global "FM Global resilience index", [online] Available at: https://www.fmglobal.com/research-and-resources/tools-and-resources/resilienceindex/explore-the-data/? [Accessed: 14 February 2024]

Fund for Peace "SRI dashboard", [online] Available at: https://www.fundforpeace.org/SRI/dashboard.html [Accessed: 14 February 2024]

Huang, X., Khan, Y. A., Arshed, N., Salem, S., Shabeer, M. G., Hanif, U. (2023) "Increasing social resilience against climate change risks: a case of extreme climate affected countries", International Journal of Climate Change Strategies and Management, 15(3), pp. 412–431. https://doi.org/10.1108/IJCCSM-04-2022-0051

Kakachia, K., Legucka, A., Lebanidze, B. (2021) "Can the EU's new global strategy make a difference? Strengthening resilience in the Eastern Partnership countries", Democratization, 28(7), pp. 1338–1356. https://doi.org/10.1080/13510347.2021.1918110

Kalka, N., Blikhar, V., Tsyvinska, M., Kuzo, L., Marchuk, A., Katolyk, H. (2022) "Analysis of peculiarities and components of resiliency of people facing military aggression against Ukraine", BRAIN Broad Research in Artificial Intelligence and Neuroscience, 13(3), pp. 320–339. https://doi.org/10.18662/brain/13.3/370

Kimhi, S., Kaim, A., Bankauskaite, D., Baran, M., Baran, T., Eshel, Y., Dumbadze, S., Gabashvili, M., Kaniasty, K., Koubova, A., Marciano, H., Matkeviciene, R., Teperik, D., Adini, B. (2023) "A full-scale Russian invasion of Ukraine in 2022: Resilience and coping within and beyond Ukraine", Applied Psychology: Health and Well-Being, 16(3), pp. 1005–1023. https://doi.org/10.1111/aphw.12466

Kostenko, A. M., Svitailo, N. D., Nazarov, M. S., Kurochkina, V. S., Smiianov, Y. V. (2021) "Strengthening societal resilience during Covid-19 pandemic", Wiadomości Lekarskie, LXXIV(5), pp. 1137–1141. https://doi.org/10.36740/WLek202105117

Kostenko, A., Kozyntseva, T., Opanasiuk, V., Kubatko, O., Kupenko, O. (2022) "Social resilience management of Ukrainian territorial communities during the Covid-19 pandemic", Problems and Perspectives in Management, 20(3), pp. 1–11. http://doi.org/10.21511/ppm.20(3).2022.01

Kurnyshova, Y. (2023) "Ukraine at war: Resilience and normative agency", Central European Journal of International and Security Studies, 17(2), pp. 80–110. https://doi.org/10.51870/uxxz5757

Lavrelashvili, T. (2018) "Resilience-building in Georgia, Moldova and Ukraine: Towards a tailored regional approach from the EU", European View, 17(2), pp. 189–196. https://doi.org/10.1177/1781685818805680

Masik, G. (2022) "The concept of resilience: Dimensions, properties of resilient systems and spatial scales of resilience", Geographia Polonica 954, pp. 295–310. https://doi.org/10.7163/GPol.0237

Moldovan, I.-D. (2020) "Resilience and social change – Romania after 1989", Research and Science Today, 2(20), pp. 79–91. https://doi.org/10.38173/rst.2020.20.2.7:79-91

Mulska, O., Vasyltsiv, T., Shushkova, Y., Kloba, L., Parfenyuk, Y. (2022) "Assessment of the population's social resilience environment (the case of the Carpathian region of Ukraine)", Problems and Perspectives in Management, 20(1), pp. 407–421. http://doi.org/10.21511/ppm.20(1).2022.33

NUMBEO "Crime index by country 2024", [online] Available at: https://www.numbeo.com/crime/rankings_by_country.jsp [Accessed: 14 February 2024]

Obrist, B., Pfeiffer, C., Henley, R. (2010) "Multi-layered social resilience: a new approach in mitigation research", Progress in Development Studies, 10(4), pp. 283–293. https://doi.org/10.1177/146499340901000402

Pagnejer, B.-C., Magraon, D.-A. (2023) "Romania – A resilient state in the regional security equation. NRRP implementation", Bulletin of "Carol I" National Defence University, 12(1), pp. 154–162. https://doi.org/10.53477/2284-9378-23-13

Shkuropadska, D., Lebedeva, L., Shtunder, I., Ozhelevska, T., Khrustaleva, V. (2024) "The impact of demographic resilience on the economic development of countries (on the example of the Visegrad Group countries)", Financial and Credit Activity Problems of Theory and Practice, 1(54), pp. 552–563. https://doi.org/10.55643/fcaptp.1.54.2024.4279

Social Progress Imperative "2024 global social progress index", [online] Available at: https://www.socialprogress.org/2024-social-progress-index/ [Accessed: 14 February 2024]

Tokar, V., Molchanova, E., Honcharova, Y., Zhyrova, T., Ilikchiieva, K. (2021) "Fostering gender equality to stimulate economic growth: Legal and institutional measures to enhance economic security of EU member-states and Ukraine", CEUR Workshop Proceedings, 3187, pp. 38–48. [online] Available at: https://ceur-ws.org/Vol-3187/paper4.pdf [Accessed: 14 January 2025]

Transparency International "Corruption perceptions index", [online] Available at: https://www.transparency.org/en/cpi/2023 [Accessed: 14 February 2024]

United Nations Development Programme "Human development index (HDI)", [online] Available at: https://hdr.undp.org/data-center/human-development-index#/indicies/HDI [Accessed: 14 February 2024]

Wisevoter "Poverty rate by country", [online] Available at: https://wisevoter.com/country-rankings/poverty-rate-by-country/ [Accessed: 14 February 2024]

World Bank Group "Unemployment, total (% of total labor force) (modeled ILO estimate)", [online] Available at: https://data.worldbank.org/indicator/SL.UEM.TOTL.ZS [Accessed: 14 February 2024]

World Economic Forum "Global gender gap report", [online] Available at: https://www.weforum.org/publications/series/global-gender-gap-report/ [Accessed: 14 February 2024]