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ANNEX

Territorial Exaptive Resilience along EU Eastern Borders

Case study observations

Annex 1. // December 2024

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ANNEX //

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1 Context

1.1. Research objectives and questions

The main aim of this study is to provide a comprehensive and policy-relevant understanding of territorial exaptive resilience in the EU's eastern border regions. To achieve this, the research pursues several interconnected objectives and questions that address the conceptual, methodological, empirical, and policy dimensions of the topic, with a specific focus on the following key questions:

1. How can exaptive resilience be translated to the situation of the eastern EU external border? Is it possible to find a new development path for territory/region as opposed to path dependency?
2. How to develop and harness the exaptive capacity of regions along external EU borders?
3. How to measure the exaptive resilience of these regions? Which factors/drivers contribute to it?
4. Which are the new paths for capitalizing and reutilizing the local resources (local competitive advantages) to enhance resilience in the long term?
5. How can existing governance structures be adapted or reconfigured to facilitate exaptive resilience in regions along the eastern EU external borders? What multi-level policy mechanisms can promote resilience? Are new standards for coordination needed, in order to help ensure more consistency, clarity, and coherence between top-down decision-making and bottom-up stakeholder actions?
6. How can the new cohesion policy and other mechanisms (after 2027) more efficiently support border regions and ensure their development in the face of ever more rapidly changing socio-economic conditions and challenges? Do these need new/special tools (e.g., areas of specific intervention, special strategies)? What kind of support would be most effective (financial, legal changes)?

Conceptually, the study seeks to develop a clear and operational definition of territorial exaptive resilience that is grounded in the specific context of the EU's eastern border regions. This involves critically engaging with the existing literature on regional resilience, evolutionary economic geography, and border studies to identify the key features, mechanisms, and indicators of exaptive resilience in cross-border settings. Some guiding questions include:

- What are the main characteristics and dimensions of territorial exaptive resilience, and how do they differ from other forms of regional resilience (e.g., adaptive, absorptive, or transformative resilience)?
- How can the concept of exaptive resilience be adapted and applied to the specific challenges and opportunities facing border regions, such as peripherality, cultural diversity, or institutional fragmentation?
- What are the theoretical linkages and complementarities between exaptive resilience and other relevant concepts, such as adaptability, or adaptation?

Methodologically, the study aims to develop a novel approach to measuring the exaptive resilience of regions across the EU. This involves the construction of an index, the Territorial Exaptive Resilience Index (TERI). The TERI incorporates both resistance and reallocation capacities, considering multiple time periods and economic contexts to capture the dynamic and evolutionary nature of regional resilience. The index's ability to categorize regions into distinct resilience profiles (resistant, exaptive, and non-resilient) provides a nuanced understanding of the diverse pathways through which regions adapt to and recover from shocks.

The study empirically examines the driving forces and patterns of exaptive resilience in the EU's regions through a comprehensive approach combining spatial, temporal, and econometric analyses. Spatial analysis identifies which regions exhibit specific resilience profiles, while temporal analysis investigates how these profiles evolve across different crises. Econometric modeling tests hypotheses about the interplay among economic, institutional, and social factors that shape the exaptive resilience of regions, as quantified by the TERI (Territorial Exaptive Resilience Index). Latent class analysis further reveals the heterogeneity of regional capacities across Europe, allowing for a deeper understanding of structural conditions that foster resilience across diverse territorial settings. The guiding questions, include:

- What spatial patterns emerge in the exaptive resilience profiles of the EU's eastern border regions?

- How does the resilience profile of regions shift over time in response to different types of crises?
- Which economic, institutional, and social factors most strongly predict resilience outcomes?
- What latent classes or “types” of regions can be identified based on their institutional, economic, and social characteristics?
- How might the findings inform the post-2027 EU cohesion policy to better address resilience needs?

Additionally, the study includes in-depth case studies of selected border regions to provide a more nuanced and contextualized understanding of the drivers, barriers, and best practices for building exaptive resilience through cross-border cooperation and EU cohesion policy. The case studies aim to uncover the lived experiences, perceptions, and strategies of key stakeholders in relation to territorial exaptive resilience in the EU's eastern border regions. They cover a wide range of themes crucial for understanding the dynamics of exaptive resilience in border regions, such as:

- How do regional actors perceive and leverage the evolution of their regional assets and capabilities to foster exaptive resilience?
- What are the specific experiences and impacts of cross-border cooperation in enhancing the long-term resilience of border regions?
- How do border regions respond to geopolitical changes and adapt their strategies to seize new opportunities for development and renewal?
- What are the examples of creative and unconventional use of resources in border regions, and how can these exaptive practices be identified, analyzed, and scaled up to create new growth paths and solutions?
- How do key stakeholders assess the future development directions and potentials of their regions?

From a policy perspective, the study aims to derive concrete implications and recommendations for strengthening the exaptive resilience of the EU's eastern border regions, in line with the goals and priorities of EU cohesion policy. This involves translating the empirical findings into actionable proposals for policymakers at different levels and in different domains. It also involves contributing to the ongoing debate on the future of cohesion policy and its role in promoting a more resilient, sustainable, and inclusive development of border regions. Key questions include:

- What are the main policy lessons and best practices that can be drawn from the analysis of exaptive resilience in the EU's eastern border regions, and how can they be transferred and scaled up to other contexts?
- What are the most pressing challenges and promising opportunities for enhancing the of border regions in the post-2027 period, considering the changing political, economic, and environmental conditions?
- How can EU cohesion policy be reformed and adapted to better support the exaptive resilience of border regions, in terms of its objectives, priorities, instruments, and governance arrangements?
- What are the potential synergies and trade-offs between exaptive resilience and other policy goals, such as economic competitiveness, social inclusion, or environmental sustainability, and how can they be managed and optimized?

By addressing these objectives and questions, the study aims to make a significant contribution to the academic and policy debate on territorial resilience and cross-border cooperation in the EU. It seeks to advance the theoretical and empirical understanding of exaptive resilience as a key concept for explaining and promoting the adaptation and transformation of border regions in the face of major challenges and disruptions. It also seeks to provide a novel and policy-relevant tool for measuring and comparing the resilience of border regions across the EU, which can inform more targeted and place-based interventions by cohesion policy and other relevant policies.

Moreover, by focusing on the EU's eastern border regions as a strategically important but understudied area, the study fills a crucial gap in the literature and sheds light on the specific challenges, opportunities, and dynamics of resilience-building in these contexts. It also contributes to a more balanced and nuanced understanding of the heterogeneity and diversity of border regions in the EU, and the need for differentiated and context-sensitive approaches to promoting their development and integration.

1.2. Theoretical Framework

1.2.1. Definition and conceptualization of territorial exaptive resilience

The concept of resilience has gained prominence in regional studies and policy in recent years. Broadly defined, resilience refers to a system's capacity to withstand, adapt to, and bounce back from shocks and disturbances (Kollár D. & Kollár J. 2020). However, the precise meaning and application of resilience varies across disciplines (Reid, 2024).

In the field of engineering, resilience is often understood as a system's capacity to bounce back to a pre-existing stable equilibrium after a shock (Holling, 1996). This "engineering resilience" perspective emphasizes the resistance and recovery dimensions of resilience, focusing on the speed and extent to which a system returns to its original state. While this view may be applicable to certain physical infrastructures, it has limitations when applied to more complex, adaptive systems such as regional economies or societies.

In contrast, the ecological and complex adaptive systems literature (Bristow & Heally 2014) defines resilience as a system's ability to absorb disturbances and reorganize while maintaining its core functions and identity (Walker et al., 2004). This "ecological resilience" perspective recognizes that systems may have multiple equilibria and that resilience is not just about bouncing back, but also about the capacity for adaptation and transformation in the face of change. This understanding of resilience is more relevant for the study of regional development, as it acknowledges the possibility of regions shifting towards new growth paths and economic structures.

Evolutionary economic geography further develops this dynamic perspective on regional resilience, emphasizing the role of long-term processes of change and adaptation (Boschma, 2015; Martin & Sunley, 2015). In this view, resilience is not a fixed property of regions, but an ongoing process of continual adjustment and transformation in response to various challenges and opportunities. Key to this evolutionary perspective is the idea that resilience is not just about responding to exogenous shocks, but also about the endogenous capacity of regions to generate new development paths and adapt their economic structures over time. This focus on the interplay between external disturbances and internal capacities is particularly relevant for understanding the adaptive potential of regions in the face of major structural shifts, such as technological change, globalization, or environmental pressures.

Building on these insights, we can define regional resilience as the capacity of a region to withstand, adapt to, and recover from shocks, while also generating new growth opportunities and maintaining core functions and identity in the face of change. This definition emphasizes both the short-term (resistance and recovery) and long-term (potential adaptation and transformation) dimensions of resilience, as well as the interplay between exogenous and endogenous drivers shaping regional development trajectories. This is particularly relevant for the EU's Eastern border regions, which are currently facing a range of geopolitical shocks and disturbances, such as trade disruptions, migration pressures, and security threats linked to the war in Ukraine (Reid 2022). These regions need to not only cope with the immediate impacts of these shocks but also adapt their economic structures and development strategies to thrive in a rapidly changing geopolitical context.

Crucially, regional resilience is not a static property or end-state to be engineered from outside, but an emergent, context-dependent capacity rooted in the self-organizing potential of complex adaptive systems (Berkes et al., 2002). Nurturing resilience therefore requires engaging with the specific socio-cultural configurations, institutional arrangements, and endogenous resources of regional actors, rather than imposing a one-size-fits-all template (Miskolczi – Kollár 2024). The role of policy interventions is to enable and empower bottom-up processes of creative adaptation and transformation, while remain attuned to the unique challenges and opportunities facing different regions.

This evolutionary and place-based understanding of regional resilience sets the stage for a more focused exploration of specific mechanisms through which regions can enhance their adaptive capacity in the face of disruptive challenges.

1.2.1.1. *Defining exaptive resilience*

Building on the broader resilience framework, the concept of exaptive resilience focuses on a specific mechanism through which systems can transform in the face of disruptive change. Exaptation, a term borrowed from evolutionary biology, refers to the repurposing of an existing trait or structure for a new function, different from the one it was originally selected for (Gould & Vrba, 1982, Kollár & Kollár 2020). Classic examples include bird feathers, initially evolved for thermoregulation but later co-opted for flight, or the transformation of dinosaur forelimbs into bird wings.

In various fields of economics, such as public economics, urban development, and innovation studies, the concept of exaptation has already gained traction as a key mechanism for explaining evolutionary change (Dew et al 2004). For example, in the context of urban development, exaptation has been used to describe the repurposing of old industrial buildings for new cultural or creative functions (Andres & Golubchikov, 2016). In innovation studies, exaptation has been linked to the serendipitous discovery of new applications for existing technologies, such as the repurposing of the microwave oven from a radar component to a cooking appliance (Dew et al., 2004).

In the field of resilience studies, Kollár and Kollár (2020) have introduced the concept of exaptive resilience to capture the proactive, transformative dimension of cultural evolution. They define exaptive resilience as a complex system's capacity to respond to external shocks or changes by repurposing its existing traits or characteristics for new objectives or functions, enabling the system to develop and thrive under altered conditions. (Kollár & Kollár 2020). This stands in contrast to adaptive resilience, which is focused on maintaining predefined functions and solving well-defined problems within a given framework. Exaptive resilience, on the other hand, emerges in response to unexpected, unpredictable crises, repurposing existing assets and capabilities for new uses that were not originally envisioned (Miskolczi et al 2024.).

The exaptive resilience framework is particularly fruitful because it offers a fresh perspective on how systems can not only bounce back from disruptions but also bounce forward by using crises as opportunities for innovation and renewal. It shifts the focus from the preservation of existing structures to the creative recombination of assets and capabilities to generate new development opportunities. This aligns with the growing recognition in resilience studies that resilience is not just about stability and recovery, but also about transformation and regeneration (Davoudi et al., 2012).

Moreover, the exaptive resilience framework is well-suited to capture the complex, non-linear dynamics of economic systems in the face of deep uncertainty. By emphasizing the role of open-ended experimentation and serendipitous discovery, it accounts for the fact that the most successful adaptations often emerge from unexpected quarters, rather than from carefully planned strategies. This makes it a valuable tool for understanding and fostering resilience in a world of accelerating change and mounting unpredictability.

In sum, the concept of exaptive resilience, offers a promising new lens for understanding and promoting adaptive transformation in economic systems. By highlighting the potential of repurposing existing assets for new functions, it opens up new avenues for resilience-building that go beyond mere shock absorption or recovery. As such, it is likely to gain increasing traction in resilience studies and inform novel strategies for navigating disruptive change.

1.2.1.2. *Defining territorial exaptive resilience*

Building on the concept of exaptive resilience, territorial exaptive resilience focuses on the specific manifestations and drivers of exaptive resilience at the regional scale, with a particular emphasis on the role of geographic context and spatial relationships. We define territorial exaptive resilience as a region's ability to repurpose its existing resources and capabilities, which were originally developed for different functions, to create new growth opportunities and evolve in response to transformative changes or crises.

This definition captures several crucial aspects of how regions can adapt and transform their economies in the face of change. At its core, territorial exaptive resilience is about leveraging a region's existing assets in new and creative ways. It involves identifying the latent potential of a region's resources, such as its industrial infrastructure, human capital, or institutional frameworks, and finding novel applications for them that can drive new growth opportunities (Gould & Vrba, 1982; Andriani & Cohen, 2013). This emphasis on repurposing and recombining existing resources and capabilities, rather than simply acquiring new ones, is what sets exaptive resilience apart from other forms of

regional resilience, such as adaptive resilience, which focus more on incremental adjustments and the accumulation of new resources (Boschma, 2015; Martin & Sunley, 2015).

Moreover, territorial exaptive resilience is not just about bouncing back from crises and disruptions, but also about bouncing forward by seizing the new growth opportunities that often emerge from such challenges (Boschma, 2015; Martin & Sunley, 2015). It requires a proactive and future-oriented mindset that looks beyond mere survival or recovery and actively seeks to shape a region's development trajectory. This transformative and opportunity-driven nature is a key feature of exaptive resilience, setting it apart from more conservative or reactive approaches to regional adaptation.

However, the ability of regions to engage in exaptive resilience is deeply shaped by their specific historical, institutional, and geographic conditions (Boschma, 2015; Grillitsch & Sotarauta, 2020). The resources and capabilities that a region can draw upon for exaptation were often originally developed for different functions and contexts, reflecting the path-dependent nature of regional development. Exaptive resilience thus involves a degree of breaking free from these path dependencies, finding new development opportunities that build on, but are not constrained by, a region's past. This path-breaking potential is often triggered or accelerated by major disruptions and challenges, such as economic shocks, technological shifts, or geopolitical tensions. Such changes can act as catalysts for regional transformation by creating new needs and opportunities that regions can seize through exaptive strategies (Boschma, 2015; Martin & Sunley, 2015).

In sum, our definition of territorial exaptive resilience provides a novel and dynamic perspective on how regions can adapt and transform in the face of change by leveraging their existing assets in creative and entrepreneurial ways. It highlights the importance of repurposing and recombining existing resources, the transformative and opportunity-driven nature of exaptive processes, the role of historical and geographical context in shaping exaptive potential, and the catalytic function of crises and disruptions. By doing so, it complements and extends existing concepts of regional resilience, offering a more proactive, future-oriented, and path-breaking perspective on regional adaptation and development.

1.2.1.3. *Territorial exaptive resilience and exaptibility*

In exploring the concept of territorial exaptive resilience, which captures a region's capacity to repurpose and recombine its existing assets to create new growth opportunities amidst transformative changes or crises, it is equally fertile to introduce and elaborate the concept of exaptibility. Exaptibility refers to a region's underlying capacity to cultivate and maintain the conditions that enable such exaptive processes to occur. Exaptibility can be understood as a region's potential for exaptive resilience. It is about the systemic and structural factors that enable a region to continuously identify, valorize, and mobilize its latent resources and capabilities for new purposes and in new contexts (cf.: Grillitsch & Sotarauta, 2020).

To fully understand the role of exaptibility, it is essential to distinguish it from related concepts such as adaptability, adaptive resilience, and exaptive resilience. These concepts can be situated within a framework that considers two key dimensions of regional response to change: the degree of change (incremental vs. transformative) and the orientation of change (reactive vs. proactive). This framework clarifies their interconnections and contributions to regional development strategies, highlighting the balance between preparation and response.

Table 1.1

Adaptability, exaptibility, adaptive resilience and exaptive resilience

Dimension	Incremental Change	Transformative Change
Proactive (Preparation)	Adaptability: Gradual improvements within existing systems.	Exaptibility: Cultivation of capacities and conditions for future transformation.
Reactive (Response)	Adaptive Resilience: Absorption and recovery from shocks.	Exaptive Resilience: Creative repurposing of existing assets during crises.

Adaptability refers to a region's capacity for incremental, proactive adjustments within its existing development trajectory. It is characterized by gradual improvements in systems, skills, or infrastructure to better align with evolving challenges or opportunities without fundamentally altering the core structure (Boschma, 2015; Martin & Sunley, 2015). Proactive by nature, adaptability ensures that regions are equipped to handle foreseeable changes through enhancements to existing capabilities and frameworks. In contrast, adaptive resilience focuses on a region's reactive ability to absorb and recover from shocks while preserving its essential identity and trajectory. It prioritizes restoring equilibrium and mitigating immediate disruptions rather than pursuing long-term transformation (Bristow & Healy, 2014; Hu & Hassink, 2017). Adaptive resilience emphasizes stability, enabling regions to "bounce back" after crises with minimal structural alteration.

Exaptive resilience captures a region's reactive capacity to repurpose and recombine existing assets for transformative change in response to major disruptions. It reflects the creative potential of crises, enabling regions to "bounce forward" by leveraging existing resources in novel ways to seize emergent opportunities (Gould & Vrba, 1982; Boschma, 2015). While adaptive resilience aims to restore, exaptive resilience embraces transformation, highlighting the innovative use of resources and capabilities. Exaptibility, by contrast, represents a region's proactive capacity to cultivate the conditions necessary for future exaptive processes. This involves building preconditions—such as flexible institutions, diversified skill bases, and multifunctional infrastructure—that enable transformative change when disruptions arise. Exaptibility ensures that regions are not only prepared for known challenges but also equipped to navigate and capitalize on unpredictable opportunities.

The case of the Ruhr region in Germany offers a prime example of the importance of exaptibility in fostering long-term regional resilience. The Ruhr region, traditionally dependent on coal mining and steel production, faced severe economic challenges as these industries declined. However, the region managed to successfully transform its economy by repurposing much of its industrial infrastructure and know-how for new uses. For instance, former industrial sites were transformed into cultural venues and creative hubs, while the region's technical skills and engineering expertise were redeployed in emerging sectors such as environmental technologies and renewable energy. The Zollverein Coal Mine Industrial Complex in Essen, once the largest and most modern coal mine in Europe, was converted into a UNESCO World Heritage site and a center for art, culture, and creative industries (Hospers, 2004). The Emscher Landscape Park, a network of green spaces and recreational areas developed on former industrial sites, has become a symbol of the region's ecological and social transformation (Shaw, 2002).

Crucially, this successful transformation was not just a matter of reactive crisis response, but the result of a long-term, proactive effort to cultivate the region's exaptibility. This involved significant investments in building a dense network of universities and research institutes, which provided a steady supply of skilled labor and fostered a culture of innovation and entrepreneurship. It also involved the creation of new, flexible forms of regional governance, such as the International Building Exhibition (IBA) Emscher Park, a ten-year regional development program that brought together diverse stakeholders to envision and implement new strategies for the region's future (Shaw, 2002). Moreover, the region placed a strong emphasis on rehabilitating its industrial brownfields and developing green infrastructure, which not only improved its environmental sustainability but also enhanced its attractiveness as a location for new economic activities. These proactive efforts to nurture the region's institutional, social, and physical assets played a key role in its ability to continually adapt and reinvent itself in the face of changing circumstances.

The case of Finland and its response to the collapse of Nokia provides another compelling example of the interplay between adaptability and exaptibility in fostering regional resilience. Finland's economy was heavily dependent on Nokia, which at its peak accounted for 4% of the country's GDP and 20% of its exports. However, with the rise of competitors like Apple and Android smartphones in the late 2000s, Nokia's dominance quickly eroded, leading to mass layoffs and a significant economic shock for Finland (Miskolczi, 2020).

Finland's success in navigating this crisis can be attributed to its proactive efforts to cultivate both adaptability and exaptibility. In terms of adaptability, Finland had made significant investments in building a strong innovation ecosystem, with a particular emphasis on education, research, and development. This included a dense network of universities and research institutes, as well as policies aimed at fostering collaboration between academia and industry. These structural factors provided

a foundation for incremental adjustments and improvements within Finland's existing development trajectory.

However, it was Finland's capacity for exaptability that truly enabled it to transform the Nokia crisis into an opportunity for growth and renewal. Finland's strong institutional trust and collaborative governance model played a key role in its ability to mount a coordinated response to the crisis. The government worked closely with industry, labor unions, and other stakeholders to develop targeted support programs for displaced workers and to incentivize the growth of new industries. For example, the "Bridge" program provided funding and support for former Nokia employees to start their own businesses, leading to the creation of hundreds of new startups in areas like software development, gaming, and cleantech (Miskolczi, 2020). This illustrates how Finland leveraged its institutional and social assets to repurpose and recombine its resources in novel ways.

Finland also demonstrated exaptability by leveraging its existing strengths in areas like telecommunications and ICT to develop new growth opportunities. Nokia's decline freed up a pool of highly skilled engineers and technicians who were quickly absorbed by other companies and sectors. This included a growing startup scene, particularly in the Helsinki region, which has become a leading hub for mobile gaming and other digital industries. Finland has also become a leader in the development of 5G networks and other advanced telecommunications infrastructure, building on its legacy of innovation in this field (Miskolczi, 2020).

The Finnish example, like the Ruhr case, illustrates how fostering regional resilience requires a balance between adaptability and exaptability. Adaptability, rooted in structural factors like institutional quality and economic diversification, provides the stability and robustness needed to withstand shocks. Exaptability, on the other hand, is about the dynamic capacity to repurpose assets and seize new opportunities in the face of disruption. It is enabled by factors such as strong social networks, collaborative governance, and a culture of innovation.

In conclusion, the concepts of adaptability and exaptability are crucial for understanding the dynamic nature of regional resilience and its role in shaping new development pathways. While resilience itself represents the potential for regions to transform and reconfigure themselves in the face of shocks and disruptions, it is the interplay between adaptability and exaptability that ultimately determines the extent and direction of this transformation.

Exaptive resilience is about the latent capacity for regions to repurpose and recombine their existing assets and capabilities in novel ways when confronted with crises. It opens up the possibility space for change, creating opportunities for regions to break from their established trajectories and chart new courses for growth and development. However, the mere presence of exaptive resilience does not guarantee that these possibilities will be realized. Rather, it is the cultivation of adaptability and exaptability that shapes whether and how regions actually navigate these possibilities and translate them into concrete outcomes. Adaptability, rooted in factors such as institutional quality, economic diversification, and robust infrastructures, provides the necessary stability and flexibility for regions to incrementally adjust and improve their existing systems in response to changing circumstances. Exaptability, on the other hand, is the key to unlocking the transformative potential of exaptive resilience. It represents the proactive and future-oriented cultivation of the enabling conditions and capacities that allow regions to fundamentally reinvent themselves when faced with disruption.

The degree to which regions can leverage their exaptive resilience to forge new development pathways, then, is a function of the strength and interplay of their adaptability and exaptability. Regions with robust adaptability but low exaptability may be able to weather shocks and maintain stability in the short term, but may struggle to fundamentally reorient themselves towards new opportunities. Conversely, regions with high exaptability but fragile adaptability may be able to envision and initiate transformative changes, but may lack the underlying resilience to sustain these changes over the long haul. It is the regions that can effectively cultivate and balance both adaptability and exaptability that are best positioned to harness the transformative potential of their exaptive resilience. By proactively investing in the institutional, economic, and social foundations of adaptability, while simultaneously nurturing the innovative and entrepreneurial capacities that underpin exaptability, these regions can create a powerful alchemy of resilience and transformation.

1.1 Relevance to EU cohesion policy and border regions

The concepts of territorial exaptive resilience and exaptibility have significant implications for EU cohesion policy and its focus on border regions. Cohesion policy aims to reduce regional disparities, strengthen economic, social, and territorial cohesion, and promote sustainable and inclusive growth (European Commission, 2021). Border regions are a key target and beneficiary of cohesion policy, as they often face specific challenges and opportunities that require tailored and integrated interventions (European Commission, 2022).

The concept of territorial exaptive resilience aligns well with the place-based and integrated approach of cohesion policy (Berkowitz et al., 2017; Wróblewski et al., 2022). By focusing on the endogenous potential and creativity of border regions to adapt and transform their economies through cross-border cooperation and integration, exaptive resilience can help identify the specific assets, challenges, and opportunities of each border region, and design more targeted and effective interventions that build on the region's strengths and address its weaknesses (Dołzbłasz, 2020). Moreover, the multi-dimensional and multi-level nature of exaptive resilience resonates with the holistic and partnership-based approach of cohesion policy, which emphasizes the importance of involving and empowering regional and local stakeholders in the design, implementation, and monitoring of interventions (European Commission, 2021; Wróblewski et al., 2022).

The notion of exaptibility, in particular, can provide valuable insights for cohesion policy in fostering the long-term transformative capacity of border regions. By emphasizing the proactive and future-oriented cultivation of a region's institutional, social, and cognitive infrastructures, exaptibility highlights the importance of investing in the enabling conditions and capacities that allow border regions to continuously identify and seize new growth opportunities over time (Boschma, 2015). This perspective can inform the design and implementation of cohesion policy interventions that not only address the immediate needs and challenges of border regions but also build their resilience to future shocks and opportunities. Furthermore, the concepts of exaptive resilience and exaptibility can contribute to the ongoing debate on the future of cohesion policy and its role in supporting the recovery and resilience of regions in the face of global challenges, such as the COVID-19 pandemic, climate change, or digital transformation (European Commission, 2021; 2022). These concepts offer a forward-looking and transformative perspective on how border regions can not only recover from crises but also build back better and greener by leveraging their untapped assets and synergies for smart and sustainable development (Baumgartinger-Seiringer et al., 2021; Eder & Trippel, 2019).

In conclusion, the concepts of territorial exaptive resilience (and exaptibility) have significant relevance and applicability to EU cohesion policy and its focus on border regions. They provide a novel and useful framework for guiding and assessing the interventions of cohesion policy in border regions, by emphasizing the endogenous potential and creativity of these regions to adapt and transform their economies through cross-border cooperation and integration. Moreover, they contribute to the ongoing debate on the future of cohesion policy and its role in supporting the recovery and resilience of regions in the face of global challenges. By operationalizing and applying these concepts to the case of the EU's eastern border regions, this study aims to generate valuable insights and recommendations for enhancing the effectiveness and impact of cohesion policy in these regions, and for promoting their sustainable and inclusive development in the post-2027 period.

2. Research Design: Rationale for a Mixed Methods Approach

The complex nature of territorial dynamics and regional development processes has led to increasing recognition of the value of mixed methods research in regional studies (Creswell & Plano Clark, 2017; Tashakkori & Teddlie, 2010). This methodological approach is particularly relevant for studying territorial exaptive resilience, which encompasses both measurable structural patterns and complex social processes that shape regional adaptation and transformation (Bristow & Healy, 2014; Pike et al., 2010). Our study employs a systematic mixed methods design that combines quantitative and qualitative approaches to provide a comprehensive understanding of how border regions adapt and change in response to challenges. This methodological choice is grounded in three key considerations that emerge from both theoretical debates and empirical research in regional studies: First, the inherent complexity of territorial phenomena demands multiple analytical perspectives. Regional resilience involves the interplay of economic, institutional, and social factors that cannot be fully captured through a single methodological lens (Martin & Sunley, 2015; Wilson, 2012). While quantitative methods enable the identification of structural patterns and causal relationships, qualitative approaches reveal the deeper processes and mechanisms that generate these patterns (Eisenhardt & Graebner, 2007). This complementarity is particularly crucial for understanding exaptive processes, where the repurposing of regional assets often involves subtle interactions between formal structures and informal practices (Grillitsch & Sotarauta, 2020). Second, our methodological framework reflects the conceptual distinction between exaptive resilience as a reactive capacity and exaptibility as a proactive potential that we established in our theoretical framework. This duality requires research methods that can capture both the structural conditions that enable change and the processes through which regions actually transform their resources and capabilities (Boschma, 2015). The integration of quantitative and qualitative methods allows us to examine not only the presence of adaptive and exaptive capacities but also how these capacities are mobilized and deployed in specific contexts. Third, the policy relevance of our research demands methodological approaches that can generate both generalizable findings and context-specific insights. Mixed methods research is particularly valuable for policy-oriented studies as it can identify broad patterns while also revealing the nuanced ways in which policies are implemented and adapted at regional levels (Yin, 2014). This is especially important in the context of EU cohesion policy, where effective interventions must balance universal principles with sensitivity to local conditions (Bachtler et al., 2017).

This methodological choice aligns with recent developments in regional studies that emphasize the importance of understanding both the structural and agency dimensions of regional development (Sotarauta & Beer, 2017). To capture these multiple dimensions, we have developed a comprehensive research framework that systematically integrates quantitative and qualitative approaches (Tödting & Trippel, 2018).

Our research design operationalizes this integrated approach through four complementary analytical components, each designed to illuminate different aspects of territorial exaptive resilience. The quantitative components provide the structural foundation and broad patterns, while the qualitative component offers deep contextual understanding of how these patterns manifest in practice. At the heart of our quantitative analysis is the Territorial Exaptive Resilience Index (TERI), a novel composite indicator that measures both the resistance and reallocation capacities of regions. The TERI enables us to categorize regions into distinct resilience profiles (resistant, exaptive, and non-resilient) and track how these profiles evolve across different crisis periods from 2006 to 2023. This dynamic measurement approach allows us to capture how regional resilience patterns shift in response to various types of shocks.

To establish the broader developmental context for our analysis, we employ Latent Class Analysis (LCA) to categorize EU regions based on their socio-economic characteristics. This classification reveals historically evolved regional disparities and structural conditions across Europe, providing crucial context for understanding how different types of regions - from advanced service centers to in-

dustrial-agricultural peripheries - respond to challenges and develop their resilience capacities. Rather than directly measuring resilience, this classification helps us understand the distinct developmental starting points from which regions must build their adaptive capabilities.

To complement our resilience profiling, we employ Bayesian multinomial panel regression modeling to examine how different factors influence whether regions exhibit resistant or exaptive resilience (compared to non-resilient regions). This econometric analysis tests specific hypotheses about the role of economic structure, institutional quality, local resilience, R&D intensity, and EU funding in shaping regional resilience outcomes. Through this analysis, we can identify which factors are most crucial in enabling regions to either maintain stability (resistance) or creatively adapt (exaptive resilience) in the face of shocks.

Finally, we conduct in-depth case studies of five strategically selected border regions to understand the concrete mechanisms and processes through which regions develop and deploy their adaptive capacities. These case studies, which form the focus of our next methodological section, combine semi-structured interviews, desk research and document analysis to build rich, contextual accounts of how regions navigate transformative challenges. Through this integrated methodological approach, we aim to generate both broader patterns and deeper insights into how border regions can enhance their capacity for exaptive resilience. The combination of quantitative and qualitative methods allows us to not only identify what factors matter for regional resilience but also understand how these factors operate in specific contexts and can be influenced through policy interventions.

In the following sections, we focus on our qualitative methodology, detailing the case study approach that forms a crucial component of our research design. The complete quantitative methodology, including detailed descriptions of the TERI construction, latent class analysis, and econometric modeling, can be found in Annex 3.

2 Case Studies

2.1 3.1. Relevance and scope of the case studies

The case studies presented in this research aim to provide a comprehensive understanding of territorial exaptive resilience in the EU's eastern border regions. By examining the experiences, challenges, and strategies employed by these regions in the face of various crises, such as geopolitical tensions, environmental degradation, and humanitarian emergencies, the case studies offer valuable insights into the dynamics of exaptive resilience in diverse territorial contexts.

The selected case studies are highly relevant for several reasons. First, they represent a wide range of border regions in the EU's eastern borderlands, each with its unique characteristics, assets, and challenges. This diversity allows for a rich comparative analysis that captures the multi-faceted nature of territorial exaptive resilience and identifies common patterns and variations in how border regions adapt and transform in the face of adversity.

Second, the case studies focus on regions that have faced significant disruptions and shocks in recent years, such as the Russian-Ukrainian war, the refugee crisis, and environmental degradation. These crises have tested the resilience and adaptability of border regions, forcing them to find creative ways to repurpose their existing resources and capabilities to address new challenges and opportunities. By examining how these regions have navigated these crises, the case studies can generate valuable lessons and best practices for fostering exaptive resilience in other border regions facing similar challenges.

Third, the case studies pay particular attention to the role of cross-border cooperation and EU cohesion policy in supporting the development of exaptive resilience in border regions. By analyzing how EU funding, initiatives, and institutional frameworks have contributed to the implementation of resilience-building measures and the creation of new growth opportunities, the research can provide insights into how cohesion policy can be adapted to better address the specific needs and potentials of border regions in the face of ongoing challenges and uncertainties.

The scope of the case studies encompasses a wide range of themes and dimensions relevant to understanding territorial exaptive resilience. These include:

1. The perception and evolution of regional assets and capabilities, and how these can be harnessed to develop the exaptive capacity of border regions and find new development paths beyond path dependency.
2. The experiences and impacts of cross-border cooperation, and how this can contribute to capitalizing on and reutilizing local competitive advantages to enhance long-term resilience.
3. The responses to geopolitical changes and adaptation strategies, and how border regions can seize new opportunities for development and renewal in the face of external shocks and disruptions.
4. The examples of creative and unconventional use of resources, and how these exaptive practices can be identified, analyzed, and scaled up to create new growth paths and solutions to emerging problems.
5. The assessment of future development directions and potentials, and how these can be translated into concrete strategies and action plans for enhancing the exaptive resilience of border regions.

To capture these themes and dimensions, the case studies employ a multi-method approach that combines semi-structured interviews with key stakeholders, analysis of strategic documents and policy frameworks, and a review of relevant academic literature. The interviews target a diverse

range of actors, including representatives from local and regional authorities, civil society organizations, business associations, and academia, ensuring a comprehensive and balanced perspective on the challenges and opportunities faced by border regions.

By triangulating insights from these different sources, the case studies aim to provide a robust and contextualized understanding of territorial exaptive resilience in the EU's eastern border regions. The findings from the case studies will not only contribute to advancing the conceptual and empirical foundations of this emerging field of research but also inform the design and implementation of more effective and place-based strategies for enhancing the resilience and adaptability of border regions in the face of current and future challenges.

2.2 Case selection and justification

The case studies in this research were purposively selected to represent a diverse range of border regions in the EU's eastern borderlands, each facing unique challenges and opportunities in the context of geopolitical changes, environmental crises, and social and economic disruptions. The selection criteria included:

1. Inclusion of at least one Polish external border region
2. Representation of multiple affected countries
3. Heterogeneity in the development levels of the regions
4. Inclusion of at least one region bordering Ukraine, one bordering Russia, and one bordering another post-Soviet country (Belarus or Moldova)

Based on these criteria, five case study regions were selected: Maramureş County in Romania, Lapland Region in Finland, Szabolcs-Szatmár-Bereg County in Hungary, Olsztyn Region in Poland, and Vilnius County in Lithuania. This diverse selection allows for a comprehensive analysis of how border regions with different characteristics and capacities respond to and recover from shocks and disruptions.

2.3 Data collection

The case studies employed a multi-method approach to data collection, combining semi-structured interviews with key stakeholders, analysis of strategic documents such as regional development plans, and a review of relevant academic literature on the characteristics of the selected regions. This triangulation of data sources ensures a comprehensive and balanced perspective on the challenges and opportunities faced by border regions (Yin, 2014).

Semi-structured interviews were conducted with a diverse range of stakeholders, including representatives from local and regional authorities, civil society organizations, business associations, and academia. The interviews were guided by a flexible protocol that covered key themes related to territorial exaptive resilience, such as the perception and evolution of regional assets and capabilities, experiences and impacts of cross-border cooperation, responses to geopolitical changes and adaptation strategies, and examples of creative and unconventional use of resources (Bryman, 2012). The protocol was adapted to the specific context and expertise of each interviewee, allowing for the emergence of new insights and perspectives (Kvale & Brinkmann, 2009).

In addition to the interviews, the case studies involved a review and analysis of relevant strategic documents. These materials provided valuable insights into the institutional and policy context in which exaptive resilience unfolds, and allowed for a triangulation of findings from different sources (Bowen, 2009). Furthermore, a review of academic literature on the characteristics and development of the selected regions was conducted to provide a deeper understanding of the historical, socio-economic, and cultural context of each case study (Hart, 2018).

2.4 Data analysis

The analysis of the qualitative data followed a flexible approach inspired by grounded theory, which involves an iterative process of coding, categorization, and comparison (Charmaz, 2014; Corbin & Strauss, 2015). The analysis was guided by its principles of openness, constant comparison, and theoretical sensitivity (Thornberg & Charmaz, 2014). The interview data and documentary evidence were initially organized and summarized using a grid system, where broad categories and themes were identified and refined through a process of constant comparison within and across cases (Ritchie & Lewis, 2003). The summarized data and emerging themes were then used to develop a coherent narrative for each case study, highlighting the specific context, challenges, and exaptive practices employed by the selected regions. The case study narratives were structured around a flexible template that allowed for variations and adaptations based on the unique features and experiences of each region (Yin, 2014). Finally, a comparative analysis was conducted across the case studies to identify common patterns, differences, and lessons learned regarding territorial exaptive resilience in the EU's eastern border regions. This comparative analysis involved a process of cross-case synthesis, where the findings from each case were systematically compared and integrated to generate higher-level insights and propositions (Yin, 2014; Eisenhardt, 1989). By employing this flexible and iterative approach to data analysis, the case studies aimed to generate a rich and contextualized understanding of territorial exaptive resilience, grounded in the experiences and perspectives of key stakeholders in the selected border regions, and informed by the broader institutional, policy, and academic context. The insights gained from this analysis can inform the development of more effective and place-based strategies for enhancing the resilience and adaptability of border regions in the face of current and future challenges.

2.5 Individual Case Study Findings

2.5.1 The case of Olsztyński subregion in Poland

2.5.1.1 Basic characteristics of the region

The Olsztyński subregion of the NUTS3 level is part of the Warmińsko-Mazurskie region (NUTS2) located in the north-eastern part of Poland. The subregion covers an area of over 10 thousand square kilometers, is inhabited by about 590 thousand people, over the last twenty years the number of inhabitants has decreased by 20 thousand (3.5%). There are 21 cities in the research area, which are home to about 60% of the total population of the subregion, which is slightly below the Polish average. The largest city in the subregion is Olsztyn, with 167 thousand residents (a decrease from 174 thousand in 2004) (Central Statistical Office 2024). The subregion includes 7 counties (NUTS4) and a city with county's rights (Olsztyn).

The main sectors of the region are the food, furniture, wood and tire industries, as well as tourism. The capital of the region, Olsztyn, has a university, and apart from the educational sector, the city's important functions include transportation sector. The Olsztyński subregion borders the Russian Federation to the north, and more precisely, its exclave, the Królewiecki Oblast (former Kaliningrad Oblast). The region is one of the peripheral regions in Poland with progressive depopulation and the outflow of young people to larger urban centers in Poland. The distance from Olsztyn to Warsaw is over 200 km, to Gdańsk over 150 km, to the road border crossing with the Królewiecki Oblast approx. 90 km.

The main strategic objectives of the Warmińsko-Mazurski region (NUTS2) are economic, social and spatial cohesion. As part of economic cohesion, greater funding for smart specializations is indicated. The following smart specializations are distinguished in the region: water economy, high-quality food, wood and furniture, and supporting areas: ICT, security, logistics, financing, fairs and promotion which respond to the needs of companies seeking their advantages through cooperation with the R&D sector. In Olsztyn, the development of metropolitan functions is indicated as important, including industry 4.0, robotization, digitization as models increasing work efficiency which allows independence from fluctuations in human resources. As part of spatial cohesion, the connection with the main transport network of Poland and the trans-European corridors is highlighted. Social cohesion emphasizes the creation of jobs mainly for young people. An important strategic objective are

the competences of the future, i.e. the ability to cooperate and share knowledge, creative and critical thinking. Both formal and informal education (including vocational education) are important in this respect (Warmińsko-Mazurskie 2030).

In the local development strategies of the cities and associations of municipalities in the subregion (NUTS3, 28 documents), attention is drawn to the diversification of sources of development financing, cooperation with other local governments (including within the Cittaslow network of cities – promoting high quality and slow life), cooperation with non-governmental organisations and entrepreneurs. In the context of the border, attention is drawn to cooperation with the Królewiecki Oblast in order to strengthen entrepreneurship and cultural exchange, but after the suspension of contacts, these activities will be difficult. The region's significant resources are natural and social resources, but there is no indication of repurposing the aims of using resources. The concept of resilience (including exaptive resilience) is not generally present in local development strategies, few strategies indicate very generally the strengthening of resilience, and only adaptation to climate change in accordance with the adopted policy at the EU and national levels is emphasized.

2.5.1.2 Perceptions and evolution of regional assets and capabilities, and how these can be harnessed to develop the exaptive capacity of border regions and find new development paths beyond path dependency

When small border traffic with the Królewiecki Oblast was launched in 2012, it seemed that the quite lively cross-border contacts of the Olsztyński subregion would gain new momentum. However, the rapid suspension of this agreement (in 2016) meant that the developing relations in this direction remained frozen. The subsequent stages of deterioration of Polish-Russian relations no longer provided the possibility of developing official cooperation, although small projects were implemented, such as the Polish-Russian cross-border bicycle rally or the project "BALTIC ODYSSEY - the creation of a common historical and cultural area", implemented since 2019 as part of the POLAND - RUSSIA 2014-2020 Cross-border Cooperation Program. At the time of Russia's aggression against Ukraine, this Program was suspended and the funds were frozen. The closure of local border traffic as well as Russia's full-scale invasion of Ukraine turned the north of the region into a peripheral area and accelerated the depopulation of the entire Region (with particular emphasis on the northern communes and counties).

In the context of the above processes, it seems that there should be stronger ties with other regions of Poland, so that the region and its capital (Olsztyn) have better accessibility by transport from the outside. According to research on depopulation, Olsztyn is the "last stop" for the inhabitants of the region before leaving for other parts of the country or abroad. The majority of migration in the region takes place primarily to the capital of the region, and in the second stage beyond its borders. Improving the attractiveness of the city as a place of work and conducting business activity is a chance to reduce its peripherality and weaken depopulation trends

The important assets of the region, as one of the respondents pointed out, are elements of nature, such as lakes, forests, clean air or hilly terrain. They constitute the basis for the development of sailing, cycling or agritourism tourism, and in the future, broader ecosystem services. An example of the use of the above-mentioned assets was the influx of tourists during the COVID-19 pandemic, when crossing state borders was difficult. At the same time, it should be noted that during the full-scale invasion of Ukraine by Russia, there was a decrease in the number of tourists, which resulted from the adopted perception of the threat and disinformation. Due to the increased interest in border areas of European institutions as a result of the war (which resulted in sealing of border and the increase in the peripherality of the region) it can be indicated that these areas currently have their chance. It is indicated that currently, for this reason, it is precisely the time of borderlands, which is an opportunity for them (crisis as an opportunity). There has been a shift from the "waiting mode" for better cooperation with Russia to the "searching for new opportunities mode", where the border is no longer a resource or a development impulse (Studzińska 2022). This change in thinking is a kind of exaptive resilience, i.e. using the geographical location for other development purposes, this time not related to the resources of the border and abroad but to external European resources (and as previously resulting from endogenous potentials).

The discussed region was based on the provision of small services by tourists and traders from Russia (Królewiecki Oblast) and external funds obtained from the European Union, the provincial or

state budget. After the almost complete closure of the border with Russia, many small businesses ceased to operate. In connection with this, we can indicate such directions of development as eco-tourism, senior tourism, water economy, healthy food, furniture industry and ecosystem services. Among the more modern professions, it is worth mentioning computer science and bioengineering, the development of which is enabled by the University of Warmia and Mazury in Olsztyn.

2.5.1.3 Experiences and impacts of cross-border cooperation, and how this can contribute to capitalizing on and reutilizing local competitive advantages to enhance long-term resilience

A significant resource of the region (local government, NGO's, scientific and educational institutions, and "ordinary" people) is the experience in cross-border contacts with entities of the Królewiecki Oblast. This experience was both positive and negative, but on this basis institutional (administrative) capital was built (institutional resilience/agency perspective; Masik 2018) which should be further strengthened within the framework of cooperation with other partners. An important observation from the research is the fact that cooperation with the Królewiecki Oblast was based mainly on financial resources, there was no greater trust between the administration due to the low institutional level in the Oblast

A chance to fill the gap after cross-border cooperation with the Królewiecki Oblast is to deepen cooperation with the Baltic states, in the context of researching and comparing threats on the borders with Russia and Belarus. Exchange of experiences in this area, in the context of combating Russian propaganda, information warfare, and other threats is a chance to develop relations (the involvement of the administration within other purposes, meaning exaptive resilience). According to the respondents, bilateral cooperation within the framework of the Poland-Lithuania, Poland-Finland and other Baltic Sea regions programmes are crucial. These kind of programmes are also significant due to the ease of potential renegotiation, compared to larger partnerships in times of geopolitical changes. For small municipalities, which do not have the appropriate staff and too small budgets for project contributions, this cooperation may be difficult to achieve. Therefore, external organisational and financial support is necessary, or joint applications for projects within associations of municipalities and pre-financing of activities due to lack of own resources. As the long view perspective of exaptive resilience (and strengthening local institutions in Russia) it is worth considering the development of a special cross-border cooperation programme dedicated to the following individual border areas: Norwegian-Russian, Finnish-Russian, Estonian-Russian, Latvian-Russian, Latvian-Belarusian, Lithuanian-Belarusian, Lithuanian-Russian, Polish-Russian, Polish-Belarusian.

Taking into account the economic dimension, according to entrepreneurs, the challenge is the disappearance of cooperation with the completion of cross-border cooperation projects. For this reason, they point out that entrepreneurs should have a greater share in them. This will facilitate the exchange of experiences with Baltic Sea regions in running companies, the possible use of benefits from different operating costs or the expansion of business markets. Such an approach can help maintain cross-border and transnational cooperation after the end of project financing from European funds. In this way, public institutions and entrepreneurs can reuse their cooperation skills and become more capable of adapting and strengthening the resilience of regions in the long term.

2.5.1.4 Responses to geopolitical changes and adaptation strategies, and how border regions can seize new opportunities for development and renewal in the face of external shocks and disruptions

Due to the suspension of cooperation with the Królewiecki Oblast, the decrease in private investments in the border municipalities (due to concerns about the future), which is reinforced by the presence of the army, and the loss of EU funds from the Poland-Russia Programme (support for water and sewage management, health sector), these funds are directed for the Poland-Lithuania Programme (road infrastructure, crisis management; border guard; fire brigade, tourism) and the South Baltic (support for innovation, labor market). In connection with this process, new relations are being created, aimed especially at the South Baltic regions.

The response to geopolitical changes in the social dimension is the strengthening of cooperation between the inhabitants of the border area during the period of rapid changes, which can be identified with the linking social capital. It is particularly important in the first phase of any crisis (Antonietti, Boschma 2018), where self-organization and family or neighborly help play a key role in surviving the threat and stabilization. In this context, the adaptation strategy to external shocks can certainly be the strengthening of institutions, as mentioned above, i.e. building social capital connecting the inhabitants of the region with institutions based on high mutual trust (linking social capital: Aldrich 2012). This self-organization helps to increase the level and sense of security within the cooperating police, scouts, territorial protection forces, local governments and residents.

In the economic dimension, partial independence from external energy suppliers, including the development of distributed solar and wind energy, is important in the context of geopolitical changes. It can provide new jobs, which is a significant added value of such activities in the renewal of the economy.

2.5.1.5 Examples of creative and unconventional use of resources, and how these exaptive practices can be identified, analyzed, and scaled up to create new growth paths and solutions to emerging problems

Creative use of resources may concern infrastructural, economic, human and natural resources. An example in the Olsztyński subregion during the pandemic crisis may be the development of a dispersed form of hotels, i.e. the creation of a standard of rooms (on a franchise basis) located in various buildings - private houses, other facilities. Entrepreneurs emphasize that companies are increasingly converting free warehouse space into production facilities or distribution centres, which helps reduce costs and respond faster to market needs. Such actions will be part of exaptive resilience, as buildings have been used for other purposes as a result of the crisis. During the pandemic, renting summer houses in small towns to employees from large Polish cities and the development of condo hotels were also popular in order to work remotely in these facilities. This type of change in employee behavior under hybrid work can be scaled up to other peripheral regions and other future crises. It is indicated that the dispersion of other activities or investments, such as wind and solar power plants may also be a desirable direction.

A good example of unconventional use of human resources within transnational cooperation are initiatives aimed at NEETs. These people can complete internships in the field of rescue or firefighting in other countries in order to transfer knowledge and apply appropriate procedures and mechanisms in the border regions.

Unconventional use of resources can be identified with their “relocation” or organization in such a way that they contribute to greater resilience in accordance with the features of resilient complex adaptive systems (e.g. regions) (Bristow 2010; Masik, Grabkowska 2020). Such desirable features include diversification. It can refer to energy sources, new directions of export of goods and services (preferably to democratic countries), cooperation and partnerships, etc. Another feature is dispersion and it can concern small-scale production of machine components or wind and solar farms. It is also important to create economic modules with shorter supply chains, which protects the region from an unexpected asymmetric shocks. Another desirable feature is redundancy, i.e. creating stocks of essential materials and machinery in order to minimize the effects of various types of crises (so-called Black Swans), accumulating excess human resources from sectors that have lost due to the closure of borders to rescue services, medical services (strengthening the white economy), care services (strengthening the silver economy) and the defense sector. An important feature of systems supporting territorial exaptive resilience is connectivity, i.e. stronger infrastructural connections, including more frequent transport connections (e.g. air), greater links of companies, e.g. with the South Baltic region, increasing the number of institutional partnerships (strengthening institutions in an inclusive way), building soft skills. Mutuality may also be a desirable feature, i.e. strengthening associations, cooperatives and social capital in small communities, around e.g. fire departments and rescue/military services.

2.5.1.6 Assessment of future development directions and potentials, and how these can be translated into concrete strategies and action plans for enhancing the exaptive resilience of border regions

Olsztyn (as the capital of the region) has a large and at the same time untapped potential as a university city, with several prestigious courses at the University of Warmia and Mazury (e.g. veterinary medicine, geodesy, sociology, bioengineering). Better cooperation between the city and the university could strengthen this endogenous potential. At the same time, in public discussion emphasizes the issue of deglomeration, i.e. moving institutions or central offices to cities outside Warsaw, so that more attractive jobs can be created there, while at the same time allowing the retention of the best university graduates. In Olsztyn, for example, the Main Geodesy Center and Cartography could be located.

According to entrepreneurs in Olsztyn, as well as in smaller cities, it is important to invest in the development of digital and technological competences of residents in order to prepare them for work in a changing economy. In this context, the development of the information society infrastructure is important. Interviewed entrepreneurs pointed out that there is a lack of greater support in the form of large grants or well-financed business incubators to retain IT specialists in the region. Initiatives to attract specialists from outside the region are also important, as well as the creation of funds supporting small and medium-sized enterprises. The establishing of business incubators, acceleration programs and innovation funds that allow for the creation of a competitive advantage, including in particular venture capital and private equity funds, were also indicated.

Taking into account strategic approach, one can point out the importance of related industries in a given region. The predominance of internally related variety over unrelated ones shows a stronger positive effect on the flexibility of the region (Xiao, Boschma, Andersson, 2017). The presence of unrelated industries contributes to a smaller increase in unemployment in the event of an asymmetric shock, while the predominance of related industries promotes the creation of new jobs in related activities due to the flow of workers between them. These flows allow for the retention of human capital in the region and long-term development (exaptive resilience) (Masik 2019). It is also indicated that urban regions based on knowledge sectors, with a high degree of linkages between existing technologies, which at the same time do not yet have a comparative advantage, have a greater capacity to survive technological crises and are characterized by the fact that crises are less intense and shorter. These regions have a large potential to reconfigure their local technological resources and constitute their technological flexibility (Balland, Rigby, Boschma 2015).

In the presented study of the close border areas, attention is paid to the development of public transport, expenditure on public services and strengthening the sense of security (Studzńska, Żęgota 2024). Security issues can be understood in a very broad way. Actions can be taken to increase physical, infrastructural, environmental, social and economic security. Physical security may consist in creating a system of information about non-standard behaviour or suspicious persons trying to raise social anxiety. Infrastructural security in the civilian sense may include placing additional cameras and lighting in particularly sensitive places. Environmental security, in turn, may concern the construction of fortifications in places exposed to floods or creating special places to flood in the event of an invasion by foreign troops (in this meaning military security). The same repurpose can apply to forest planting – changing the main goal from CO2 absorption to defense barrier. Social security may include providing support for sensitive social groups during crisis phenomena (providing additional care and shelters). Economic security can refer to surplus of financial resources which can be repurposed to crisis management and consequently building long term exaptive resilience (buffer capacity).

In relation to EU funds, the appropriate strategy is to increase the flexibility of cohesion policy. In the regional program, due to the decrease in the investment attractiveness of border areas, subsidies for entrepreneurs should be used instead of repayable funds. Another direction could be the creation of a priority axis aimed at entrepreneurs allowing them to obtain working capital (which was used during the pandemic in some regions). Another appropriate strategy is to implement comprehensive projects covering a given area in a commune instead of individual investments.

Actions that are part of the exaptive territorial resilience strategy can be identified with resilience phases (Masik, Grabkowska 2020; Masik, Gajewski 2021) that take into account the specificity of spatial units, creating a time-space configuration of strategic actions. In the first phase, in response

to an external crisis, a given region should be resistant (persistent, withstanding pressure). Therefore, in line with engineering interpretation of resilience, in municipalities and counties located closer to the border with the aggressor, expenditures on technical infrastructure and defense sector should be increased. The next stage, i.e. absorption, should concern county or subregional centers, and may concern the absorption of refugees and migrants e.g. from Ukraine, who can fill gaps in the labor market. The adaptation phase (in line with ecological resilience; adaptation to current changes, including reactionary actions) may include the adaptation of buildings (e.g. empty schools, other vacant buildings) to new needs or purposes (for senior facilities, military purposes). Adaptability (in line with evolutionary resilience; constant changes and high capacity to enter a new development path) may concern larger cities and the capital of the region with a critical mass to enter a new development path. These centres should invest more in innovation, support the defence sector and develop logistics.

2.5.1.7 Mechanisms and obstacles for knowledge flows and information exchange, and how these can be optimized to ensure more effective coordination and coherence between top-down decision-making and bottom-up stakeholder actions

In the dimension of increasing the adaptability of institutions, it is possible to indicate in the Olsztynski subregion the creation of cooperation platforms for local enterprises, scientific institutions and non-governmental organizations in order to exchange knowledge, resources and respond to changes. It is important to strengthen cooperation between local governments, universities and the private sector in order to jointly create development strategies. It is also important to strengthen institutions monitoring and responding to geopolitical changes, which will make it easier for entrepreneurs to prepare for sudden changes and minimize losses. Some interviewees also noted that entrepreneurs in the vast majority are not able to manage big projects due to the dominance of small companies. For this reason, it is necessary to develop skills in managing large projects, including those with an international scope and to offer more personalized export advisory support. An important direction of action for the future EU budget perspective is therefore broader consultations with entrepreneurs.

In the context of cooperation between the authorities and residents, social participation is important during the building the strategy; at the initial stage, public debate, and then social consultations. In many cases, only social consultations are conducted, but at a late stage of adopting the strategy, which makes it difficult to introduce key changes to it. Information exchange mechanisms should take into account the voices of all residents in order to correctly determine development priorities not only through participation but also deliberation. Deliberation assumes the use of new tools to listen to the opinions of various parties through, for example, the Citizens' Panel, the Social Innovation Laboratory, the Public Hearing or, for example, the Internet Survey. The Citizens' Panel assumes the selection from time to time of representative groups of people in terms of gender, age and education, who will debate on topics important for a given city. The Social Innovation Laboratory assumes cyclical meetings of interested residents and experts in a given field in order to solve more detailed problems, repurpose of city's development goals and propose several solutions for the City Council or the Citizens' Panel. The Public Hearing assumes public speeches on a given topic in a specific place and time by various parties interested in a given issue. The Online Survey allows people who are less active to express their opinions on a given topic.

An obstacle to cooperation with new regions may be inadequately trained personnel, technical difficulties and high staff turnover. Therefore, financial support and knowledge transfer in the form of dedicated institutional development programmes and promotion of cooperation between local government units in Poland and with foreign partners are important. Examples of various initiatives that have gained recognition among representatives of local governments in the region include React EU, the Advisory Support Centre (CWD), Peer-Review and the activities of the Regional Development Agency. In the technical scope of applying for cross-border cooperation projects, the interviewees postulate to remove the submission of applications under Interreg programs due to greater administrative difficulties. Therefore, it is necessary to return to simple schemes dedicated to the external borders of the EU for small projects.

2.5.1.8 Exploring how different types of crises (eg, refugee issues, loss of neighbors, hybrid threats) affect the resilience of regions

Refugee crises, border closures and hybrid threats can significantly reduce the resilience of a given region. In the Olszyński subregion case study, the key issue is the sealing of the border, which has led to a decrease in the flow of people and goods, a decrease in investment and economic activity in areas close to the border, and a decrease in the level of security. These processes, the increase in hybrid attacks, and the increase in military threats have led to a decrease in the region's resilience to external turbulence.

The impact of these threats has led to the following reactions and anticipative actions being emphasized. Firstly social resilience to disinformation should be increased. In this context, the continuity of the administration and key state processes are important, including the ability to maintain the state's decision-making process during a growing crisis (a political and military one as well). Secondly, to reduce future threats, energy supply is considered as significant, e.g.: contingency plans and backup energy sources (internal/domestic and external/foreign). Thirdly, in the context of institutional resilience there is a need to raise the ability to respond to mass uncontrolled migrations, e.g.: the ability to deconflict refugee movements with the movements of armed forces. In the event of an escalation of crises, the supply of water and food will be important, e.g.: ensuring that food resources are protected from disruption and sabotage. Fourthly, within the framework of crisis management, the ability to respond to events with a large number of casualties is important, e.g. ensuring the capacity of the civilian health service system, including stocks of medical supplies. Finally, it is crucial to ensure civilian communications, e.g. ensuring the continuity of communication and telecommunications systems in crisis situations, including an adequate state of spare resources. In terms of the transport system, it is crucial to ensure the freedom of movement of armed forces (including the so-called spearhead), and IT systems resistant to disruptions supporting the functioning of the transport system of the region and state.

2.5.1.9 Examining the special challenges faced by eastern border regions (eg, towards Ukraine, Russia, Belarus) and their need for differentiated approaches and more support from mainstream cohesion programs, not just cross-border cooperation programs

A special challenge in the context of cohesion policy is to regain its original development role. Cohesion policy should be characterized by an individualized territorial approach, as before, directed by and to local governments and residents, as suggested by interviewees. It was also emphasized that the Eastern Poland Programme should have special earmarked funds for border areas and that applications-based programming should be implemented, at least for part of the programme.

In the Podkarpackie region bordering Ukraine, it was noted that, as part of the Regional Operational Programme, repayable loans are generally used for entrepreneurs. In the functional border area, subsidies for entrepreneurs (instead of loans) have been maintained, which is a favourable situation. This type of support should cover all border areas (bordering also with Russia and Belarus) due to entrepreneurs' concerns about locating investments in these areas. For example, in the Podlaskie region (bordering Belarus), it is indicated that the investment attractiveness such areas has decreased due to the use of repayable funds instead of subsidies. The importance of investments in hospitals in regions bordering the aggressor, linear investments and improving the quality of public services are also emphasised.

The challenge in large urban centres, including the capitals of regions with the eastern border of the EU, is to create favourable conditions for the development of young, talented and creative people to stop emigration to other centres, i.e. large cities of Poland or in Western Europe. A good example of such an initiative, which is worth transferring to other regions, is the development of innovation in the Podkarpackie region (bordering Ukraine). Namely, on the initiative of the European Commission in cooperation with the World Bank, financing of innovative activities was introduced to the Regional Operational Programme, within which the Podkarpackie Innovation Centre was established. Within this centre, grants are paid to scientists and students, which allowed for their development in the region and curbed the emigration of creative people.

Another challenge is to use cohesion policy funds in border areas to expand border crossings (on the border with Ukraine), as well as road and rail infrastructure. According to respondents, also environmental protection, i.e. sewage treatment plants and sewage systems, is more important than climate issues, because border areas are at an earlier stage of development than metropolitan regions or regions in Western Europe, where climate policy can be implemented more easily.

To sum up the challenges facing the regions of eastern Poland within the framework of mainstream programmes, one can indicate categories of spatial units: in border communes, the development of public services and the completion of the construction of water and sewage infrastructure and the development of road and rail infrastructure are important. In regional capitals and large cities, it is important to strengthen innovation centres and create transport hubs, which applies in particular to the Podkarpackie and Lublin regions bordering Ukraine. If we take into account NUTS2 or NUTS3 regions, their specificity in the context of having an external EU border should be taken into account and two special types of regions should be distinguished for a different type of support: those with an external EU border with Ukraine and Lithuania (increased expenditure on the development of transport connections, development of partnerships and reduction of their peripherality) and those with an external EU border with aggressors, i.e. Russia and Belarus (increased expenditure on defence, border protection and increased level of security). If we take the entire country into account as a spatial unit, it is advisable to transfer a significant part of the decisions regarding the allocation of funds to the national level in order to better coordinate regional and local initiatives, using place-based and bottom-up approaches.

Based on the conducted research, it can be concluded that there are certain patterns in the studied Polish regions with an external EU border:

- regions bordering Ukraine (Podkarpackie, Lubelskie) were characterized by large influx of refugees at the beginning of the war, currently significant migration flow to and from Ukraine; predominance of strategic approaches to develop economic and social cooperation (including cross-border), strengthening institutions, creating transport hubs, strengthening infrastructure and communication connections. In Podkarpackie there is a strong need for greater industrialization, supporting innovation based on the aviation sector;
- the region bordering Lithuania (Podlaskie) is characterized by emphasis on the development of technical infrastructure and increasing the level of security (Suwalski Pass – small area between Russia and Belarus)
- regions bordering Russia and Belarus (Warmińsko-Mazurskie, Podlaskie) is characterized by emphasis on increasing the level of security, searching for new development paths based on contacts with the South Baltic region (Warmińsko-Mazurskie) and Ukraine (Podlaskie) as well as EU funds.

Based on the research, it is also possible to indicate fundamental differences between the Warmińsko-Mazurskie region (including the Olsztyński subregion) and the other regions with an external border. In the study region compared to other bordering regions:

- natural resources are important, a large number of lakes, forest areas, clean air (Green Lungs of Poland) and developing ecosystem services (tourism services, leisure time, senior tourism, ecotourism);
- relatively small regional capital (Olsztyn; approx. 170 thousand inhabitants) compared to the capitals of other regions and lack of well-developed machine industry. Therefore, the only chance is to bounce-forward on the basis of external finances (including large amount of high-risk capital to attract investors from metropolis) and strengthening the city's innovative industries, i.e. bioengineering and IT in entrepreneurship accelerators ('island of innovations');
- as a result of having and sealing the border with Russia, observed is an increase of peripherality and potential external threat from the main aggressor. There is no international transport corridor in the region;

- observed is an increase of militarization of the region aimed at building defence barriers;
- in the near future, cross-border (transnational) cooperation is possible only with remote regions not directly bordering the region (e.g. Lithuania, Latvia, Sweden).

2.6 The case of Maramures county in Romania

2.6.1 Region's relevance to the research project

The case of Maramureş County in Romania is highly relevant to the study of territorial exaptive resilience in EU border regions. As a region that has faced multiple crises, from the collapse of traditional industries to environmental degradation and the impacts of the war in neighboring Ukraine, Maramureş offers valuable insights into how border regions can adapt and transform in the face of adversity. By examining how the region has mobilized and repurposed its tangible and intangible assets, fostered institutional and organizational adaptation, and innovated through cross-sectoral collaboration, this case study contributes to a deeper understanding of the mechanisms and strategies of exaptive resilience. Moreover, by highlighting the challenges and opportunities of cross-border cooperation in a dynamic geopolitical context, the case of Maramureş provides important lessons for EU Cohesion Policy and cross-border cooperation more broadly.

2.6.2 Overview of the border region

Maramures County is situated in the northwestern part of Romania, bordering Ukraine for 150 km to the north, with both natural (Tisa River) and land borders. The county is surrounded by Suceava County to the east, Bistrita-Nasaud, Cluj, and Salaj to the south, and Satu Mare County to the west. With an area of 6,304 km², it is the third largest county in the region and ranks 15th nationally. As of early 2021, the county's population stood at 454,000, making it the third most populous in the region. The population density of 72 people/km² is below the regional and national average, which is characteristic of mountainous areas (Consiliul Judeţean Maramureş, 2021).

Map 2.1 Location of Maramures



Strategie de Dezvoltare Maramureș 2021-2027

Geographically diverse, the county comprises 43% mountainous terrain, 30% hills and plateaus, and 27% basin-like areas. The climate is temperate continental with mountainous features, and the county boasts a rich and dense river network spanning more than 4,500 km. Administratively, Maramures is divided into 2 municipalities (Baia Mare and Sighetu Marmatiei), 11 towns, and 63 communes. Baia Mare, the county seat, is the third-largest city in the northwestern region after Cluj-Napoca and Oradea and is an important urban center with long-standing urban traditions streaming from the legacy of the mining industry which shaped societal and industrial patterns in the region for a long period of history (Consiliul Județean Maramureș, 2021).

The county's population is ethnically diverse, with 82% Romanians, 7% Hungarians, 7% Ukrainians, and 3% Roma. The religious composition is as follows: 79% Orthodox, 5% Roman Catholic, 5% Greek Catholic, and 4% Reformed (Consiliul Județean Maramureș, 2021).

Economically, Maramures County has a long tradition in agriculture, forestry, mining, and during the communist period, a strong manufacturing sector was added. However, the county's economy has undergone significant structural changes, with the almost complete disappearance of the mining industry, a reduction in the population dependent on agriculture, a strong restructuring of manufacturing, and the continuous development of the service sector. The above tendencies are due to environmental challenges, technological advancements and institutional and social developments that significantly changed the trajectory of the region (Consiliul Județean Maramureș, 2021).

According to Eurostat, in 2018, the service sector generated 60.6% of the gross value added (GVA) in the county, industry 29.9%, construction 4.8%, and agriculture only 4.7%. The most developed industrial branches are furniture and wood processing, electrical and electronic equipment, metallurgy and metal constructions, food and beverages, plastics, textiles, and clothing. Although it generates only 4.7% of the county's GVA, the agricultural and forestry sector was responsible for employing 25.6% of the county's workforce in 2020. This percentage is even higher in small towns and communes, while in the two municipalities, the primary sector is less developed, as there are more diversified employment alternatives, especially in industry and services (Consiliul Județean Maramureș, 2021). The county has significant tourism potential, with many natural and cultural heritage attractions, such as the wooden churches of Maramureș, which are part of the UNESCO World Heritage (UNESCO, Wendt et al., 2018). The region also offers opportunities for cyclotourism, which can contribute to the development of the area (Ilieș et al., 2013). However, despite this huge potential, the tourism sector provided only 2% of total jobs and generated only 1.3% of total private sector revenues in 2020, indicating that additional measures are needed to capitalize on the county's tourism potential (Consiliul Județean Maramureș, 2021).

2.6.3 Maramureș County - Strategic Vision and Objectives for 2021-2027

The strategic vision for Maramureș County is to become a thriving and sustainable region that offers a high standard of living for its residents and a favorable environment for economic development. To achieve this, the county will focus on leveraging its rich natural and cultural heritage, improving connectivity and accessibility, fostering innovation and entrepreneurship, promoting social inclusion, and ensuring environmental sustainability (Consiliul Județean Maramureș, 2021b).

The strategic plan is structured around four main objectives (Consiliul Județean Maramureș, 2021b), each with a set of specific sub-objectives and corresponding policies and programs. As the region generally struggles with the outward migration of its young population the first objective focuses on enhancing economic competitiveness and supporting the transition to a sustainable and resilient economy. This will be achieved through investments in transport infrastructure, support for research, development, and innovation, digitalization of businesses and public services, entrepreneurship promotion, and targeted support for high-potential sectors such as tourism, agri-food, and wood processing.

The second objective aims to promote social inclusion and improve access to quality public services and infrastructure. This includes measures to enhance the quality of the built environment and public spaces, reduce poverty and social exclusion through investments in education, health, and social services, and improve citizens' access to quality public utilities and services, such as water supply, sewage, waste management, and public transport.

The third objective focuses on ensuring environmental sustainability and supporting the transition to a low-carbon economy. This will be pursued through actions to protect biodiversity and promote the sustainable use of natural resources, reduce pollution and improve environmental quality, enhance resilience to climate change and natural hazards, and support the transition to a circular economy and sustainable consumption and production patterns.

Finally, the fourth objective aims to strengthen institutional capacity and foster territorial cooperation and partnerships. This includes measures to improve the capacity of local public administrations to manage sustainable development and deliver high-quality public services, as well as actions to enhance territorial, cross-border, and transnational cooperation and partnerships with relevant stakeholders, such as businesses, NGOs, and academic institutions.

To operationalize these objectives, the strategic plan outlines a series of specific policies and programs. For example, to improve connectivity and support sustainable mobility, the county will invest in road and railway infrastructure, develop intermodal transport facilities, and promote sustainable urban and rural mobility solutions. To foster innovation and entrepreneurship, the county will support the development of R&D and innovation infrastructure, promote technology transfer and commercialization, and provide training and support for entrepreneurs and start-ups.

In the social sphere, the county will invest in the modernization and expansion of educational and healthcare infrastructure, develop integrated social services, and implement targeted interventions for vulnerable groups. To promote environmental sustainability, the county will support investments in renewable energy and energy efficiency, monitor and improve air and water quality, promote waste reduction and recycling, and implement sustainable forestry and agriculture practices.

The implementation of the strategic plan will be supported by a combination of EU, national, and local funding sources, and will involve close cooperation and coordination between different levels of government, as well as partnerships with the private sector, civil society, and academic institutions. The plan also emphasizes the importance of monitoring and evaluation, to ensure the effectiveness and efficiency of the proposed measures and to allow for necessary adjustments and improvements.

Overall, Maramureş County's strategic plan for the 2021-2027 period represents a comprehensive and ambitious framework for sustainable and inclusive development. By pursuing these objectives and implementing the corresponding policies and programs, the county aims to unlock its full potential, enhance its competitiveness and attractiveness, and improve the quality of life for all its residents, while contributing to the broader goals of regional development and European cohesion.

2.6.4 The Impact of Crises on Maramureş County

Maramureş County has faced a series of crises in recent years that have significantly impacted the region's socio-economic fabric and tested its resilience. These crises have ranged from the decline of traditional industries to the COVID-19 pandemic and the ongoing war in neighboring Ukraine. Each of these challenges has brought to the fore the region's vulnerabilities, but also its inherent strengths and capacity for adaptation and transformation.

One of the most significant crises that has left a lasting mark on Maramureş is the collapse of the mining industry in the early 2000s. For decades, mining had been a key pillar of the region's economy, providing jobs and sustaining local communities. However, the sector's decline due to a combination of factors, including the depletion of resources, increased competition, and environmental concerns, led to massive layoffs and the closure of mines. This had a devastating impact on the region, leading to high unemployment, social dislocation, and a sense of hopelessness. The mining crisis also left behind a legacy of environmental degradation, with abandoned mines and contaminated sites posing long-term health and ecological risks. Heavy metal contamination of soils is associated to mining activities and has impact on plants, micro-organisms and life support functions such as immobilisation, mineralisation, nitrification (Celaya Alvarez 2021, Vasilescu et al 2012, Boros et al. 2015, Bora et al. 2023, Marcela et al. 2019, Smical – Pop-Vadean 2022). This high level of land contamination posed a huge risk of health issues that not only has effect on current generation, but for future generations to come which significantly reduced the region's attractiveness as a place where a high standard of living is sustainable.

The COVID-19 pandemic presented another major challenge for Maramureş, as it did for regions across the globe. The public health crisis and the associated lockdown measures disrupted economic activities, particularly in sectors like tourism, hospitality, and manufacturing, which are important for the region (Calina – Calina 2023). Small businesses and entrepreneurs struggled to stay afloat, while many workers faced reduced hours or lost their jobs entirely. Since the county just stepped on the path of economic and industrial reforms, this crisis had a significant impact as the new environment did not have the resilience that could withstand such a huge disruption. The pandemic also exposed the weaknesses in the region's healthcare system and the digital divide, with remote areas lacking adequate access to medical services and online education. At the same time, the crisis also accelerated the adoption of digital tools and remote working practices, forcing a rapid adaptation process.

More recently, the outbreak of war in Ukraine has once again thrust Maramureş into the spotlight, given its position as a border region. The humanitarian crisis triggered by the conflict has seen a

significant influx of Ukrainian refugees into the region, putting pressure on local authorities and communities to provide assistance and support. The county council and local NGOs have played a crucial role in managing the refugee response, from providing temporary accommodation and transportation to integrating children into schools. However, the region's limited resources and infrastructure have been strained by this sudden increase in demand. The war has also disrupted cross-border trade and cooperation, which had been an important driver of growth and development for Maramureş.

Beyond these specific crises, Maramureş also faces a set of structural challenges that have hindered its ability to build long-term resilience. These include a rapidly aging population, as young people leave the region in search of better opportunities elsewhere (Consiliul Judeţean Maramureş, 2021, leading to a hollowing out of the workforce and a loss of skills and talent. The impacts of brain drain are something that the region has to address imminently in order to achieve its development goals. Structurally there are resources, like high quality universities and the existence of rich knowledge and heritage of practices in traditional industries, however a these needs to be channeled properly into the new economic structure that the county aims to implement as part of its new strategy for a more attractive sustainable region. The region also grapples with a lack of investment in key infrastructure, such as transportation networks and digital connectivity, which limits its attractiveness for businesses and investors. Moreover, the legacy of centralized planning and the slow pace of institutional reform have sometimes hampered the region's capacity to respond quickly and effectively to new challenges and opportunities.

2.6.5 Leveraging Local Resources and Capabilities for Exaptive Resilience

The Maramureş region has demonstrated its ability to mobilize and repurpose tangible assets to address new challenges and opportunities. A prime example is the SPIRE (Smart Post-Industrial Regenerative Ecosystem) project, which tackled the issue of historical pollution and land contamination left by the collapsed mining industry. Instead of resorting to unsustainable practices like excavating and replacing polluted soil, the project utilized phytoremediation techniques, employing special plants to absorb heavy metals from the soil. As one of the interviewees mentioned, this was a reiterative process. As starting from screech, they first had to find the most effective plants for the project. Moreover the ratio of plants to territory also needed to be defined, taking into account the possibility that some plants needed to be replanted as part of the process to successfully achieve the best possible outcome of the replantation project, This innovative approach not only addresses the pollution problem but also creates a new resource in the form of biomass that can be used for green energy production. Repurposing the biomass created new resources for the community. As infrastructural changes were made on an elementary school close to the project, the building is now heated with the renewable energy that is extracted as a rather useful exaptive “byproduct” of the replantation project. It is also key to mention that the whole replantation project was carried out by residents on voluntary bases. This means that the project stakeholders successfully identified the will, the ambition and the need of the residents to create more livable places and channeled this sentiment into a project that brought back the sense of agency countering the above mentioned feeling of hopelessness in relation to the ecological environment of the residents.

Another interesting example of exapting tangible assets that emerged from the interviews is the use of the region's cultural heritage and traditional way of life for developing sustainable tourism. The rural character, remoteness, local gastronomy, handicrafts, and authentic hospitality of Maramureş, traditionally seen as disadvantages, are now being leveraged to provide livelihoods for locals and unique experiences for tourists seeking to escape consumerism and connect to their roots. Initially, tourism development was quite "wild", but recently initiatives focus on local specificity, traditions, organic food, with young people educated abroad or from the diaspora investing in these areas

In addition to tangible assets, the interviews also highlighted the region's strong capacity to harness its human and social capital to drive positive change. The SPIRE project heavily involved the local community, educating them about the importance of sustainable practices and engaging them in planting events. The project also tapped into the expertise of local universities and NGOs, creating a collaborative ecosystem. Similarly, the development of sustainable tourism builds on the knowledge, skills, traditions and hospitality of the local people. The engagement of youth has been particularly

important in both the SPIRE project and sustainable tourism initiatives, as they are open to innovation while preserving their cultural identity. This openness to change is also reflected in the community's willingness to participate in sustainable initiatives, such as the ILEU reward system, which incentivizes eco-friendly behaviors like walking and biking. While in the beginning the new digital reward system was not the most popular among the older generations the involvement of youth created a huge impact in the general involvement of the whole society in the Baia Mare region. The youth aged between 11-18 years old were willing to share their positive experiences with their companions and family members, which eventually resulted in the involvement of more senior residents' involvement in several branches of the SPIRE project. Currently the SPIRE HUB in Baia Mare - which is was an old abandoned building for years in the city center - is a vivid studio that has 3D printers and provides office places in return to the eco digital currency. Above all it provides space for other innovative projects that could be drivers of future collaborations.

The capacity for institutional and organizational adaptation was another key theme that emerged from the interviews. Local institutions and organizations in Maramureş have demonstrated adaptability in the face of changing circumstances. The county council and local authorities have been open to new ideas and have supported innovative projects like SPIRE and sustainable tourism development. They have also shown a willingness to adopt digital tools to improve their processes and services to citizens, especially in response to the challenges posed by the COVID-19 pandemic. The notion of encouragement of being involved in the local community's life was reemphasized by many interviewees. They highlighted that the involvement of local action groups had a significant role in the project's success. Moreover, one of the public servants who have been involved in the community's development for many decades, highlighted that he believed the project was successful due to the project's stakeholders' willingness to listen to and engage with the local groups. However, the extent of adaptation varies depending on factors like the age and tech-savviness of public servants.

The interviewees also pointed to the importance of cross-sectoral collaboration as a driver of innovation in the region. The SPIRE project brought together diverse stakeholders, including the municipality, universities, IT companies, and NGOs, each contributing their unique expertise. This collaborative approach not only enriched the project but also created a foundation for future cooperation. Another example is the partnerships between local companies and educational institutions to provide scholarships, workshops, and employment opportunities for students, addressing the issue of brain drain and skills mismatch. During the project it was obvious that all stakeholders could bring something to the table that benefited the project on the long term, however this cooperation was in great length possible due to the flexibility of the framework of the project. One of the individuals highlighted that their success with the SPIRE project resulted from the openness of stakeholders in deviating from the original plan. Evaluating the project from this perspective also highlights its possible long term positive impact on locals' trust towards institutions that could remarkably foster its future capabilities of the implementation of resilient practices.

2.6.6 Strengthening Cross-Border Ties and Cooperation for Exaptive Resilience

Maramureş, as a border region, faces unique challenges and opportunities. The region's relationship with Ukraine has evolved over time, from friendly cooperation during communist times to a more complex dynamic in recent years. The outbreak of war in Ukraine has heightened the region's exposure and awareness of its border status. However, it has also opened up opportunities for the region to serve as a strategic partner in Ukraine's future reconstruction efforts, as evidenced by the new cross-border bridge project.

The interviews revealed that despite challenges, Maramureş has actively leveraged its cross-border networks, especially with Ukraine, for mutual benefit. Before the war, cooperation was mainly focused on cultural and minority issues, but since the refugee crisis, Ukraine sees Maramureş as a strategic partner. The county has the second longest border with Ukraine in Romania and was one of the main receivers of Ukrainian refugees. The county council and prefecture led a working group that met weekly to organize transport, accommodation and support for refugees. Although there were initial concerns about the continuation of cross-border projects when the war broke out, the situation eventually stabilized and all projects were completed without negative impact.

This adaptability in the face of changing geopolitical realities, particularly in response to the war in Ukraine, is a testament to the region's resilience. Local authorities and communities quickly mobilized to support Ukrainian refugees, providing accommodation, transportation, and essential services. The region's experience in cross-border cooperation helped in managing this crisis. However, the war has also brought new challenges, such as the need to strengthen border security and infrastructure. The refugee crisis highlighted the inadequacy of the old Ukrainian-Romanian border bridge for handling humanitarian aid shipments. In response, the construction of a new border bridge has begun, which will be one of Romania's most modern facilities, improving connectivity with Ukraine and enabling Maramureş to participate in reconstruction efforts.

Looking ahead, there is a recognition that border regions like Maramureş need more targeted support and a differentiated approach in EU cohesion policy. The region's strategic location and experience in cross-border cooperation can be leveraged to play a more active role in Ukraine's reconstruction and in strengthening EU's external borders. Enhanced cross-border programs, with increased budgets and more flexible rules, can help the region build on its existing cooperation and tap into new opportunities for growth and resilience. The reality of war next door also brought back a great sense of insecurities and uncertainty. For future collaborations to flourish in a resilient manner, this sense of lack of agency might be the first one to be addressed. Solutions need to be provided in a way that, in the future too, highlight participation on a voluntary basis and encourage the development of skills and capabilities that could be transferred easily upon relocation.

2.6.7 Challenges and Lessons Learned for Building Exaptive Resilience

Structural and systemic barriers

One of the main structural barriers to building exaptive resilience in Maramureş is the region's risk of getting caught in the middle-income trap. As global trends like automation reshape industries, the region may face challenges in transitioning its workforce from low-income manufacturing and forestry jobs to more creative and knowledge-based roles. Addressing this will require concerted efforts to upskill the population and attract new types of investments. This could only be achieved if local as well as state authorities are involved in the institutional development of the region. Rules and regulations should be streamlined to ease cross county cooperation and projects aiming at the establishment of a resilient institutional structure. Another systemic barrier is the outward migration of talented youth to more developed regions or countries, which weakens the local knowledge base and innovation potential.

Governance and coordination gaps

While local authorities in Maramureş have been generally supportive of innovative projects, there are still gaps in governance and coordination that hinder the region's capacity for exaptive resilience. One issue is the dependence on external funding – many initiatives are not continued once the funding period ends, indicating a lack of long-term strategic planning and resource allocation. There is also a need for more integrated planning to avoid fragmentation and duplication of efforts. Strengthening the capacity of local institutions to design and implement transformative projects will be crucial. The government's involvement and oversight on local projects as an observer could be a great starting point in successfully identifying local needs and overcoming the possibility of the introduction of “one size fits all” solutions. Many interviewees highlighted that success stories are mostly streaming from the idea of letting the local communities taking the lead on projects hence they have the best understating of local realities and already existing resources. This has been well interplayed in the SPIRE project's reliance of local action groups.

Moreover, as one of the interviewees mentioned, there are cases when the need of government support is necessary to upscale local projects and initiatives. For example, in the case of the SPIRE project's initiative to incorporate the local digital currency into the national tax paying scheme, the lack of government support led to the abandonment of the idea. The original plan was to support local companies in a way that for their sustainability efforts they could earn ILEU, which they could have used to pay part of their taxes to the authorities. While this idea could have been great in promoting

the small and medium size enterprises' involvement in sustainability, the country wide taxation framework was – at this stage – not prepared to incorporate this initiative into the country's regulatory system.

Enhancing adaptive and transformative capacities

Maramureş has demonstrated adaptive capacity in responding to immediate crises, such as supporting Ukrainian refugees or adjusting to the constraints of the pandemic. However, enhancing its transformative capacity to drive long-term structural changes remains a challenge. This will require a more strategic approach to leveraging the region's unique assets, such as its natural and cultural heritage, and investing in the key enablers of transformation, such as education, research and innovation, and digital infrastructure. Fostering a culture of lifelong learning and entrepreneurship will also be critical to building the region's resilience to future shocks.

Balancing short-term coping and long-term transformation

Achieving prosperity in Maramureş will require a careful balancing of short-term coping strategies and long-term transformation efforts. While addressing urgent challenges like supporting refugees or mitigating the impacts of the pandemic is crucial, it should not come at the expense of investing in the region's long-term development priorities. This will require a multi-stakeholder approach that aligns the efforts of local authorities, businesses, academia, and civil society around a shared vision for the region's future, and mobilizes the necessary resources and commitments to drive sustained transformation. The nature of funding, as highlighted many times above, should be flexible as it has been demonstrated in the case study of Maramureş, the nature of the crises are changing, hence funding should mirror this and facilitate the quick reallocation of funding when a new type of crisis, shock come to light.

2.6.8 New Development Pathways and Challenges for Realizing Strategic Goals in Maramureş County

As outlined at the beginning of this case study, Maramureş County has set forth a series of strategic objectives for the 2021-2027 period. While these objectives provide a clear direction for the region's future development, the insights gained from interviews with local stakeholders and experts suggest some additional development pathways that could help enhance the region's resilience and sustainability.

One such pathway is the promotion of sustainable tourism based on the region's unique natural and cultural heritage. While tourism is mentioned as a high-potential sector in the first strategic objective, the interviews suggest that there is still untapped potential in developing niche forms of tourism, such as ecotourism, agrotourism, and cultural tourism. By leveraging its traditional way of life, stunning landscapes, and rich cultural traditions, Maramureş could attract visitors seeking authentic and immersive experiences, while also creating new livelihood opportunities for local communities.

The SPIRE project also demonstrates the potential for innovative solutions that can address multiple challenges simultaneously. By using phytoremediation to clean up contaminated land and then using the resulting biomass for sustainable energy production, the project showcases how environmental remediation can be coupled with the development of new value chains in the circular economy. This approach could be extended to other sectors, such as agriculture and forestry, where there are significant opportunities to valorize waste streams and create new sources of income and employment in rural areas.

The interviews also highlighted the importance of fostering cross-sectoral collaboration and innovation as a way to address complex challenges and create new opportunities. The SPIRE project is a prime example of how bringing together stakeholders from different sectors – including academia, business, and civil society – can lead to creative solutions that deliver multiple benefits. Building on

this experience, Maramureş could seek to establish more permanent platforms for cross-sectoral collaboration, such as innovation hubs, living labs, or public-private partnerships, to catalyze further innovation in areas like sustainable tourism, the circular economy, and beyond.

At the same time, realizing these new development pathways will require addressing some of the key challenges identified in the interviews. One of the most critical challenges is the need for institutional reforms to promote social inclusion and citizen participation. As a society that is transitioning into this outlined, new social environment, social inclusion has to be the key of institutional reforms. The promotion of participation on voluntary basis is also a significant aspect that contributes to the success of the above mentioned objective on the long run. This suggests that ensuring all members of society have a stake in the development process will be essential for the region's success.

Another challenge that was highlighted in the interviews is the urgent need to address environmental sustainability, particularly in light of the region's history of unsustainable mining practices. This objective being one of the most prominent ones as the region has been struggling with the high level of air pollution and land contamination due to unsustainable mining practices that once were the absolute focus of the economic development and were projected as one of the only plausible way of economic betterment. This underscores the importance of prioritizing the transition to a low-carbon economy and promoting sustainable use of natural resources.

The interviews also emphasized the need for a more integrated and coordinated approach to development planning and implementation, particularly in terms of aligning regional and national-level objectives. These partnerships need to be in tandem with not only regional, but also state level objectives as on many occasions the sustainability of the specific regional projects are dependent on state level institutional support. Moreover to guarantee that a regional project has a significant positive "spill over" effect on other regions too, state level authorities needs to develop a policy framework that enables the same playing field for cross regional cooperations and partnerships. This suggests that developing a policy framework that enables cross-regional cooperation and creates a level playing field for all actors will be crucial for the success of regional initiatives.

Finally, achieving the region's strategic objectives and realizing new development pathways will require a sustained commitment to capacity-building and institutional strengthening. This includes enhancing the technical and administrative skills of local public administrations, fostering a culture of transparency and citizen engagement, and leveraging tools like digitalization and e-governance to modernize public services.

2.6.9 Implications for EU Cohesion Policy and Cross-Border Cooperation

To fully leverage the unique potential of border regions like Maramureş, EU Cohesion Policy needs to better recognize and support their specific challenges and opportunities. This will require a more differentiated approach that goes beyond one-size-fits-all programs and takes into account the specific needs and assets of each border region. Providing more targeted funding with greater flexibility, technical assistance, and capacity building support can help these regions to fully tap into their potential for cross-border cooperation and to play a more active role in the EU's external relations and neighborhood policy.

Achieving resilience and prosperity in border regions will necessitate a shift towards more place-based and adaptive approaches in EU Cohesion Policy. This means giving regions more flexibility to design and implement strategies that are tailored to their specific territorial context and that can adapt to changing circumstances. It also implies a greater emphasis on experimentation, learning, and innovation, rather than on compliance with rigid rules and procedures. Encouraging more peer learning and exchange between border regions can help to spread good practices and foster mutual support. Local communities should be involved in the early stages of the development of innovation based projects from all parts.

Strong multi-level and multi-actor governance arrangements are crucial for effective cross-border cooperation. EU Cohesion Policy should provide incentives and support for the creation of cross-border governance structures, such as European Groupings of Territorial Cooperation (EGTCs), that can facilitate joint planning, decision-making, and implementation. It should also encourage the involvement of a wide range of stakeholders, including local authorities, businesses, universities, and civil society organizations, in the design and delivery of cross-border initiatives. Building trust and understanding between different actors across borders is key to successful cooperation. To achieve this, education and skill transfer based exchanges could be beneficial. It would not only help with the development of tangible resources, but participants could expand their social capital which is a significant driver of social resilience.

Embedding the concept and practice of exaptive resilience in EU Cohesion Policy and cross-border cooperation will require a concerted effort across different levels and sectors. This means mainstreaming resilience considerations into all stages of the policy cycle, from planning and programming to implementation, monitoring, and evaluation. It also implies fostering a culture of resilience among all actors involved, by raising awareness, building capacities, and providing the right incentives and support. Establishing a clear framework for assessing and measuring resilience can help to track progress and identify areas for improvement.

2.6.10 Conclusion

The case study of Maramureş offers valuable insights about the exaptive resilience of EU border regions. The region has demonstrated a strong capacity to mobilize and repurpose its tangible and intangible assets, to foster institutional and organizational adaptation, and to innovate through cross-sectoral collaboration. It has also actively leveraged its cross-border networks and adapted to changing geopolitical realities, while envisioning a future of enhanced cooperation and joint development. However, the region also faces structural and systemic barriers, governance and coordination gaps, and the challenge of balancing short-term coping with long-term transformation. The findings from this case study contribute to the academic and policy debates on regional resilience and cross-border cooperation in several ways. First, they highlight the importance of a differentiated and place-based approach to fostering resilience, one that takes into account the specific challenges and opportunities of border regions. Second, they underscore the need for a more adaptive and transformative approach to resilience-building, beyond mere short-term coping and recovery. Third, they emphasize the critical role of multi-level and multi-actor governance arrangements in driving effective cross-border cooperation and resilience. Finally, they provide concrete examples and lessons learned that can inform the design and implementation of future policies and initiatives.

Looking ahead, the case of Maramureş offers both inspiration and caution for the future of EU Cohesion Policy and cross-border cooperation. On the one hand, it demonstrates the untapped potential of border regions to drive innovative and transformative change, when given the right support and incentives. On the other hand, it also highlights the persistent challenges and barriers that need to be overcome, from structural inequalities and brain drain to governance fragmentation and short-termism. Moving forward, a key priority will be to mainstream the concept and practice of exaptive resilience into all aspects of EU Cohesion Policy and cross-border cooperation, by providing a clear framework, adequate resources, and tailored support to border regions. This will require a concerted effort from all actors involved, from the EU institutions and national governments to regional and local authorities, businesses, universities, and civil society organizations.

2.7 The case of Vilnius county in Lithuania

2.7.1 Overview of the border region

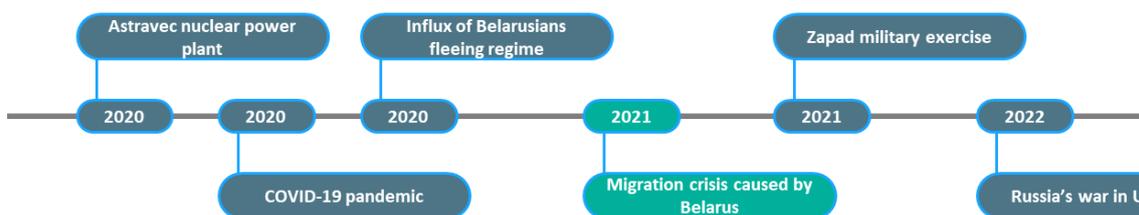
Vilnius County is a region in southeastern Lithuania, which shares a border with Belarus. Vilnius county has the longest EU external border (678,82 km) with Belarus among the three Lithuanian

NUTS-3 regions that share a border with Belarus.¹ It is classified as both a NUTS-2 and NUTS-3 region. The county comprises of eight municipalities or local self-governments, including Vilnius city municipality (capital city).²

The county is home to almost a third of Lithuania's population, with around 20% specifically residing in Vilnius city municipality. It is also the most prosperous region in Lithuania, accounting for almost half of the country's GDP. Even though being the most economically developed county, and being able to use institutional and economic resources located in the capital city Vilnius, the County is characterised by strong economic development disparities between Vilnius and the remaining municipalities in the county, which also applies to regional situation in Lithuania in general. Another characteristic of the county is its diversity in terms of ethnic composition, especially in terms of Polish ethnic minorities living in the region.

The County (and the whole country) faced big challenges in dealing with several crises of global, national or regional scale: opening of Belarusian Astravec nuclear power plant in 2020 just 40 kilometres away from Vilnius (and 20 km from the border); following the fraudulent presidential elections in August 2020 in Belarus and the persecution of the opposition, there has been an influx of people fleeing the Belarusian regime and seeking asylum in Lithuania; COVID pandemic that started in 2021; Russian-Belarusian exercise Zapad-2021, which left the Russian military contingent in the lead-up to its large-scale invasion of Ukraine, including from Belarusian territory; Russia's war in Ukraine in 2022, which led to almost 100 thousand Ukrainian refugees in Lithuania³.

Figure 2.1
Key crisis events in Lithuania



Source: Compiled by the author. Visual template from presentationgo.com

The focus of this case study, though, is on **the irregular migration caused by Belarus**, which started in summer 2021 (and is still ongoing). Lithuania, together with Latvia and Poland, started experiencing an unrepresented influx of coordinated groups of immigrants from Belarus- first such migration crisis in the country's history, with 4000 unauthorized entries reported in 2021. This phenomenon represented a fundamentally new challenge for Lithuania in managing such flow of migrants and ensuring the security of its external borders. Responding to the hybrid crisis demanded rapid efforts from Lithuania, alongside responsible institutions and organisations from other countries, to promptly and effectively adopt necessary legal, infrastructural, and capacity-building measures, secure additional funding, and foster cooperation across various aspects.

Relevance to the research project

¹ Other counties bordering Belarus are Utena and Alytus.

² Three municipalities - Švenčionys district, Vilnius district and Šalčininkai district - out of eight municipalities have the direct border with Belarus.

³ <https://osp.stat.gov.lt/ukraine-dashboards>

The Lithuanian case, focusing on a region bordering Belarus, adds another important dimension to the overall analysis presented within this project. As Belarus has been implicated in the weaponization of migration and other hybrid threats, this case can illuminate how border regions can adapt to complex geopolitical pressures. Examining the institutional and policy responses to these challenges can generate valuable lessons for enhancing the preparedness and resilience of border regions across the EU. The current analysis focus on the regional exaptive resilience, but having in mind the size of the country and its governance arrangements, and the importance and the scope of the crisis event, it also covers country level.

Key research questions

This case study aims to examine how Vilnius county, but also the entire region across the border with Belarus and the whole country, has demonstrated exaptive resilience in responding to the migration crisis by repurposing existing resources and leveraging its cross-border ties and multicultural heritage to effectively manage it. By analysing the specific exaptive practices employed in the region and at national level, the study seeks to extract transferable lessons and best practices for strengthening the resilience of EU border regions facing similar challenges.

2.7.2 Understanding the migration crisis from Belarus

The migration crisis that began in summer 2021 marked a turning point for Lithuania, particularly due to the strategic instrumentalisation⁴ of migration by the Belarusian regime. This approach to migration, although not a new phenomenon (Rasche, 2022), emerged as a deliberate tactic, used by Belarus to destabilise the region, mostly in response to the fourth package of EU sanctions over enduring repressions and the forced landing of a Ryanair flight.⁵ Unlike traditional migration flows, this situation involved the active facilitation of irregular migration through Belarus, for example, issuing tourist visas to Belarus directly at the Minsk airport and in such a way creating a gateway to the EU (Adams, 2021), targeting Lithuania and other bordering states, including Latvia and Poland, with further ripple effects anticipated for Estonia, Finland, Norway, and even Western Europe and Scandinavia through secondary migration.

The influx of migrants occurred at an unprecedented scale. Initial national and regional plans and infrastructure were not equipped to manage with thousands of people arriving in a short span. In July 2021 alone, Lithuanian authorities apprehended 2892 foreign nationals, with over 1100 arrivals recorded within a single week (from July 26 to August 1). From January 2021 to October 2024, 4661 irregular migrants were registered.⁶ In comparison, in 2020 there were 81, in 2019 – 46, in 2018 – 104 irregular migrants.⁷ From 3 August 2021, when the State Border Guard Service (VSAT) officers were given the right to turn away irregular migrants trying to cross the border from Belarus in unauthorised places, 8106 persons were refused entry to Lithuania until 31 December 2021. In total, since the beginning of the migration crisis, Lithuanian border guards have prevented 22821 entries to the country.⁸ Migrant flows were recorded along the entire border stretch (see **Error! Reference source not found.** below).

⁴ A situation where a third country instigates irregular migratory flows into the Union by actively encouraging or facilitating the movement of third-country nationals to the external borders, onto or from within its territory and then onwards to those external borders, where such actions are indicative of an intention of a third country to destabilise the Union or a Member State, where the nature of such actions is liable to put at risk essential State functions, including its territorial integrity, the maintenance of law and order or the safeguard of its national security. <https://eur-lex.europa.eu/legal-content/EN/TXT/PDF/?uri=CELEX:52021PC0890>

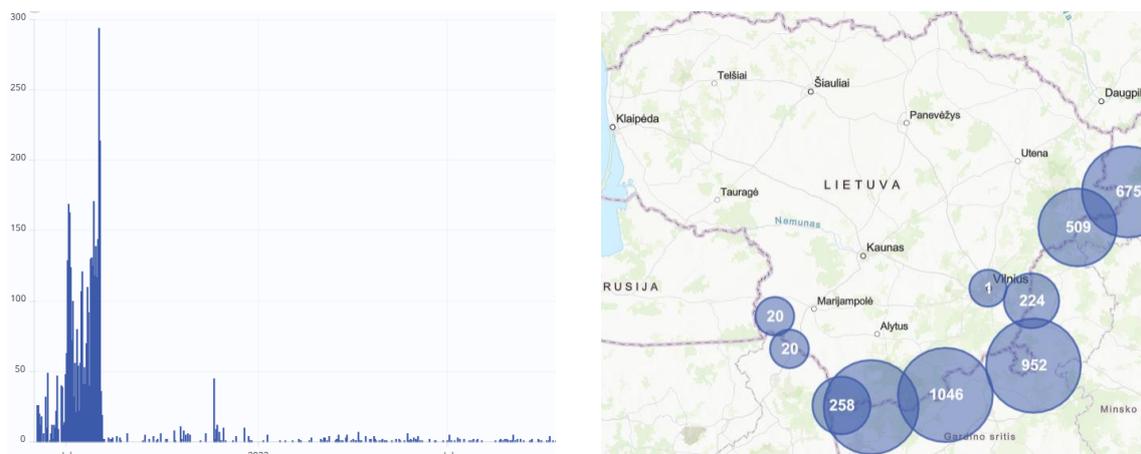
⁵ <https://www.consilium.europa.eu/en/policies/sanctions-against-belarus/belarus-timeline/>

⁶ <https://osp.stat.gov.lt/neteiseta-migracija-dashboard>

⁷ A.Bilotaitė: we will not allow an i migration route through Lithuania: <https://www.15min.lt/naujiena/aktualu/lietuva/a-bilotaite-butina-telkti-maksimalias-pajegas-nelegalios-migracijos-suvaldymui-56-1525736>

⁸ By the cut of date of 04 11 2024. <https://vsat.lrv.lt/lt/naujienos/neileistu-neteisetu-migrantu-statistika/>

Figure 2.2
Registered irregular migrants



Note: from 2021-01-01 to 04-11-2024 Source: <https://osp.stat.gov.lt/neteiseta-migracija-dashboard>

The crisis compelled Lithuania to reconsider its migration policies and external response strategies, leading to intensified legislative processes both domestically and at the EU level. This, in turn, prompted broader discussions with other EU member states on handling such hybrid threats⁹ collaboratively.

Table 2.1
Timeline of the key events unfolding during the first year of the crisis

Date	Event
beginning of June 2021	Due to the increase of irregular migration Lithuania’s Border Guard Service reinforced controls on the border with Belarus and mobilised the Public Security Service and volunteer forces (mostly consisting of members of the Riflemen’s Union) to assist border guards.
June 2021	The first tent camp to accommodate the increased number of irregular migrants at Lithuania’s Foreigners’ Centre in Pabradė came into use.
July 2021	Responding to the rapid increase of irregular migrants the Government of the Republic of Lithuania declared an ‘extraordinary situation’.
July 2021	The Parliament of the Republic of Lithuania adopted the resolution stating that countries hostile towards Lithuania were waging hybrid aggression against the Republic of Lithuania and portraying the irregular migrants as tools in ‘hybrid aggression’ against Lithuanian sovereignty
July 2021	New amendments of the Law on the Legal Status of Aliens introduced: a) legalisation of de facto detention of asylum seekers having entered the country undocumented in an extraordinary situation (or state of war or emergency or an extraordinary event due to a mass influx of foreigners); b) a new practice of accelerated examination of all asylum applications; c) an administrative appeal stage against asylum decisions.
August 2021	The order of the Minister of the Interior after which collective expulsions of irregular migrants started to be implemented in practice.

⁹ Hybrid threats refer to when, state or non-state, actors seek to exploit the vulnerabilities of the EU to their own advantage by using in a coordinated way a mixture of measures (i.e. diplomatic, military, economic, technological) while remaining below the threshold of formal warfare. https://defence-industry-space.ec.europa.eu/eu-defence-industry/hybrid-threats_en

Date	Event
August 2021	Following the new amendments of the Law on Legal Status of Aliens, the specific places where an application for asylum may be lodged in an extraordinary situation (or state of war or emergency, or an extraordinary event due to a mass influx of foreigners) were identified.
September 2021	Irregular migrants temporarily accommodated during the summertime in tents, premises provided by municipalities and the units of the State Border Guard Service started to be transferred into six long-term migrant accommodation centres in Kybartai, Medininkai, Vilnius (Naujininkai), Jieznas, Pabradė and Rukla.
September 2021	The construction company Tetas, owned by the energy group Epso-G, started building the 111-kilometre-long fence - physical barrier along the 502 km of the border
October 2021	In view of deteriorating weather conditions and potential risks to migrants' health, the Ministry of the Interior of the Republic of Lithuania made the decision to distribute humanitarian aid packages to migrants that were being pushed back.
November 2021	Declaration of the state of emergency at the state border of the Republic of Lithuania with the Republic of Belarus within the entire border zone at the Lithuania-Belarus border, and five kilometres extending from the border zone deep into the country, also in the locations of and 200 metres around the migrant accommodation facilities in Pabradė, Medininkai, Kybartai, Rukla, and Naujininkai urban district in Vilnius. The state of emergency allowed the use of preventive actions and mental coercion in order to ensure a person's non-admission into the country's territory, and the use of physical violence and other special measures if a person presents a threat to life or health of the officers.
December 2021	Extension of the state of emergency until 15 January 2022.
December 2021	New amendments to the Law on Legal Status of Aliens, foreseeing that when asylum applications of the irregular migrants are rejected or irregular migrants themselves fail to apply for asylum and the authorities are unable to expel them from Lithuania during the initial detention period, their right to free movement may be restricted for another six months.

Source: COMPARATIVE REPORT ON THE INFLUX OF IRREGULAR MIGRANTS ACROSS THE BORDER OF BELARUS: THE RESPONSE BY THE GOVERNMENTS OF LITHUANIA AND LATVIA, 2022

The mixed nature of the migrant groups complicated the crisis response. The incoming migrants included asylum seekers, economic migrants, individuals and families seeking medical services that are unavailable in their home countries (especially families seeking medical services for children), and others attempting to reunite with relatives within the EU. There was some diversification and taking into account the situation of migrants (for example, providing better living facilities and care for women with children). However, despite these varied backgrounds, Lithuania adopted a firm approach, seeking to prevent uncontrolled migrant flows into the EU to demonstrate its commitment to EU partners and avoid burdening other European states with unregulated migration. The deterrence and the push-back tactic was employed by Lithuanian (but also Latvian and Polish) government. Various resilience-building measures were taken by Lithuanian authorities (Mészáros and Ţoca, 2023) declaration of state of emergency; requesting help from Frontex and other EU institutions; introduction of new legislation; increasing the protection of the border, including by building physical barriers; actions to counter the disinformation spread by Belarusian authorities to convince potential migrants of using this migration pathway; establishing temporary housing in facilities owned by municipalities and in facilities of the border posts.

Table 2.2
Various actions in response to the crisis

Level	Actions
International actions	<ul style="list-style-type: none"> - Deploying Frontex officers - EU sanctions¹⁰ - European Union Agency for Asylum (previously known as European Asylum Support Office) assistance - Bilateral cooperation and help received from other countries
State actions	<p>Reinforcing border protection:</p> <ul style="list-style-type: none"> - State of emergency - Constructing border barriers - Strengthening border patrols - Restricting border area access - Installing surveillance systems - Revisions of legislation - Law on the Legal Status of Foreigners of the Republic of Lithuania and the Law on the State Border and the Guard thereof were supplemented <p>Dealing with irregular migration flows</p> <ul style="list-style-type: none"> - Migrant pushbacks - Detaining migrants - Restricting migrant rights <p>Calls for international actions</p>
Public actions	<p>Diplomatic protest</p> <p>Protests by Belarusians in Lithuania</p> <p>Protests against limited border access</p> <p>Protests against the housing of migrants¹¹</p> <p>Civilian border patrols</p>

Source: (Bakker, 2022)(Seniutienė, 2023), own elaboration

Efforts to manage this crisis centred on restricting migrants' transit into Europe, but ultimately, Lithuania became a "transit courtyard" as migrants who were let in continued to pursue routes further

¹⁰ <https://www.consilium.europa.eu/en/policies/sanctions-against-belarus/belarus-timeline/>

¹¹ Jurčenkaitė (2021) Protest against migrant evictions in Dieveniškės: premises are being prepared: <https://www.15min.lt/naujiena/aktualu/lietuva/dieveniskese-protestas-pries-migrantu-atkeldinima-patalpos-jau-ruosiamos-56-1538596>

westward. Lithuanian authorities faced the challenge of balancing humanitarian obligations with security concerns, particularly as they recognised that hundreds of migrants could not be safely repatriated to their countries of origin. In the beginning of 2022 there were around 3400 irregular migrants in Lithuania, and by October 2022, there were only around 500 left in the country, with the majority migrating to other EU member states.

2.7.3 Understanding exaptive resilience in the regional context - leveraging local resources and capabilities

2.7.3.1 3.1. Repurposing facilities and infrastructure

Overall situation

The 2021 migration crisis necessitated an immediate response from Lithuanian authorities to accommodate a sudden influx of migrants. Before the crisis, Lithuania had only limited facilities, such as the Foreigners Registration Centre in Pabradė, managed by VSAT, and the Refugee Reception Centre in Rukla operating under the Ministry of Social Security and Labour. In response, the state and municipal authorities expanded these existing centres and established additional sites across municipalities, further exemplifying territorial exaptive resilience as regional resources were pooled to handle the pressures of the crisis.

This urgency led to the swift identification and repurposing of various facilities, including previously unused or underutilised buildings, to serve as temporary accommodation centres. Around 1400 migrants were housed in temporary accommodation in 16 border crossing points managed by VSAT and 9 facilities provided by municipalities. New temporary foreigners registration centres were established on an emergency basis, such as Kybartai foreigners registration centre (KURC), established in a converted correctional facility, and Medininkai foreigners registration centre (MURC), established at a border guard school. Tent and modular camping sites were established. A large temporary camp for migrants was set up in Medininkai on the grounds of the Border Guard School. Temporary container homes were constructed in Rukla. Persons who were initially accommodated in tents, premises provided by municipalities and the units of the State Border Guard Service were gradually transferred into six long-term migrant accommodation centres in Kybartai, Medininkai, Vilnius (Naujininkai), Jieznas, Pabradė and Rukla. Naujininkai Refugee Reception Centre in Vilnius was established in the repurposed temporary housing facilities for homeless people.¹² Vulnerable irregular migrants (such as families with children, people with disabilities) are being accommodated here, also providing them with various medical and social services. Also, it is in the city centre, thus facilitating integration into communities.

As the crisis deepened, the scarcity of suitable facilities became evident, with multiple establishments declining requests to house migrants due to the high security needs and the risk of unauthorised departures, which required specifically customised facilities, and not every public building possessed by municipalities or central government could serve this purpose.

The crisis and the need to establish or repurpose existing infrastructure exposed gaps in coordination with non-governmental organisations (NGOs), which could have better contributed expertise in managing temporary accommodations and camp settings. For instance, in locations like Kybartai and Medininkai, the absence of NGOs in the initial planning stages was noted as a missed opportunity to improve the accommodation process. The involvement of NGOs might have improved living conditions and facilitated a more humane response, reflecting an area where exaptive resilience could be further strengthened through partnerships.

¹² <https://socmin.lrv.lt/lt/naujienos/pabegeliu-priemimo-centre-naujininkuose-apyvendenami-pirmieji-migrantai/>

Input from the regions

As border municipalities absorbed the initial influx of migrants, their efforts exemplified territorial exaptive resilience, but with challenges. They repurposed community facilities, including schools and sports halls, and allocated municipal resources for food distribution, medical care, and transportation. Municipalities primarily contributed by securing and managing temporary housing, a responsibility that took on an unexpected significance. However, their capacity to do this was pretty limited. 684 migrants (out of around 4000) were accommodated in premises provided by municipalities: in Ignalina District (186 persons), Šalčininkai District (30 persons), Varėna District (149 persons), Alytus District (167 persons), Alytus city (71 persons), and Lazdijai District (81 persons).¹³ Some interviewees mentioned that in certain instances, it could be felt that local governments viewed this role through a financial lens, expressing concerns about whether the central government will compensate their costs, illustrating the structural issue of limited financial resources and dependence on central government allocations.

These efforts were instrumental in managing the crisis at its onset, underscoring the resilience of local governance structures. However, interview data reveals mixed findings and attitude towards the willingness of municipalities to allocate their own resources¹⁴, not only because their overall limited capacity (Jacauskas, 2021) and resistance from communities. In many cases, political dynamics at the municipal level influenced the degree of engagement in the crisis response. Some municipalities resisted the directive approach from central authorities, expressing frustration over decisions made without consultation. Political alignment between local and central government also somewhat impacted collaboration, with some opposition-led municipalities displaying reluctance to fully support crisis measures, perceiving them as imposed from above.

For more information, also see section on challenges and lessons learnt related to lack of infrastructure and human resources.

2.7.3.2 Mobilizing human resources and skills and taking on new functions

2.7.3.3 **The migration crisis resulted in rapid adaptation across its public institutions by them also taking the new roles and functions needed to respond to and manage the crisis. Most of the institutions involved had to take up new functions and reallocate resources. Below are just a few examples.**

The State Border Guard Service (VSAT) took primary responsibility in crisis management, focusing on strengthening border security with Belarus. This involved deploying additional personnel and resources, and collaborating with various national bodies, including the police, military, and international organisations like Frontex and Europol. Being at the forefront of the crisis, VSAT also had to carry out functions that were not inherent to its role as a law enforcement agency. It had to take care of the need to expand the housing facilities, provide basic medical services (including COVID-19 related measures), social services and psychological support, and legal assistance. Because of these additional tasks, the institution faced a substantial increase in workload. This burden necessitated a partial reallocation of personnel, who shifted from standard functions of border protection to, for example, organising the logistical aspects of medical service provision.

The Ministry of the Interior (VRM) coordinated emergency operations at the national level. Designated by the government as the operational lead, the Ministry was tasked with coordination of rapidly addressing security challenges at the border, organising migrant registration, and coordinating

¹³ VRM: all migrants evicted from premises provided by municipalities: <https://vrm.lrv.lt/lt/naujienos/vrm-is-savivaldybiu-suteiktu-patalpu-iskelti-visi-migrantai/>

¹⁴ Šalčininkai District opposes accommodation of migrants in Dievieniškės, but the Ministry assures that the premises there are suitable and will be used: <https://www.lrt.lt/naujienos/lietuvoje/2/1452273/salcininku-rajonas-priesinasi-migrantu-apygyvendinimui-dievieniskese-bet-ministerija-tikina-ten-esancios-patalpos-yra-tinkamos-ir-jas-naudos>

return processes. It worked closely with national and local partners, as well as the European Union organisations and international partners to ensure visibility for the crisis, aiming to mobilise broader support and highlight the issue on both national and international platforms. The Ministry also adapted by managing crisis elements that typically lay outside its jurisdiction, such as coordinating health and social services. This included drafting, negotiating, and implementing legal measures that intersected with healthcare and social welfare—sectors not traditionally within the Ministry’s responsibilities. The Ministry of Internal Affairs’ Medical Centre extended its services beyond its typical scope, reallocating part of its capacity to conduct COVID-19 testing and medical services for migrants.

Another example is the Lithuanian Ministry of Foreign Affairs (URM), which assumed a particularly proactive role, engaging its diplomatic resources in new functions to address migration-related challenges.¹⁵ The Ministry initiated a working group that mobilised Lithuania’s foreign representatives to establish contact with migrants’ countries of origin, facilitating the process of identification, documentation, and eventual repatriation. This expanded diplomatic engagement marked a significant shift from the URM’s traditional roles, showcasing a dynamic approach where foreign embassies served as key operational assets for internal security. Some interviewees very positively assessed the proactiveness of URM and its valuable input to trying to solve the crisis through its active mobilisation of diplomatic corpus. A total of 679 persons voluntarily returned to their countries of origin in 2022 (Lietuvos Migracijų Departamentas, 2022).

At regional level, local administrative offices, including social support departments, experienced functional shifts as their staff took on tasks outside their usual remit. Personnel who traditionally focused on community welfare shifted to manage facilities, organise bed allocations, and calculate resource needs for migrant support. Some municipal workers, originally tasked with maintenance of public spaces, were reassigned to roles in food distribution for migrants. This repurposing of human resources exemplifies organisational resilience, as municipalities adapted their workforce to ensure critical services were maintained despite limited staff and resources.

2.7.3.4 Leveraging civil society networks and expertise

Various NGOs played a crucial role during the migration crisis. However, this model proved challenging, as state institutions, especially those under the Ministry of Interior, were initially unprepared and inexperienced to work closely with civil society organisations in this capacity. It relates to the structural long-standing problem that civil society organisations are not always seen by institutions as professional partners, qualified to support institutions. The crisis, however, catalysed a shift in institutions’ understanding of the value of integrating non-governmental organisations into crisis management frameworks.

During the crisis, NGOs not only were the human rights watchdogs, but also filled significant gaps in government capacity, particularly in ensuring hygiene and other essential services for migrants. The crisis also required the NGOs to innovate themselves and adapted their way of functioning. They established a coordinated response mechanism among various NGOs as a crucial adaption to their usual way of functioning. Recognising that the capacities of individual organisations were insufficient, the NGOs initiated an Operational Centre within the Lithuanian Red Cross and coordinated actions across multiple NGOs. This collaborative structure was a novel reaction within Lithuania’s migration management landscape, where past experiences involved managing significantly smaller numbers of migrants. Another example implemented by the Lithuanian Red Cross was the introduction of mobile team formats for provision of humanitarian and social support, a new approach to an existing activity. Traditionally, mobile responses had been limited to one or two staff members per operation;

¹⁵ Lithuania and Kurdistan discuss closer cooperation on the return of irregular migrants: <https://www.urm.lt/naujienos/141/lietuva-ir-kurdistanas-tariasi-del-glaudesnio-bendradarbiavimo-sprendziant-neteiseitai-siena-kirtusiu-migrantu-grazinimo-klausima:24701>

however, the crisis necessitated a more robust and coordinated mobile presence, prompting the deployment of multi-staff teams for on-the-ground crisis management.

2.7.4 Status of cross-border ties and cooperation for exaptive resilience - adapting to changing geopolitical realities

The migration crisis created a complex situation for Lithuania's cross-border relationships, leading to stronger alliances with certain EU neighbours and institutions, while simultaneously cutting the ties of cross-border cooperation with Belarus.

Cooperation with Belarus

Prior to the crisis, Lithuania and its regions maintained cross-border cooperation with Belarus, both in terms of border security and wider socio-economic cooperation. This was especially the case for the border regions and communities living on both sides of the border.

Vilnius county (as well as most of the eastern side of Lithuania across the border with Belarus), is characterised by diversity in terms of its ethnic composition. Polish ethnic minority takes 76% of total population in Šalčininkai district municipality, 47% in Vilnius district municipality, 27% in Trakai district municipality, 24% in Švenčionys district municipality. The largest share of Russian ethnic minority of total population lives in Visaginas (47%), Zarasai district (17%), Švenčionys district (12%) municipalities.¹⁶ The ethnic composition and proximity to the border with Belarus is also largely related to the language use - the largest share of population who identify Russian as their mother tongue is in South-Eastern Lithuania, along the border with Belarus. Having these features of the region in mind, communities living across the eastern border of Lithuania have close ties with Belarus, also connected through family ties.

Disrupted cooperation in ensuring border security

The migration crisis severely disrupted Lithuania's cooperation with Belarus on border security, effectively halting previously established frameworks for collaboration. Before the crisis, Lithuania and Belarus had maintained structured cross-border interactions based on bilateral agreements that included regular meetings, joint investigations of border incidents, and coordinated inspections and maintenance of border markers. This cooperation involved border authorities at both central and regional levels, facilitating a coordinated approach to maintaining security along the shared border. However, as the Belarusian regime began instrumentalising migration as a tool of geopolitical pressure, and supported the Russia's war in Ukraine, these cooperative efforts ceased. The Lithuanian government responded by cutting off most forms of collaboration with Belarus. It also included closing some of the border inspection posts with Belarus, making it harder to travel across the border.¹⁷

Disrupted economic ties of the border regions

This cessation also affected the local economy in border regions, as the suspension of logistical exchanges limited access to goods and resources that communities in these areas previously obtained from Belarus (for example, cheaper food and fuel). Also, the border regions previously benefited economically from the transport sector and transport flow through Belarus-Lithuanian border, which decreased because of the disrupted relations. In addition, the closure of some border inspection posts and strengthened supervision of goods transported through the border (because of the need to enforce the EU sanctions) resulted in freight transport queues at the border with Belarus, especially in

¹⁶ <https://tmde.lrv.lt/lt/tautiniu-mazumu-kulturos-centrai-ir-tautines-bendrijos/statistika/>

¹⁷ Lavoriškės and Raigardas Border Inspection Posts (BIPs) will be closed from 1 March: <https://vsat.lrv.lt/lt/naujienos/nuokovo-1-d-uzdaromi-lavoriskiu-ir-raigardo-pasienio-kontroles-punktai/>

Šalčininkai district.¹⁸ Local residents are complaining of worsening traffic, deteriorating road surfaces, blocked entrances to yards and running lorry engines that prevent them from sleeping at night (Pugačiauskaitė, 2024).

Disrupted cultural ties

The migration crisis deeply disrupted the cultural ties of communities living along the Lithuanian-Belarusian border, severing longstanding connections that had been established through regular cross-border interactions. Before the crisis, residents on both sides frequently visited one another for family gatherings, community events, and shared celebrations. However, with heightened border security and travel restrictions, these once-routine interactions became increasingly difficult, isolating families and neighbours who had long maintained close personal and cultural bonds.

Additionally, the isolation raised concerns about the accessibility of communication services like phone and television. It was always a longstanding issue of the local communities somewhat living and being affected by the Belarussian/Russian cultural influence, for example, through the proximity to their radio and television broadcasts, and the lack of alternative to it. It could be thus seen as both, the disruption, but also as opportunity highlighting the need to enhance information resilience in these regions. These restrictions of movement and broadcasts of Belarussian media were aimed to manage e.g. recruitment risks by Belarussian state authorities and propaganda spread.

Cancelled cooperation of cross-border regions supported by Interreg

The disrupted ties also affect the cross-border cooperation funded by EU instruments, more specifically, Interreg. During the 2014-2020 MFF, the Latvia-Lithuania-Belarus European Neighbourhood Instrument Cross-Border Cooperation program supported cooperation between these countries and regions. The goal of the Programme was to strengthen relations, raise capacities and share experience among people and organisations from Latvia, Lithuania and Belarus through the implementation of joint actions aimed at increasing the overall quality of life in the border regions.¹⁹ Those programmes were an important investment source for the regions involved, also the communities of those regions. The supported projects also included actions aiming to strengthen the border protection and related infrastructure.²⁰ However, due to Russia's war in Ukraine, where Belarus supported the Russian side, the EU halted collaboration with Belarus and only continued implementation of projects on the EU side of the border. In this context, the earmarked allocations for the entire programming period until 2027 for programmes with the Russian Federation and Belarus were no longer being approved and should have been redistributed to other existing Interreg programmes.²¹

Reinforced cooperation with the EU partners

Conversely, the crisis fostered stronger ties between Lithuania and Poland, and other EU partners, with ongoing collaborative efforts on border security measures. This enhanced cooperation focused on securing the EU's external border by implementing consistent border security standards and practices, with joint problem-solving, coordination, and information sharing at the core. In response to the crisis, Lithuania's State Border Guard Service (VSAT) intensified its security measures by mobilising additional support from local institutions such as the police, military, customs, and environmental protection agencies, as well as through collaboration with border security forces from neighbouring EU countries. In February 2022, an Operational Taskforce Flow (FLOW) was created, coordinated by Europol. It includes Lithuania and other cooperating countries - Estonia, Finland, Latvia, Poland and Germany, aiming to support Lithuanian border authorities to counter irregular migration

¹⁸ Truck queues at the border with Belarus continue to grow: <https://www.vz.lt/transportas-logistika/2024/06/10/vilkikueiles-pasienyje-su-baltarusija-nemazeja>

¹⁹ <https://interreg.eu/programme/eni-cbc-latvia-lithuania-belarus/>

²⁰ For example, Modernization of Urbany-Silene Border Crossing Point (Latvia - Belarus), project number ENI-LLB-0-246.

²¹ Commission Decision (EU) 2023/1635

flows and monitor criminal activities (Lietuvos Migracijos Departamentas, 2022).²² Frontex, the EU's border and coast guard agency, also ramped up its operations along Lithuania's border, providing personnel, technical assistance, and operational expertise to manage the heightened migration pressures.²³ Additionally, the European Union Agency for Asylum (previously known as European Asylum Support Office) assisted with the establishment of registration centres, reinforced screening processes for incoming migrants, and other technical expertise.²⁴

While the central government and its institutions have benefited by strengthening cooperation with other partners, the regions bordering Belarus face a different reality. Due to their geographic location, they just cannot not establish new cross-border partnerships, leaving them unable to replace the suspended cooperation with Belarus.

2.7.5 Challenges and lessons learnt for building exaptive resilience

The 2021 migration crisis at the Lithuanian border with Belarus exposed several significant challenges for Lithuanian institutions, both at regional and national level. Following these challenges, some valuable lessons were learnt, and changes are being implemented.

2.7.5.1 Overall preparedness for such crisis

While Lithuania had frameworks and plans in place to handle migration influxes, and the working process of handling the regular migration flows and integration of asylum seekers, these were insufficient for the scale and speed of the 2021 crisis. For example, state emergency-related documents already in 2006 have identified the risk of “mass influx of aliens into the territory of Lithuania, when the state border of the Republic of Lithuania is crossed at unidentified places, at unidentified times or in an unidentified manner”.²⁵ However, these crisis-preparedness plans were largely theoretical. The lack of early response to warning signs could be mentioned, as some experts had signalled the beginning of the crisis at the beginning of the 2021. The challenges were also compounded by the unpreparedness of migration system itself - the migration and asylum system was overall a relatively underdeveloped policy field for Lithuania, it was poorly coordinated, lacking involvement from local governments and regions. There were long-lasting and deepening structural problems, such as overall limited capacity of the regions in terms of their financial and human resources, continuous optimisation of social security and health systems, and the overall lack of communication and cooperation with municipalities. These challenges are further elaborated in the sections below.

2.7.5.2 Structural and systemic challenges

The overall need to balance between security and human rights

The weaponisation of migration and its treatment as a hybrid attack from Belarus resulted in Lithuania taking strict actions. The positioning of migration as a national security threat shaped the response, reflecting a deterrence-based approach influenced by external security concerns. In the first months of the crisis, the push-back strategy was enacted as a key response mechanism to prevent

²² Helped by Europol, Lithuanian border guards detain suspected migrant traffickers: <https://www.lrt.lt/en/news-in-english/19/1840253/helped-by-europol-lithuanian-border-guards-detain-suspected-migrant-traffickers>; 21 people arrested in the fight against migrant smuggling across the EU-Russia border <https://vsat.lrv.lt/lt/vsat/empact/suimtas-21-asmuo-kovojant-su-neteisetu-migrantu-gabenimu-per-es-ir-rusijos-siena/>

²³ Deputy Minister A. Abramavičius: Frontex officers will continue their mission at the Lithuanian border: <https://vrm.lrv.lt/lt/naujienos/viceministras-a-abramavicius-frontex-pareigunai-tes-misija-lietuvos-pasienyje/>

²⁴ <https://migracija.lrv.lt/lt/naujienos/susipazinkite-europos-sajungos-prieglobscio-agentura/>

²⁵ Lietuvos Respublikos Vyriausybė, Nutarimas Dėl LIETUVOS RESPUBLIKOS VYRIAUSYBĖS 2006 M. KOVO 9 D. NUTARIMO NR. 241 „DĖL EKSTREMALIŲJŲ ĮVYKIŲ KRITERIJŲ ŠARAŠO PATVIRTINIMO“ PAKEITIMO, 2015 m. spalio 14 d., Nr. 1063 Vilnius

the escalation of the crisis, despite potential ethical and legal controversies. The approach was justified by the sudden crisis and lack of preparedness within the system to handle it.

A variety of complex measures were implemented, significantly reducing migrant flows. However, this raised serious concerns about aligning actions with human rights. When it comes to those migrants who were accepted to Lithuanian territory, the authorities, in practice, were detaining those migrants and were restricting their rights, and faced challenges in ensuring their basic needs and living conditions. Migrants often faced long waiting periods before receiving legal assistance, which was criticised as inconsistent with democratic values. Some stakeholders noted that migrants were sometimes left in prolonged uncertainty about their legal status. Lithuanian Constitutional Court ruled that certain provisions of the Law on the Legal Status of Aliens, which mandated the accommodation of asylum seekers in designated facilities without granting them the right to free movement within Lithuania, were unconstitutional. The Court determined that these measures, which could last up to six months, violated the Constitution by imposing restrictions without individual assessments or judicial oversight (Jaruševičiūtė-Mockuvienė, 2023; Bakaitė, 2023). Many monitoring reports²⁶ and opinions were issued by international and local NGOs indicating the violations of human rights. NGOs were also (and still are) using strategic litigation against the state, aiming to impact the migration system overall and the actions taken when handling the crisis.

Lack of migration and integration strategy and involvement of municipalities

Lithuania does not have much experience in the field of migration from third countries - this policy became relevant only after Lithuania joined the European Union (Leveckytė & Junevičius, 2014). The policy of integration of foreigners in Lithuania is an even more novel policy issue: the first strategic document (the Lithuanian Migration Policy Guidelines) was adopted in 2014 with the aim of implementing the integration of foreigners, followed by the Action Plans for the Integration of Foreigners into Society for 2015-2017 and 2018-2021.²⁷ The novelty of the policy also results in the lack of human resources and knowledge in public sector about the migration and integration of migrants, the gaps that are, to some extent, being filled by NGOs.

Migration policy has become particularly significant in recent years due to a substantial increase in immigration flows stemming from economic migrants and refugees from Belarus fleeing the regime, and other third countries; huge number of Ukrainian refugees. The crisis revealed the lack of comprehensive migration policy and how to deal with large scope of various types of migrants (legal, illegal, economic, refugees, etc). Prior to 2021, the organisational set-up for the reception of asylum seekers, consisting of different agencies, was not expected to function as a unified system, nor there were clear strategic objectives (MRU ekspertų grupė, 2022). During the crisis, there was a lack of inter-agency cooperation and coordination between different agencies, as well as a lack of involvement of and coordination with local self-governments/municipalities (Valstybės kontrolė, 2023). The lack of strategic vision and policy direction resulted in delayed responses and inconsistent treatment of migrants.

After 2021, a more systemic approach and a network of cooperation with the characteristics of a system have emerged in the crisis response (MRU ekspertų grupė, 2022), with the specific example of the establishment of Reception and Integration Agency (see sections below). However, in terms of the overall migration and integration policy, the strategic approach and direction is still lacking.

²⁶ VšĮ Žmogaus teisių stebėjimo institutas, 2023 analitinė studija: migrantų ir prieglobsčio prašytojų situacija Lietuvoje. <https://hrmi.lt/wp-content/uploads/2023/11/Analitine-studija-MPP-09.11.2023.pdf> // <https://redcross.lt/wp-content/uploads/2022/09/LRC-Monitoring-Report-2022.pdf>

²⁷ VšĮ Žmogaus teisių stebėjimo institutas, 2023 analitinė studija: migrantų ir prieglobsčio prašytojų situacija Lietuvoje. <https://hrmi.lt/wp-content/uploads/2023/11/Analitine-studija-MPP-09.11.2023.pdf> // <https://redcross.lt/wp-content/uploads/2022/09/LRC-Monitoring-Report-2022.pdf>

2.7.5.3 Limited capacity of the regions

The migration crisis had a profound impact on Lithuanian regions bordering Belarus, with consequences felt along the entire 678.82-kilometre boundary shared with the country. Border regions were the first to experience the direct influx of migrants, leading to unique challenges. Almost all accommodation centres set up by the state or temporary accommodation provided were in the territory of the border region. In the initial phase of the crisis, local municipalities in these areas were required to allocate designated spaces for migrant accommodation, which placed immediate strain on their limited resources.

Structural challenges

Border regions in Lithuania, but also other Lithuanian regions, have historically been characterised by economic disparities, as, for example, compared to larger cities, low population density and an aging demographic. These areas already faced workforce shortages and limited access to essential services, which were further exacerbated by the migration crisis and the lingering effects of the COVID-19 pandemic. During the pandemic, residents in these peripheral areas faced increased difficulty in accessing services and employment, partly due to travel restrictions and limited digital literacy compared to urban populations. The migration crisis intensified these pre-existing issues, and limited the capacity of municipalities to contribute their own resources to solving the migration crisis. In addition, the continuous optimisation of health care and education systems, access to services in the regions, and concentration of these in larger cities, which the border region with Belarus are lacking, made it difficult for municipalities to free up resources for the migration crisis.

Resistance from communities

The close proximity of the border and the locations where asylum seekers and refugees are housed, combined with disinformation campaigns (Lithuanian Armed Forces, Strategic Communications Department, 2023) (such as the false claim that a residential container town capable of accommodating up to 40,000 irregular migrants is planned in the Švenčionys district (Danauskienė, 2021)), and a general unfamiliarity with the cultures of these migrants²⁸, have significantly affected the public's perception of security. There was an underlying narrative that migrants represented a potential threat, which further heightened community resistance. Some stakeholders noted a prevailing belief that migrants were “not supposed to stay” in Lithuania, contributing to a lack of long-term planning for their integration or accommodation.

During the migration crisis, Lithuanian communities exhibited varying degrees of resistance to accommodating migrants in their regions. Municipalities were not deeply involved in addressing these challenges, leaving much of the effort to NGOs and community leaders. Significant work was done directly with local communities, especially in areas where migrant centers were established. For example, NGOs played a crucial role by participating in community meetings and attempting to shift public attitudes. They provided statistics highlighting the number of children and mothers among the migrants to humanize them and counter negative narratives.

As discussed during the interviews, active protests and resistance from local communities were linked to whether the communities were already familiar with the different cultures. More limited resistance was observed in Pabradė – the region where the Foreigners Registration Center is functioning for a long time already and the members of the local community are used to living alongside foreigners, or are working in the center themselves. However, in some cases, agreements with communities could not be reached, complicating and restricting the accommodation process due to limited resources and lack of experience. The resistance, sometimes materialising into active protests,

²⁸ The majority of migrants came from Iraq, but also Congo, Syria, Cameroon, Afghanistan, Iran, etc.

was also linked to somewhat lacking communication from national level authorities, and lack of involvement and leadership of regional governments in decision-making process, especially when it comes to accommodation of migrants. Representatives of central government were visiting the affected regions, trying to establish communication and calm down the local communities, however, these actions were often reactive.

2.7.5.4 Lack of available infrastructure

While routine operations in the migration system, housing of migrants, and their integration prior the crisis ran smoothly, the sharp increase in migrant numbers quickly overwhelmed the available facilities. Before the crisis, Lithuania had only two main centres for migrant accommodation. The government had to establish additional facilities in municipalities and expand the capacities of existing ones. The border regions, where many of these centres were located, lacked the infrastructure to accommodate large numbers of people. With limited resources, temporary accommodation had to be organised in buildings not designed for this purpose, such as schools and administrative facilities. By reallocating central and local government buildings, such as schools and administrative spaces, Lithuania demonstrated a capability for quick adaptation. However, these spaces often fell short of providing adequate living conditions, even of minimal standards, revealing limitations in the infrastructure's ability to support large-scale, prolonged accommodation. In many cases, facilities repurposed for migrant accommodation were not designed for residential use and thus lacked basic amenities. Makeshift solutions, such as tents and portable structures, were common at border control points and other temporary locations, which were ill-suited to the needs of migrants, especially during the rainy months or with colder weather approaching.

Some specific actions were already taken to expand the availability of infrastructure for housing the migrants. Foreigners Registration Centre was modernised using the financial support from European Neighbourhood Instrument, and can now accommodate 685 foreigners (State Border Guard Service of the Republic of Lithuania, 2023).

Interviewed stakeholders also emphasised the need for a contingency plan, including maintaining a stock of available facilities and resources that could be mobilised quickly in case of similar events. This foresight could mitigate logistical issues and ensure a more coordinated response to future migration challenges. Some actions towards securing the stock of housing for such crisis events are already being implemented. The Ministry of Social Security and Labour, already when they were preparing for the Ukrainian refugee flows, concluded agreements with 22 municipalities to make their unused schools available. This agreement with municipalities is still active and is part of the strategy for establishing multi-purpose facilities: municipalities would use those facilities for social housing, but in case of crisis, such facilities would be also used for accommodating the migrants.

2.7.5.5 Governance and coordination gaps

Overall crisis management

The migration crisis revealed that at that time, the existing structures and systems were not sufficient to coordinate the crisis. For this reason, an inter-institutional coordination approach was employed to coordinate the crisis. Following the government's declaration of a national emergency, the Minister of the Interior was appointed as the as Head of Emergency Operations and coordinated the overall inter-institutional approach towards the crisis. At the border security level, the inter-agency Joint Situation Centre was created within VSAT, with officers from the Fire and Rescue Department, the police, the Public Security Service, Lithuanian Armed Forces, etc. joining.

In order to ensure that the crisis management system covers everything from threat and risk monitoring to prevention and response,²⁹ Crisis Management Centre was created under the Chancellery of the Government. This reform aimed to tackle the ineffective emergency preparedness and management mechanism, and insufficient coordination, roles and responsibilities among the actors in the field of civil protection.³⁰ While the previous crisis management system relied on the Fire and Rescue Department under the Ministry of the Interior, the new system is uplifted to the very top of the government, being under the Chancellery of the Government, and indicates the move towards network-based coordination approach (Nakrošis, 2024).

Furthermore, there appeared to be a disconnect between political leaders and migration experts, with policymakers often perceived as disregarding expert recommendations. Moreover, the crisis highlighted interagency communication issues, for example, between the Migration Department and the State Border Guard Service. Miscommunication and blame-shifting were common, with each institution attributing registration delays and operational failures to the other. This lack of accountability created significant gaps in responsibility and hindered effective crisis management.

Coordination of migration policy

The lack of coordination and clear share of responsibilities was also observed in the coordination system of migration policy, including the limited involvement of municipalities in this policy area. It was especially felt in terms of provisions of housing and social services. Such situation is somewhat encoded in the organisational structure and share of responsibilities between the VSAT and Migration Department under the Ministry of Interior and Ministry of Social Security and Labor. VSAT is responsible for the immigrants who have illegally crossed the Lithuanian border, including their detention, temporary accommodation, investigating their identity and the circumstances of their arrival in Lithuania, and organising their return to their countries of origin. Migration department is responsible for processing asylum claims and issuing residence permits. Refugee reception centre, operating under the Ministry of Social Security and Labour, is responsible for allocating social support, temporary accommodation and integration services for those granted asylum, as well as those third-country nationals who are vulnerable and require special reception conditions. Given the mix of various types of migrants during the migration crisis, it amplified the lack of coordination and share of responsibilities, often also resulting in different treatment of migrants depending on where they were accommodated. This fragmented approach underscored a need for greater centralisation in decision-making and uniformity across centres. Without a cohesive strategy or standardised procedures, each location faced unique challenges, exacerbating disparities in migrant experiences and further complicating efforts to manage the crisis effectively.

In response to unclear share of roles and responsibilities in terms of migrant housing and integration, Refugee Reception Centre is being transformed into a new agency, Reception and Integration Agency, aiming to streamline services such as accommodation, social, education and health services, legal support under a single structure, reflecting the need for a coordinated model.³¹ The Agency should become operational from January 2025. This agency was envisioned to address the challenges of fragmented governance by centralising reception-related responsibilities that were previously divided among different Ministries and institutions operating under them. However, some complexities may arise in dividing the security-related functions between the Agency and the State Border Guard Service officers. Some asylum seekers living in the Foreigners' Registration Centre in Pabradė have limited freedom of movement as an alternative to full-scale detention. The new Agency will become responsible for their accommodation, but will lack authority and infrastructure to manage the

²⁹ <https://www.infolex.lt/ta/72773:str9>

³⁰ AIŠKINAMASIS RAŠTAS DĖL LIETUVOS RESPUBLIKOS CIVILINĖS SAUGOS ĮSTATYMO NR. VIII-971 PAKEITIMO ĮSTATYMO IR SUSIJUSIŲ KITŲ ĮSTATYMŲ PAKEITIMO ĮSTATYMŲ PROJEKTŲ

³¹ LIETUVOS RESPUBLIKOS SOCIALINĖS APSAUGOS IR DARBO MINISTRAS. ĮSAKYMAS DĖL PRIĖMIMO IR INTEGRACIJOS AGENTŪROS NUOSTATŲ patvirtinimo, 2024 m. rugsėjo 17 d. Nr. A1-614, Vilnius

risk of fleeing. To address this issue, further agreement on mutual security protocols will be needed between the State Guard Service and the Agency.

Central and regional level coordination gaps

The crisis revealed a notable challenge in the coordination between central government agencies and local authorities. The central government often adopted a top-down approach, making unilateral decisions without sufficiently consulting local governments. However, the interviews revealed that municipalities are seeing positive changes through closer involvement in more discussions with municipalities, especially in the area of civil security.

As part of the civil protection system reform, at municipality level, preparedness officers are being established in each municipality and will be directly responsible for the implementation of the tasks of the crisis management and civil protection system.³² Additionally, there are plans to establish Foreigners Affairs Coordinators positions within municipalities to foster a greater sense of ownership in matters related to the integration of foreigners, housing issues, and similar areas.

2.7.5.6 Information provision and IT systems

Data collection posed another challenge, particularly given that many migrants lacked identification documents. Migrants' names and other identifying information were recorded based on verbal communication, requiring unique identification systems. The Migration Department developed individual codes (LTU codes) for each registered migrant and integrated them across multiple databases to ensure consistency in service delivery. Some interviewees very critically assessed how the registration of migrants was handled, indicating that the whole registration system collapsed and in some cases it was not clear how many migrants there were in the reception centres or camps. Both the Migration Department and VSAT struggled with delays in migrant registration, fingerprinting, and overall management.

At the onset of the crisis, migrant registration was conducted on paper. The Migration Information System's (MIGRIS) asylum module only became operational in August 2021. This delayed the processing and tracking of migrants, and the transition from paper to digital systems posed significant challenges. This digital system transformed all foreign nationals' cases into electronic formats, streamlining legal processes related to their status. Additionally, the Statistics Department (now the State Data Agency) enhanced the VDVIS system with a "Data Lake" module, which improved information sharing and provided diverse statistical insights. with integrations, and improvements were made to the Border Guard's (VSAT) PIKS system.

2.7.6 Implications for EU Cohesion Policy and cross-border cooperation

The experience of Lithuania during the migration crisis showcased the importance of the EU support in addressing the challenges posed by the crisis and improving the resilience of country and its regions. It included both, the support provided by various EU institutions and agencies, as well as the financial support provided by EU funds. Asylum, Migration and Integration Fund (AMIF) provided almost €45 million in EU funding to Lithuania for covering the costs incurred for the accommodation of migrants, security, food, education, reception and detention facilities, asylum procedures and other necessary services. In December 2021, the EC allocated almost €15 million from the Internal Security Fund (ISF) to Lithuania to urgently reinforce the EU's external border with Belarus: modernisation of helicopters, unmanned aerial vehicles (UAVs), night-vision, fingerprint scanning equipment, etc. The Ministry of the Interior, as the managing authority of the Border Management and Visa Instrument (BMVI) programme, is implementing the BMVI projects launched during the migration

³² <https://www.lrt.lt/naujienos/lietuvoje/2/1927413/vrm-kiekvienoje-savivaldybeje-siomet-atsiras-parengties-pareigunai-atsakingi-uz-kriziu-valdyma> // <https://vrm.lrv.lt/lt/naujienos/parengties-pareigunai-stiprins-civiline-sauga-savivaldybese/>

crisis to upgrade border surveillance systems and to secure the border with Belarus and Russia, for a total of €56.7 million in EU funds.

When it comes to more long-term resilience building, rather than more reactive measures and programmes available, some interviewees noted that Cohesion Policy is crucial in terms of building resilience of the regions through convergence. Quite some challenges that materialised during the migration crisis relate to the overall limited capacity and development gaps of the regions. Thus, ESIF should continue investing in social infrastructure and human capital. Overall strengthening the migration, social support and health systems, especially at regional level and border regions, is needed so that there is available resources and capacity to free up when the crisis emerge. For example, investments in availability of mobile groups providing social and health services in the regions, launched in 2014-2020 and continuing during MFF 2021-2027, have significantly increased the diversity of social services and providers, making the sector more decentralised and therefore more resilient.

When supporting the development of infrastructure, ESIF should focus on supporting establishing multi-purpose infrastructure, which could be easily transformed to serve other than direct purpose in case of crisis.

ESIF funds should continue to focus on long-term objectives, however, they also need to be able to take into account the changing situation and changing policy priorities as a consequence of various crisis. To respond to the emerging crisis, the ESIF should be made more flexible, include some reserved funding that could be redistributed depending on the changed priorities of the member states, or similar, because setting up dedicated response instruments only at the time when the crisis is already there requires a lot of time. And the reaction time is a key to be able to tackle various crisis, especially as national budgets may be limited at a given time.

The discontinuation of the Neighbourhood Programmes with Russia and Belarus has deprived Lithuania's border regions (adjacent to these countries) of a significant part of their resources for development. In the context of EU countries. In this context, the programming of the new Financial Perspective should pay particular attention to the border regions bordering the aggressor countries.

An additional investment stream should focus on capacity building through the exchange of best practices and peer-to-peer learning among EU Member States and regions, specifically targeting regional authorities. This initiative could encompass a range of topics, including civil safety, crisis preparedness and management, and the integration of refugees and migrants overall. Some interviewees also emphasized the importance of supporting research to help Member States draw lessons from the crisis.

The migration crisis highlighted the critical role of a robust civil society sector and active NGOs. Consequently, investment in civil society organisations is essential, especially given the limited national and regional funding available in Lithuania. While national-level NGOs manage securing project-based resources from various programs, enhanced support for grassroots, regional, and local NGOs is crucial to ensure their effective contribution to crisis management.

The Lithuanian case also demonstrates the importance of reform support instruments, such as the current Technical Support Instrument, in advancing migration-related policy reforms and system strengthening by clarifying the roles of various actors within the migration system. Further investment in this area is essential to build a coherent migration system with clearly defined roles and responsibilities, including active involvement of municipalities and their defined role in the migration system.

The migration crisis demonstrated that disinformation has fuelled local resistance to accommodating irregular migrants. This underscores the importance of supporting efforts to counter disinformation, particularly in border regions that remain within the Russian cultural sphere and often lack alternative information sources.

When it comes to place-based approach, some interviewees mentioned that as regards resilience in the context of crises, the integrated territorial development method of Community-Led-Local Development (CLLD), which directly contributes to the mobilisation of civil society, as well as to the joint action of NGOs, the private sector and municipalities, was particularly important. It is the capacity of partners from different sectors to work together that has been one of the critical factors in the management of at least some of the recent crises, including the COVID pandemic, the Belarusian hybrid attacks, and the consequences of the Russian war against Ukraine. As some interviewees mentioned, regions themselves still lack freedom over where ESIF funds are spent in their region, including resilience-building measures.

2.7.7 Conclusions

Lithuania's response to the 2021 migration crisis from Belarus highlights a multifaceted approach to managing unprecedented irregular migration flows strategically exploited by the Belarusian regime. The case illustrates how the central and local authorities had to implement various actions in an unprecedented speed, successfully ensuring the security of the country, however, balancing security-driven responses with some humanitarian concessions, such as providing better care for vulnerable groups. Border regions became focal points for policy enforcement, where emergency measures—such as the state of emergency, pushbacks, and restrictions on movement—were implemented most intensely. Most of the housing facilities were established in the border regions, with municipalities also contributing with their resources.

The case shows how country and border regions can demonstrate exaptive resilience in the face of complex and unexpected challenges through effective mobilisation and repurposing of resources. The existing dedicated infrastructure, such as Foreigners Registration Centre or Refugee Reception Centre, could not handle a rapid influx of more than 4000 irregular migrants. Thus, central government and border regions were integral in rapidly repurposing and converting existing infrastructure—such as unused buildings, schools, housing for homeless people, correctional facilities—into temporary housing centres for migrants. However, interview data reveals mixed findings and attitude towards the willingness of municipalities to allocate their own resources, not only because their overall limited capacity and resistance from communities. In many cases, political dynamics and political leadership at the municipal level influenced the degree of engagement in the crisis response.

The migration crisis resulted in rapid adaptation across its public institutions by them also taking the new roles and functions needed to respond to and manage the crisis, which is another example of exaptive resilience identified in this case study. For example, at regional level, local administrative offices, including social support departments, shifted to manage facilities, organise bed allocations, and calculate resource needs for migrant support, food distribution for migrants. This repurposing of human resources exemplifies organisational resilience, as municipalities adapted their workforce to ensure critical services were maintained despite limited staff and resources.

Finally, the exaptive resilience was demonstrated through leveraging civil society networks. Various NGOs played a crucial role during the migration crisis. However, this model proved challenging, as state institutions, especially those under the Ministry of Interior, were initially unprepared and inexperienced to work closely with civil society organisations in this capacity. The crisis, however, catalysed a shift in institutions' understanding of the value of integrating non-governmental organisations into crisis management frameworks. The crisis also required the NGOs to innovate themselves and adapt their way of functioning. NGOs established a coordinated response mechanism among various NGOs, as well as employed a new ways of providing humanitarian support, such as introduction of mobile team formats for provision of humanitarian and social support.

One of the outcomes of the migration crisis redefined Lithuania's cross-border dynamics. Previously, Lithuanian border regions benefited from cross-border cooperation with Belarus, which supported economic activities, cultural exchange, and social cohesion, particularly within ethnically diverse communities near the border. The crisis, however, halted these established interactions. Cooperation on border security ceased, while the disruption of economic exchanges hurt local economies reliant

on trade and transit with Belarus. Cultural connections also suffered, isolating communities and limiting access to shared cultural experiences. Simultaneously, Lithuania deepened cooperation with EU partners on border security and crisis management. Institutions like Frontex and Europol bolstered Lithuanian efforts with resources and expertise, facilitating cross-border security operations and joint problem-solving. However, while the central government benefited from these expanded alliances, the border regions face challenges in replacing the socio-economic and cultural ties lost with Belarus.

Materialisation of exaptive resilience to a larger extent was strained by various challenges at different levels. At national level, unpreparedness of migration system itself was an important factor- the migration and asylum system was overall a relatively underdeveloped policy field for Lithuania, it was poorly coordinated, lacking involvement from local governments and regions. At regional level, there are long-lasting and deepening structural problems, such as overall limited capacity of the regions in terms of their financial and human resources, continuous optimisation of social security and health systems, and the overall lack of communication and cooperation with municipalities. At community/individual level, local communities, even though from multi-cultural backgrounds, experienced insecurity because of unfamiliarity with the cultures of irregular migrants, some disinformation campaigns and lacking political leadership and communication.

The 2021 migration crisis at Lithuania's border with Belarus underscored critical areas for improvement in preparedness, coordination, and infrastructure resilience across Lithuania's public institutions, with such actions already taking place. In order to ensure that the crisis management system covers everything from threat and risk monitoring to prevention and response, Crisis Management Centre was created under the Chancellery of the Government. Positive changes have emerged through civil protection reforms to improve local-level integration efforts. For example, preparedness officers are being established in each municipality and will be directly responsible for the implementation of the tasks of the crisis management and civil protection system. After 2021, a more systemic approach and a network of cooperation with the characteristics of a system have emerged in terms of migration system, with the specific example of the establishment of Reception and Integration Agency, which is a step towards centralising migrant services and clearer share of responsibilities. In order to better prepare contingency actions when it comes to migrant accommodation, the existing facilities were and still are being modernised and expanded, including agreements with municipalities to establish a network of their unused facilities that could be then used during such crisis events. Additionally, there are plans to establish Foreigners Affairs Coordinators positions within municipalities to foster a greater sense of ownership in matters related to the integration of foreigners, housing issues, and similar areas.

2.8 The Case of Szabolcs – Szatmár – Bereg county in Hungary

2.8.1 Introduction

Szabolcs-Szatmár-Bereg County, situated in northeastern Hungary and bordering Ukraine, has been at the forefront of the humanitarian response to the refugee crisis triggered by the war in February 2022. The region's proximity to the conflict zone and its well-established cross-border ties have made it a focal point for the influx of Ukrainian refugees. As a border region, Szabolcs-Szatmár-Bereg County has long faced challenges related to its peripheral location, such as limited economic opportunities and outmigration of young people (Szabolcs-Szatmár-Bereg Megye 2021, Kósáné et al. 2020, KSH 2023). However, its border status has also endowed it with unique resources and connections, such as a rich history of cross-cultural exchange (Szabolcs-Szatmár-Bereg Megye 2021) and an infrastructure for cross-border cooperation, which have proven crucial in enabling the region to respond effectively to the sudden influx of refugees.

The outbreak of the war in Ukraine in February 2022 triggered a massive refugee crisis, with hundreds of thousands of people fleeing the conflict and seeking safety in neighboring countries, including Hungary (IOM 2024). As the main entry point for refugees arriving from Ukraine, Szabolcs-Szatmár-Bereg County experienced a sudden and overwhelming influx of people in need of immediate assistance. Already, more than a hundred thousand people have crossed the Hungarian-Ukrainian border, placing a significant strain on local resources and infrastructure. The region has had to quickly adapt to the new reality, with local authorities, NGOs, and volunteers working tirelessly to provide refugees with essential services such as shelter, food, medical care, and psychosocial support.

This case study aims to examine how Szabolcs-Szatmár-Bereg County has demonstrated exaptive resilience in responding to the refugee crisis by repurposing existing resources and leveraging its cross-border ties and multicultural heritage to effectively assist refugees. By analyzing the specific exaptive practices employed in the region, the study seeks to extract transferable lessons and best practices for strengthening the resilience of EU border regions facing similar challenges.

2.8.2 Understanding Exaptive Resilience in the Regional Context - Leveraging Local Resources and Capabilities

2.8.2.1 Repurposing Facilities and Infrastructure

One of the most striking examples of exaptive resilience in Szabolcs-Szatmár-Bereg County has been the creative repurposing of existing facilities and resources to meet the urgent needs of refugees. As the influx of displaced persons from Ukraine increased rapidly, local authorities and civil society organizations quickly realized that conventional reception centers and shelters would be overwhelmed. In response, they began to identify and convert various public and private spaces into temporary accommodation and support hubs for refugees.

The Beregsurány community house, for instance, was swiftly transformed from a cultural center into a short-term accommodation facility, offering food, shelter, and assistance with administrative procedures to hundreds of refugees. The Charity Service of the Order of Malta set up a help point in the castle park of Beregsurány, using containers to provide a safe haven for refugees. Similarly, in Záhony, empty and underutilized buildings and containers were converted into temporary shelters and warming centers for refugees. These examples demonstrate the rapid and flexible adaptation to changing circumstances, leveraging existing assets to expand reception capacity.

Moreover, hotels and pensions in the county offered their vacant rooms to accommodate refugees in need. This creative solution not only provided much-needed shelter but also allowed businesses to utilize their unused capacity during the crisis. The repurposing of existing infrastructure allowed the county to significantly expand its reception capacity without having to wait for the construction of new dedicated facilities, demonstrating the adaptability and resourcefulness of local communities in the face of crisis.

2.8.2.2 Mobilizing Human Resources and Skills

Alongside physical infrastructure, Szabolcs-Szatmár-Bereg County's human resources have proven invaluable in mounting an effective response to the refugee crisis. The region's diverse population and multicultural heritage (Szabolcs-Szatmár-Bereg Megye 2021), particularly the presence of ethnic Hungarians from Transcarpathia, have emerged as key assets in communicating with and assisting refugees.

Many locals with roots or family ties across the border have volunteered as interpreters and mediators, drawing on their language skills and cultural competencies to facilitate refugees' access to services and information. These "bridge-builders" have played a vital role in creating a welcoming environment for refugees, fostering understanding and solidarity between refugees and host communities. Their contributions highlight the importance of recognizing and mobilizing the diverse skills and

experiences that exist within border regions. Furthermore, the county's residents have shown extraordinary hospitality towards the refugees. Many locals, driven by personal connections and a sense of solidarity, have gone above and beyond to assist refugees, offering accommodation, meals, and childcare. The mobilization of these informal support networks has been crucial in providing refugees with a sense of belonging and inclusion.

2.8.2.3 Leveraging Civil Society Networks and Expertise

Local civil society organizations (CSOs) and faith-based groups, such as the Charity Service of the Order of Malta, the Reformed Church, and the Greek Catholic Church, have been at the forefront of the humanitarian response in Szabolcs-Szatmár-Bereg County. These organizations quickly mobilized their extensive networks of volunteers, donors, and partners to support the relief efforts.

The Charity Service of the Order of Malta, for instance, played a central role in coordinating assistance in Beregsurány, working closely with the local municipality. Their nationwide network allowed them to bring in volunteers from all over the country, with up to 40 people working simultaneously to provide round-the-clock care for refugees. Similarly, in Záhony, the Hungarian Reformed Church Aid was a key partner for the local government in managing the crisis, providing essential supplies and coordinating volunteer efforts. These examples demonstrate the power of civil society networks in mobilizing resources and expertise to respond to crises.

Moreover, CSOs have brought valuable knowledge and experience in providing care, counseling, and integration support to vulnerable populations. They have been able to rapidly adjust their programs and services to meet the evolving needs of refugees, filling gaps and complementing the efforts of local authorities. Many CSOs have organized language courses, cultural orientation sessions, and job training programs to support refugees' long-term integration, in addition to providing immediate humanitarian assistance.

The interviews also highlight the role of civil society networks in driving cross-border cooperation and adaptation. While formal channels of collaboration have been strained by the crisis, CSOs have emerged as key facilitators of solidarity, advocacy, and information exchange across the border. Transcarpathian Hungarians themselves have actively participated in relief efforts, with many crossing the border to volunteer. This "crisis solidarity" has not only strengthened civil society capacities but also laid the groundwork for future cooperation beyond the immediate humanitarian response.

However, the interviews also reveal the limitations of relying solely on volunteer-based aid. As the crisis has prolonged, many volunteers have experienced physical and mental exhaustion, forcing them to scale back their involvement. This underscores the need for more professionalized, sustainable solutions in the long run, with adequate state funding and capacity-building support for CSOs.

2.8.2.4 Innovating Through Cross-Sectoral Collaboration

Szabolcs-Szatmár-Bereg County's response to the refugee crisis has been characterized by the emergence of innovative collaborations across sectors and domains. Local actors from government, civil society, faith-based organizations, and the private sector have come together to pool their resources, share knowledge, and coordinate their actions in creative ways.

For instance, the Charity Service of the Order of Malta worked closely with the local municipality in Beregsurány to set up and operate the refugee help point. This collaboration allowed for a more efficient and coordinated response, leveraging the strengths of both the public and non-profit sectors. Similarly, in Záhony, the Hungarian Reformed Church Aid played a crucial role in supporting the local government's efforts to assist refugees. The organization provided essential supplies, such as food and hygiene products, and helped to coordinate the work of volunteers. The county's municipalities also cooperated with local businesses to secure the necessary supplies and equipment for refugee reception, such as mattresses and blankets.

In addition, private companies such as Flixbus (Dadashli 2023) offered their transportation capacities to help move refugees to other parts of the country, which was later complemented by the vehicles of the disaster management agency. This public-private partnership approach enabled a more rapid and flexible response to the evolving needs of refugees, while also supporting the local economy and fostering social cohesion.

Another notable example of cross-sectoral collaboration is the engagement of Roma organizations from Hungary in assisting Roma refugees from Transcarpathia. Drawing on their cultural and linguistic competencies, these organizations provided tailored support to some of the most vulnerable refugee groups, fostering solidarity and trust across the border. However, this targeted assistance also sparked tensions with local disadvantaged populations, highlighting the challenges of building inclusive resilience in a context of pre-existing inequalities.

2.8.3 Strengthening Cross-Border Ties and Solidarity

2.8.3.1 The Paradox of Bordering and Bonding

The refugee crisis in Szabolcs-Szatmár-Bereg County has brought to the fore the complex and often paradoxical dynamics of cross-border relations in times of crisis. On the one hand, the hardening of the Hungarian-Ukrainian border in response to the influx of refugees has disrupted many of the formal channels and mechanisms of cooperation that had been painstakingly built over the past decades. The tightening of border controls, the suspension of joint projects and initiatives, and the overall climate of uncertainty have posed significant challenges to the established forms of cross-border governance and collaboration. For instance, important infrastructure projects such as the extension of the M3 motorway to Vásárosnamény, which would have been crucial for the county's economic development, have been delayed or halted due to the war. In Záhony, the interviewee noted that the 2014 Crimean crisis had already dealt a severe blow to the region, leading to the disappearance of planned investments and a significant decrease in Russian truck traffic.

However, despite these challenges, the crisis has also unleashed a remarkable wave of grassroots solidarity and people-to-people ties across the border, demonstrating the resilience and adaptability of border communities in the face of adversity. From the earliest days of the crisis, local residents, civil society organizations, and informal networks on both sides of the border have mobilized to provide refugees with essential support, often bypassing or complementing official channels of assistance. The decade-long personal, familial, and business relationships between the residents of border villages have provided a solid foundation for welcoming and assisting refugees, allowing locals to treat them as acquaintances and thus facilitating a smoother provision of aid.

Many of the ethnic Hungarian refugees arriving from Transcarpathia have been able to rely on pre-existing social networks and kinship ties in Szabolcs-Szatmár-Bereg County for shelter, information, and support, activating a transnational safety net that has proven crucial in mitigating the impact of displacement. The war has further strengthened the bonds between people on both sides of the border at the level of personal ties, even as it has hampered economic relations due to the difficulties in crossing the border.

However, the case study also highlights the unique challenges faced by refugees arriving from war-affected regions of inner Ukraine, who often lack these pre-existing cross-border connections. Interviews reveal that these refugees were initially more distrustful and fearful, having experienced the trauma of war more directly. In this context, the language skills and cultural competence of the local community, particularly those with Ukrainian language abilities, have played a vital role in building trust and facilitating communication.

The presence of Ukrainian speakers among local officials, civil society volunteers, and ordinary citizens has been key to creating a welcoming environment and ensuring that the needs of these refugees are adequately understood and addressed. As a result, many of these initially hesitant refugees have

gradually opened up and become more receptive to assistance, underlining the importance of linguistic and cultural sensitivity in humanitarian response.

2.8.4 The Changing Demographic Landscape and Its Implications

The refugee crisis has not only reshaped cross-border relations but also significantly altered the demographic composition on both sides of the border. A considerable number of ethnic Hungarian families from Transcarpathia have relocated to Hungary, primarily to settlements in close proximity to the border, with many investing in property acquisition. Concurrently, the proportion and absolute number of Hungarians in Transcarpathia have experienced a marked decline. (Szigethy-Ambrus 2023) The properties vacated due to this emigration are frequently inhabited by internal migrants from other regions of Ukraine. These demographic shifts are reconfiguring the ethnic and settlement patterns in the region, with potential implications for future cross-border cooperation dynamics.

Furthermore, Transcarpathia is witnessing a two-fold process: the diminishing of the Hungarian community as a result of emigration, juxtaposed with a period of remarkable economic growth (Szigethy-Ambrus 2023). This dichotomy elicits mixed sentiments among the population, raising uncertainties about the trajectory of cross-border economic ties in the post-war reconstruction phase, particularly if the pre-existing Hungarian networks and connections have been eroded.

The substantial influx of internally displaced persons (IDPs) from other parts of Ukraine into Transcarpathia presents a significant challenge for the local Hungarian communities. There are concerns that the relative proportion of Hungarians in urban centers may diminish considerably, potentially leading to a dilution of Hungarian identity and heightening the risk of cultural tensions. In this evolving context, fostering harmonious coexistence and mutual adaptation between the host community and IDPs is paramount, but the process is not without its complexities. Divergences in mentality, customs, and social norms can generate friction, necessitating proactive management at both the municipal and regional levels.

The long-term viability and resilience of Hungarian communities in Transcarpathia are critical considerations. The future trajectory of cross-border economic collaboration remains uncertain, particularly if the reconstruction process commences in a context where the pre-existing Hungarian networks and partnerships have been weakened. Moreover, the Hungarian government's measured approach towards Ukraine has had a deleterious impact on local cooperative initiatives. The position of the Hungarian minority in Transcarpathia appears to be increasingly precarious, with an acceleration of youth emigration and a contraction of Hungarian institutions. These trends portend a more insular and less interconnected border region.

2.8.5 The Role of Shared Identity and Memory in Fostering Solidarity

Despite the challenges posed by the changing demographic landscape, the strong bonds of solidarity and mutual support between border communities in Szabolcs-Szatmár-Bereg County and Transcarpathia can be traced back to their shared history, cultural heritage, and identity. For centuries, the region has been a mosaic of ethnic, linguistic, and religious diversity, with Hungarians, Ukrainians, Roma, Jews, and other groups living side by side, intermarrying, and influencing each other's traditions and ways of life (Szabolcs-Szatmár-Bereg Megye 2021). For example: one-third of the population of Beregsurány has Transcarpathian Hungarian roots, bringing with them significant cultural, traditional, and lifestyle values. They have better preserved the traditional rural way of life, customs related to agriculture and animal husbandry than the residents of Hungary.

This legacy of coexistence and cultural hybridity has endowed border communities with a rich repertoire of skills, knowledge, and practices that have proven invaluable in navigating the challenges of the refugee crisis. From multilingualism and intercultural communication to the ability to negotiate different legal and administrative systems, these competencies have enabled local actors to bridge the gaps between refugees and host societies, facilitating access to services, information, and support networks.

Moreover, the shared experience of marginalization, discrimination, and persecution that many border communities have endured throughout history, from the traumas of war and deportation to the hardships of communist rule and economic transition, has fostered a strong sense of empathy and solidarity with those facing similar struggles today. The memory of past displacements and the recognition of common vulnerabilities have motivated many local residents to extend a helping hand to refugees, seeing in them a reflection of their own family histories and identities.

This sense of shared identity and memory has also been instrumental in counteracting the divisive narratives and stereotypes that often accompany refugee crises, such as the portrayal of refugees as a threat to national security or a burden on public resources. By emphasizing the human dignity and individual stories of refugees, and by drawing parallels with their own experiences of migration and adaptation, border communities have helped to humanize and contextualize the crisis, fostering a more nuanced and compassionate public discourse. However, tensions are starting to emerge between the more affluent, newly settled Transcarpathians and long-time residents due to differences in financial means, such as in property purchases and living standards.

2.8.6 Reimagining Cross-Border Cooperation in the Post-Crisis Era

As the immediate urgency of the refugee crisis begins to subside, the question of how to sustain and deepen the cross-border ties and solidarities that have emerged during this period becomes increasingly pressing. While the crisis has highlighted the resilience and adaptability of border communities, it has also exposed the limitations and vulnerabilities of the existing forms of cross-border cooperation.

One of the most significant challenges identified by the interviewees is the need to simplify and facilitate border crossings. The proliferation of border crossings and the development of cross-border infrastructure, such as bridges over the Tisza River, are seen as crucial breakout points for enhancing economic ties and labor flows in the region. The termination of the 30 km visa-free shopping zone for Ukrainian tourists in 2022 has severely affected border traders, underscoring the importance of easy border crossing for maintaining economic cooperation. The interviewees emphasize that more "small borders" would be needed to ease connections, but this requires the restoration of peace as a prerequisite.

To build a more resilient and inclusive model of cross-border cooperation in the post-crisis era, local actors in Szabolcs-Szatmár-Bereg County and Ukraine will need to work together to reimagine the goals, structures, and practices of their collaboration. This may involve developing new forms of partnership and dialogue that are more flexible, participatory, and responsive to the needs and aspirations of diverse border communities, including refugees and other marginalized groups.

Encouragingly, cross-border cooperation in the region already has some good practices and institutional frameworks to build upon. European Groupings of Territorial Cooperation (EGTCs) and Integrated Territorial Investment (ITI) programs have shown potential for coordinating the development initiatives of local governments and civil society actors across borders. Strengthening and expanding these existing mechanisms could provide a solid foundation for more adaptive and inclusive cross-border collaboration in the future.

The interviewees express optimism that with the restoration of peace, it will be possible to restart and deepen economic ties, joint planning, and development initiatives, which would be vital for the prosperity and resilience of both Szabolcs-Szatmár-Bereg County and Transcarpathia. However, they also emphasize that cross-border cooperation should not be limited to transactional assistance but should evolve towards more strategic, long-term forms of joint thinking and planning.

Ultimately, reimagining cross-border cooperation in the post-crisis era will require a sustained commitment to dialogue, trust-building, and inclusive participation. By leveraging the lessons learned

and solidarities forged during the refugee crisis, border communities can work towards a more resilient, adaptable, and people-centered model of cross-border collaboration that benefits all residents, regardless of their ethnicity, nationality, or legal status.

This may involve investing in cultural exchange programs, language learning initiatives, and joint education and research projects that foster mutual understanding and intercultural competence. It may also require developing more flexible and responsive funding mechanisms that can support grassroots, community-driven initiatives alongside larger-scale infrastructure projects.

2.8.7 Challenges and Lessons Learned

Financial and Institutional Constraints

One of the main challenges faced by Szabolcs-Szatmár-Bereg County in responding to the refugee crisis has been the need for more predictable and systematic financial and institutional support from the national government and the European Union. While local actors have demonstrated remarkable agility and resourcefulness in mobilizing their own resources and networks, they have often struggled to sustain their efforts over the longer term without adequate external assistance.

The interviews suggest that concrete assistance was initially slow and not always well-targeted, with criticism raised regarding the distribution of EU funds and the need for stronger coordination at the regional level. The long-delayed development of border crossings exemplifies the dominance of bureaucracy over real needs.

The sudden influx of refugees has put significant pressure on local budgets and capacities, particularly in the initial phase of the crisis. Municipalities, civil society organizations, and volunteer groups have had to rapidly scale up their operations and reallocate resources to provide emergency aid and services to refugees. However, as the interviews reveal, the local response has been remarkably resilient and adaptive, with actors finding creative ways to combine and stretch limited resources. Nevertheless, there is a clear need for more targeted, coordinated, and long-term support to enable the region to cope with the protracted nature of the crisis and to transition from emergency response to sustainable integration strategies.

Moreover, the unpredictable and often short-term nature of the funding streams available for refugee support has made it difficult for local actors to plan and implement longer-term strategies for integration and resilience-building. The lack of a stable and flexible financial framework has forced many organizations to rely on ad hoc grants, donations, and fundraising campaigns, which can be unsustainable in the long run.

To address these constraints, interviewees suggested the creation of dedicated EU funds for preparing and strengthening border regions to respond to crises more effectively, either through grant schemes or normative allocations. The idea of a specific EU "emergency fund" for border regions was also proposed, which could support the preparedness of border counties for crisis situations, enabling them to respond more quickly and effectively to various shocks.

In addition to financial support, several interviewees emphasized the need to provide more resources and decision-making autonomy at the local level so that measures can better align with actual needs. This could involve strengthening the role and capacities of regional and local authorities in the planning, implementation, and monitoring of EU-funded programs, as well as establishing more permanent and institutionalized mechanisms for cross-border cooperation.

Social Tensions and Inequalities

Another major challenge that has emerged in the context of the refugee crisis in Szabolcs-Szatmár-Bereg County is the exacerbation of pre-existing social tensions and inequalities. The arrival of a large number of refugees in a short period has put significant pressure on already strained public services

and infrastructure, leading to feelings of competition and resentment among some segments of the local population.

These tensions have been particularly acute in relation to the Roma community, both local and refugee. As one of the most marginalized and disadvantaged groups in Hungary and Ukraine, Roma have long faced discrimination, poverty, and social exclusion. The influx of Roma refugees from Ukraine has intensified these pre-existing challenges and created new forms of stigmatization and othering.

Several interviewees highlighted the complex dynamics surrounding the situation of Roma refugees from Transcarpathia. On the one hand, the arrival of Roma refugees has activated transnational solidarity networks, with Hungarian Roma organizations mobilizing to provide targeted assistance to their counterparts from across the border. These initiatives have showcased the power of ethnic solidarity in the face of crisis, while also potentially contributing to the empowerment and social inclusion of the Hungarian Roma community.

On the other hand, the influx of Roma refugees has also given rise to certain tensions and challenges. Some local aid providers and non-Roma refugees have exhibited attitudes that could be interpreted as framing Roma as "undeserving" recipients of aid, at times channeling the discussion of their needs into an exclusively ethnic framework. Moreover, the preferential treatment of Roma refugees by some aid organizations has generated a sense of injustice among segments of the local population facing similar socio-economic challenges, who feel that their needs are being overlooked.

These developments underscore the importance of adopting nuanced, context-sensitive approaches to crisis management and integration that take into account the specific needs and experiences of different social groups, while also being attentive to the potential unintended consequences of targeted interventions. This requires proactive efforts to combat stereotypes and prejudices, promote dialogue and solidarity across ethnic and social boundaries, and provide equitable support measures that address the structural drivers of vulnerability and exclusion.

As emphasized by an interviewee, the distinction between "deserving" and "undeserving" refugees, pitting different vulnerable groups against each other, carries the danger of ethnicizing poverty and undermining social solidarity. Lasting peace and development can only be based on recognizing the equal dignity of all those in need and strengthening mutual empathy.

Governance and Coordination Challenges

A third key challenge relates to the governance and coordination of the response efforts. The complex nature of the crisis has required the involvement of a wide range of actors, each with their own mandates, priorities, and ways of working. This has often led to fragmentation, duplication, and even competition among different initiatives and interventions, undermining their overall effectiveness and impact.

At the local level, the coordination of activities and resources between municipalities and civil society organizations has presented both challenges and opportunities. While some collaborations have been highly effective, others have revealed divergent approaches and priorities that have sometimes hampered the coherence and complementarity of the response. On the positive side, several international organizations have been praised for their valuable contributions and smooth collaboration with local partners. The International Organization for Migration (IOM), for instance, was singled out by interviewees as a particularly effective partner, providing critical assistance and expertise in support of the humanitarian response. Similarly, the United Nations High Commissioner for Refugees (UNHCR) was generally described as having a constructive presence on the ground, working closely with local authorities and civil society to address the needs of refugees. In addition, there were examples of successful initiatives by foreign-funded organizations, such as an American-funded group that delivered hot meals to the train station in Záhony, filling a crucial gap in the provision of food assistance to transiting refugees. However, the role of certain other international actors has been

more contentious. Some local stakeholders perceived the approach of organizations like the Hungarian Helsinki Committee as being overly focused on critical monitoring and oversight, without providing substantive operational support to the humanitarian response..

At the national level, the response has been characterized by a centralized and top-down approach, with key decisions and resources concentrated in the hands of a few government agencies and ministries. This has often resulted in a disconnect between policies designed in Budapest and the realities and needs on the ground, limiting the space for local initiative, flexibility, and adaptation.

At the international level, coordination between Hungarian authorities, EU institutions, and other international organizations has been marked by tensions and divergences. The different political agendas, value systems, and operational modalities of these actors have sometimes led to conflicting expectations and a lack of coherence in their support. Several interviewees noted the contradictory role of international organizations, with positive examples of concrete assistance alongside instances of hindering the work by insisting on rigid rules detached from local realities.

To address these governance and coordination challenges, interviewees emphasized the need for better communication and mutual understanding between local actors and international organizations to achieve more effective cooperation. They also highlighted the importance of building inclusive, participatory, and multi-level governance structures that can tap into the knowledge, resources, and capacities of diverse actors and communities, while ensuring coherence and coordination across different levels and sectors.

2.8.8 Implications for Cohesion Policy: Fostering Exaptive Resilience in Border Regions

The case study of Szabolcs-Szatmár-Bereg County's response to the refugee crisis offers valuable insights and lessons for the future of the European Union's Cohesion Policy, particularly in the context of fostering exaptive resilience in border regions. As the EU seeks to build a more resilient, inclusive, and sustainable future for all its citizens, it is crucial to draw on these experiences to inform the design and implementation of policies and programs that can effectively support regions and communities in navigating the complex challenges of our time.

One of the key lessons from the Szabolcs-Szatmár-Bereg County case is the importance of recognizing and nurturing the exaptive potential of border regions in responding to crises and fostering resilience. The interviews highlight several unique resources and capabilities that the region was able to mobilize and repurpose to address the needs of refugees, such as:

- The strong community ties and active civil society, particularly among the older generation, which played a crucial role in crisis management.
- The presence of a sizable ethnic Hungarian community from Transcarpathia, whose language skills, cultural competencies, and personal networks were invaluable in communicating with and assisting refugees.
- The flexibility and creativity of local actors in repurposing existing facilities and resources, such as community centers, schools, and unused commercial buildings, into emergency shelters and support hubs.

To fully harness the exaptive potential of border regions like Szabolcs-Szatmár-Bereg County, Cohesion Policy needs to adopt a more place-based, asset-based, and resilience-oriented approach that recognizes and builds on the specific strengths, needs, and aspirations of each territory. This could involve measures such as:

- Providing dedicated funding streams that specifically target the unique challenges and opportunities of border regions, such as support for cross-border cooperation, cultural heritage preservation, and social innovation.

- Investing in capacity-building and empowerment of local actors, particularly civil society organizations and community groups, to enable them to play a more active role in shaping and implementing regional development strategies.
- Promoting peer learning and knowledge exchange among border regions across Europe, to enable them to share good practices and innovative solutions for building resilience.

Another key lesson from the case study is the need for more effective and inclusive cross-border cooperation and governance arrangements to foster exaptive resilience in border regions. The interviews highlight both the potential and the challenges of cross-border collaboration in the context of the refugee crisis:

- On the one hand, the long-standing personal, cultural, and economic ties between communities on both sides of the border were a key source of solidarity and mutual support during the crisis. The ability to draw on these pre-existing networks and relationships greatly facilitated the provision of assistance to refugees.
- On the other hand, the crisis also exposed the limitations and vulnerabilities of current cross-border cooperation frameworks, which are often hampered by political tensions, bureaucratic obstacles, and lack of resources. The interviewees emphasize the need for more permanent and institutionalized mechanisms, such as European Groupings of Territorial Cooperation (EGTCs), to facilitate joint planning, implementation, and financing of projects across borders.

To strengthen cross-border cooperation and governance in the post-2020 period, Cohesion Policy could consider the following measures:

- Earmarking a minimum share of funding for cross-border and transnational cooperation programs, with simplified rules and procedures to encourage wider participation of local and regional actors.
- Providing targeted support for the establishment and operation of permanent cross-border governance structures, such as EGTCs, that can act as catalysts for joint development and resilience-building initiatives.
- Promoting more inclusive and participatory approaches to cross-border cooperation, by involving a wider range of stakeholders, such as civil society organizations, universities, and private sector actors, in the design and implementation of programs and projects.

A third important lesson from the Szabolcs-Szatmár-Bereg County case is the critical role of social infrastructure and human capital in fostering exaptive resilience in border regions. The interviews highlight how the mobilization of volunteers, the provision of social services, and the empowerment of marginalized groups were key factors in the successful response to the refugee crisis.

However, they also point to the persistent challenges and gaps in the social infrastructure of the region, such as the lack of adequate housing, healthcare, and education facilities, the high levels of unemployment and poverty, and the social exclusion of certain groups like the Roma. These structural weaknesses not only hinder the long-term integration of refugees but also undermine the overall resilience and cohesion of the region.

To address these challenges, Cohesion Policy could prioritize investments in social infrastructure and human capital in border regions, through measures such as:

- Earmarking a minimum share of funding for social inclusion, poverty reduction, and access to essential services, with a focus on the most vulnerable and marginalized groups.
- Supporting the development of innovative and integrated approaches to social service delivery, such as multi-purpose community centers, mobile health clinics, and digital education platforms, that can adapt to the changing needs of diverse populations.
- Investing in training, upskilling, and capacity-building of local human resources, particularly in fields like social work, intercultural mediation, and community development, to enable

them to better support the integration and empowerment of refugees and other marginalized groups.

Finally, the case study underscores the importance of promoting sustainable and inclusive economic development in border regions as a key factor in building long-term resilience. The interviews highlight the potential of sectors like agriculture, food processing, and tourism to create jobs and generate income in the region, but also point to the persistent challenges of low productivity, skills mismatches, and lack of investment.

Moreover, the crisis has exposed the vulnerability of cross-border economic ties to external shocks, such as the disruption of trade and labor flows due to border closures and travel restrictions. This calls for a more diversified and resilient economic model that can better withstand future crises and support the long-term prosperity of border communities.

To promote sustainable and inclusive economic development in border regions, Cohesion Policy could consider the following measures:

- Supporting the development of regional innovation ecosystems that build on the unique assets and capabilities of border regions, such as their cultural heritage, natural resources, and human capital. This could involve investments in research and development, technology transfer, and entrepreneurship support services.
- Promoting the diversification of local economies through targeted support for promising sectors and value chains, such as sustainable agriculture, eco-tourism, and the circular economy. This could involve measures such as business incubators, cluster development, and market access support.
- Investing in the development of cross-border economic infrastructure, such as transport links, energy networks, and digital connectivity, to facilitate the flow of goods, services, and people across borders and support the integration of regional markets.

2.8.9 Conclusion

In conclusion, the case study of Szabolcs-Szatmár-Bereg County offers valuable lessons for the future of Cohesion Policy in fostering exaptive resilience in border regions. By recognizing and nurturing the unique potential of these regions, strengthening cross-border cooperation and governance, investing in social infrastructure and human capital, and promoting sustainable and inclusive economic development, Cohesion Policy can play a key role in building a more resilient, cohesive, and prosperous Europe for all. The case study of Szabolcs-Szatmár-Bereg County's response to the Ukrainian refugee crisis offers a compelling example of how border regions can demonstrate exaptive resilience in the face of complex and unexpected challenges. By mobilizing and repurposing their unique resources, capabilities, and networks, local actors in the county have been able to provide effective and compassionate support to refugees, while also strengthening cross-border ties and solidarity. The case highlights several key factors that have enabled the county to build exaptive resilience, including the creative repurposing of existing facilities and infrastructure; the mobilization of diverse human resources and skills; the active role of civil society organizations and faith-based groups; the dense web of cross-border personal, cultural, and economic ties; and the emergence of new forms of collaboration and learning between local actors. At the same time, the case also reveals significant challenges and limitations in the county's ability to sustain and scale up its exaptive resilience, such as the need for more predictable and systematic financial and institutional support from national and EU authorities; the exacerbation of pre-existing social inequalities and tensions, particularly affecting marginalized groups such as the Roma; and the importance of fostering more systematic, inclusive coordination mechanisms among local authorities, civil society, and international organizations. To address these challenges and enable border regions like Szabolcs-Szatmár-Bereg County to fully harness their exaptive potential, the case study suggests several implications and recommendations for the future of EU Cohesion Policy, including recognizing and nurturing the exaptive potential of border regions through dedicated funding, capacity-building, and peer learning opportunities; enabling multi-level, cross-sectoral, and participatory governance arrangements; and embedding exaptive resilience as a core principle and objective in the post-2027 Cohesion Policy framework.

2.9 The Case of Lapland county in Finland

2.9.1 Introduction

Lapland, the northernmost region of Finland and the European Union, serves as a compelling case study for understanding the dynamics of territorial exaptive resilience in EU border regions. This sparsely populated area faces distinct challenges due to its peripheral location, unforgiving climate, and reliance on natural resources. However, Lapland has exhibited remarkable resilience when confronted with various difficulties, such as the decline of certain industries, the consequences of climate change, and geopolitical tensions. By investigating how Lapland has mobilized and repurposed its tangible and intangible assets, adapted its institutions, and fostered innovation through cross-sectoral collaboration, we can gain valuable insights into the mechanisms and strategies of exaptive resilience within the context of the EU's northern border regions. Furthermore, by highlighting the challenges and opportunities of cross-border cooperation in a dynamic geopolitical landscape, the case of Lapland offers important lessons for EU Cohesion Policy and regional development in peripheral areas.

2.9.2 Overview of the Border region

Lapland, the largest region in Finland, covers nearly one-third of the country's total area and is located in the northernmost part of the country. It shares borders with Sweden, Norway, and Russia. As of 2019, Lapland had a population of approximately 180,000 people, resulting in a population density of roughly two inhabitants per square kilometer (Regional State of the Art Report 2020). The region is known for its diverse natural landscape, which includes forests, lakes, rivers, and the Scandinavian Mountains. The northern part of Lapland is characterized by the Arctic tundra, while the southern part is dominated by the boreal forest (taiga). This natural environment supports traditional livelihoods such as reindeer herding, fishing, and forestry (Regional State of the Art Report 2020). Lapland's economy has been based on the extraction and use of natural resources. Key industries include forestry, mining, and tourism, which has become increasingly important in recent decades (Regional State of the Art Report 2020). The service sector, particularly tourism, is now the largest contributor to the regional economy. However, traditional industries such as forestry and mining still play a significant role (Regional State of the Art Report, p.4). Lapland accounts for 7% of Finland's total exports and ranks third among Finland's regions in terms of export per capita. 29% of enterprises in Lapland have export activities or business abroad. However, the economic fabric consists mostly of micro and small enterprises, with 94% of Lapland's enterprises having less than 10 staff. The Sami, an indigenous people who have inhabited the northern parts of Scandinavia for thousands of years, are an integral part of Lapland's cultural heritage. They have their own language and cultural traditions, and some still practice traditional livelihoods such as reindeer herding (Regional State of the Art Report 2020). Lapland's strategic location and unique natural and cultural assets provide both challenges and opportunities for cross-border cooperation and regional development. The region has been actively involved in various EU programs and initiatives, such as the Northern Periphery and Arctic Programme, the Interreg Nord Programme, and the Barents Euro-Arctic Cooperation, which aim to promote sustainable development, innovation, and cultural exchange across borders.

2.9.3 Understanding the impact of crises on Lapland

Lapland and the broader region of Northeast Finland have faced a series of challenges in recent years, testing their resilience and adaptability. These challenges are rooted in both long-term structural changes and more recent crises, as the region navigates a shifting economic, environmental, and geopolitical landscape. Over the past three to four decades, Lapland has experienced a significant transformation in its economic structure. While traditional industries such as forestry and mining remain important, they now employ fewer people due to mechanization and changes in global markets. This transition has led to job losses and outmigration, particularly among younger generations, resulting in a noticeable presence of empty villages in the countryside. Despite these challenges, larger towns and cities like Rovaniemi have managed to grow, driven in part by the rise of the tourism industry.

However, even these growth centers are not immune to the broader trend of outmigration to southern Finland, and the region as a whole remains reliant on public sector employment. Climate change poses a significant threat to Lapland's natural environment and economy, with experts cautioning that "this northernmost Europe is warming much faster than the European or global average. For the tourism industry, which depends heavily on stable winter conditions, this presents a notable challenge. Shorter and milder winters have compelled ski resorts to adapt by investing in artificial snow-making and developing non-snow-dependent activities. Efforts have also focused on diversifying tourism offerings, such as summer Northern Lights tours and activities like mountain biking with e-bikes, which are gaining popularity among visitors seeking unique experiences outside of the traditional winter season.

The impacts of climate change also extend to traditional industries like forestry, as unstable winter roads make it increasingly challenging to transport timber. Geopolitical tensions, particularly with neighboring Russia, add another layer of complexity to the region's challenges. While Lapland has benefited from cross-border cooperation in the past, the current situation has disrupted these ties, putting plans for infrastructure projects, such as a railway to the Arctic Ocean via Murmansk, on hold. At the same time, the closure of the Russian border has had minimal direct impact on tourism, as Russian visitors were never a dominant market segment. However, a more significant challenge has arisen from the loss of Asian flight routes, which previously passed over Russian airspace.

As Finland seeks NATO membership, the region's strategic importance has garnered increased attention, given its proximity to Russia's military assets and the Northern Sea Route. Economic shifts at the national and global level also have notable impacts on Lapland. As an export-oriented region, it is susceptible to changes in international trade and economic downturns in key markets like Germany. Recent interest from Chinese investors has brought both opportunities and concerns about reliability and security.

2.9.4 Leveraging local resources and capabilities for exaptive resilience

One of the key ways in which Lapland has demonstrated exaptive resilience is by leveraging its unique natural assets for new economic activities. The region's pristine forests, diverse wildlife, and distinctive landscapes have long been a source of sustenance and identity for local communities. In recent years, these assets have also become the basis for a thriving tourism industry and a growing bioeconomy sector.

As traditional resource-based industries like forestry and mining have declined, Lapland has actively promoted nature-based tourism as a new growth engine. The region has positioned itself as a premier destination for outdoor activities, wellness tourism, and authentic cultural experiences. Efforts to diversify seasonal tourism offerings have included promoting summer activities such as mountain biking, e-biking, and Northern Lights tours outside of winter months. These initiatives cater to tourists seeking both adventure and peace in Lapland's unique environment, allowing the tourism industry to mitigate the risks posed by milder winters. Additionally, emphasis on cultural integration has grown, with local traditions, handicrafts, and food increasingly forming part of the visitor experience. Restaurants in key areas like Rovaniemi have improved their offerings, combining traditional Lapland ingredients with modern culinary techniques to cater to a broad spectrum of visitors.

The region has also sought to develop its bioeconomy sector by finding new uses for its forest resources. Instead of just exporting raw timber, Lapland is investing in value-added products like biofuels, biochemicals, and wood-based textiles. However, as with many large-scale projects, the development of these industries has been slower than anticipated, due in part to challenges such as the remoteness of production sites and logistical difficulties in northern Finland. By diversifying its forest-based industries, Lapland aims to create new jobs and income streams while also promoting sustainable resource management.

A compelling example of asset repurposing is the use of forestry by-products for bioenergy production. As the traditional pulp and paper industry declines, Lapland is seeking new ways to valorize its vast forest resources. The region is investing in bioenergy plants that utilize logging residues and

other wood-based biomass to generate heat and electricity for local communities. This not only creates new economic opportunities but also contributes to the region's transition to a low-carbon economy. These efforts are complemented by cross-border cooperation with neighboring regions in Sweden and Norway, where collaborative projects in sustainable resource use and tourism development aim to share best practices and scale innovations.

2.9.5 Harnessing cultural heritage and traditional knowledge

Lapland's rich cultural heritage and traditional knowledge have also been key sources of exaptive resilience. The region is home to the Sami people, who have inhabited the northern parts of Scandinavia for thousands of years. The Sami have their own languages, cultural traditions, and livelihoods, such as reindeer herding, which are an integral part of Lapland's identity and way of life. In recent decades, there has been a growing recognition of the value of Sami culture and traditional knowledge, both as a source of resilience and as an asset for sustainable development. However, the incorporation of Sami culture into Lapland's economic and social life remains uneven. In Rovaniemi, for example, Sami culture is not prominently visible in everyday life, but its presence becomes more integrated further north, where Sami traditions are more naturally part of the local fabric.

Today, Sami entrepreneurs are developing innovative products and services that showcase their cultural heritage, such as Sami design, food products, and guided tours. These initiatives not only create new livelihood opportunities but also help to preserve and promote Sami identity. Moreover, there is an increasing emphasis on ensuring that these activities are led by Sami individuals and communities themselves, avoiding misrepresentation or cultural appropriation.

The Sámi communities' traditional knowledge and practices also offer a valuable resource for enhancing Lapland's territorial exaptive resilience in the context of NATO's increased presence. Having lived in the harsh Arctic environment for centuries, the Sámi have developed unique competencies in navigating and thriving in this terrain. The exaptation of Sámi knowledge by NATO represents an innovative approach to boosting the region's geopolitical resilience. By repurposing traditional skills and insights honed over generations, NATO can better address the new challenges posed by Lapland's heightened security situation. Practical examples could include using Sami expertise to adapt infrastructure projects to Arctic conditions or to design winter mobility strategies tailored to Lapland's extreme environments. Collaborating with Sámi communities and incorporating their perspectives can help NATO develop more socially acceptable and legitimate strategies for enhancing regional stability. Moreover, by engaging with indigenous communities, NATO can build trust and ensure that its presence in Lapland is compatible with the region's unique cultural and ecological context, thereby contributing to long-term resilience. However, to effectively integrate Sámi knowledge and practices into NATO's presence, several challenges need to be addressed. The growing nexus of relations between militarization, colonialism, extractivism, climate change, rural poverty, and loss of livelihoods needs careful consideration. The regional authorities need to address the colonial context and work towards genuine decolonization of relations with the Sami people to avoid potential exploitation of this weakness by external actors.

2.9.6 Fostering Innovation and Entrepreneurship

Lapland has been actively nurturing innovation and entrepreneurship as a key strategy for exaptive resilience. The region boasts several educational and research institutions, including the University of Lapland and the Natural Resources Institute Finland, which are dedicated to developing new solutions and technologies for sustainable development. These institutions have been working on a variety of projects, such as testing facilities for cars and car tires, positioning the region as a living laboratory for various cold climate solutions.

By promoting itself as a testbed for technologies and services tailored to cold environments, Lapland aims to attract new investments and partnerships. The region has also been encouraging entrepreneurship and start-up culture, particularly in sectors such as digital services, creative industries, and the circular economy. Recent initiatives have emphasized integrating local cultural

and natural assets into these innovations, such as developing tourism services that highlight both modern technologies and traditional Arctic ways of life.

The art and design faculty at the University of Lapland has been focusing on establishing the region as a hub for circular design. Additionally, local efforts have highlighted the importance of integrating innovation with cultural identity, such as by emphasizing traditional craftsmanship in design education and entrepreneurship. This approach seeks to merge modernity with heritage, adding a unique competitive edge to Lapland's creative industries.

Through the development of a supportive ecosystem for entrepreneurs and innovators, Lapland hopes to create new growth opportunities and jobs. However, the region faces challenges in scaling these innovations, as noted by stakeholders. Many small and medium-sized enterprises (SMEs) struggle with limited funding and difficulties accessing international markets, which can hinder the growth of promising ideas.

Experts have emphasized the need for more effective collaboration among universities, businesses, and regional authorities to transform research and innovation into practical applications and economic benefits. One notable issue is the fragmentation of funding and resources between various initiatives, which sometimes leads to duplicated efforts or inefficiencies. Stakeholders have also pointed out the importance of long-term investment in infrastructure, particularly transportation to enable entrepreneurs to operate effectively in Lapland's remote environment.

2.9.7 Building Cross-Border Cooperation and Networks

Lapland has actively pursued cross-border cooperation and networking as a key strategy for resilience. As a border region, Lapland has long-standing ties with its neighbors in Sweden, Norway, and Russia, which have been crucial for addressing shared challenges and opportunities, from environmental protection to economic development. However, recent geopolitical tensions with Russia have disrupted many of these cooperative efforts, leaving the future of initiatives like the Barents cooperation uncertain. While there is strong interest among the Nordic regions to continue cooperating without Russia, the Finnish government has been more hesitant to proceed. Despite these challenges, Lapland is working to strengthen its ties with other Arctic regions and networks. The region participates in forums such as the Arctic Council, the Northern Forum, and the Arctic Mayors' Forum. These platforms not only provide opportunities for high-level collaboration but also allow Lapland to position itself as a leader in sustainable Arctic development, particularly in the context of climate resilience and cultural integration.

Universities in the northern Nordic regions have also been collaborating more closely, forming networks like the Arctic Five and the recently expanded Arctic Six. These networks aim to develop joint programs and give visibility to topics such as how to sustain populations in the North. Practical initiatives include shared research projects on Arctic-specific challenges, such as infrastructure adaptation to permafrost changes and sustainable resource management practices that incorporate indigenous knowledge.

Lapland is also involved in various EU programs and initiatives, including the Northern Periphery and Arctic Programme and the Interreg Nord Programme. These provide valuable resources and platforms for joint projects and knowledge exchange. For instance, recent projects have focused on year-round tourism development, showcasing activities such as autumn Northern Lights tours and Arctic culinary experiences to diversify the region's offerings and extend the tourism season.

Similarly, many Interreg projects have focused on objectives that align with Lapland's existing priorities, such as creating a unified tourist network that presents the regions as a single destination with a coherent set of activities. The Arctic Europe tourism cluster, a notable example, has brought together businesses and operators from Finnish Lapland, Swedish Lapland, and Northern Norway to develop collaborative products and marketing strategies. Feedback from these initiatives suggests

that the shared promotion of the region as a cohesive Arctic destination has been effective in attracting new international markets, particularly from Southern Europe and North America.

However, experts have highlighted the challenges of creating genuine economic integration across borders. Despite efforts to improve transport connections and remove barriers, most of Lapland's economic ties remain oriented towards southern Finland and the rest of Europe. Cross-border transport remains a significant obstacle, particularly between Finland and Sweden, where differing railway standards and poorly synchronized schedules hinder the development of seamless connections.

Overcoming the structural obstacles to cross-border integration remains a key challenge for building long-term resilience. Enhanced infrastructure, including improved road networks and airports, has been identified as a priority not only for economic integration but also for addressing climate-related goals by offering more sustainable travel options.

2.9.8 Adapting to changing geopolitical realities

Responding to the Impacts of the Ukraine War

The Russian invasion of Ukraine in February 2022 has significantly impacted Lapland and its geopolitical environment. While the direct effects on Lapland have been less pronounced compared to southeastern Finland, the war has heightened security concerns and disrupted long-standing patterns of cross-border cooperation. One immediate consequence has been the closure of borders and the suspension of joint projects and initiatives with Russia. In the past, Lapland's proximity to northern Russia was seen as a strategic asset, fostering economic and political ties that enhanced the region's positioning toward Helsinki and other national decision-making centers. Now, this connection has transformed into a challenge, if not a liability. The suspension of multilateral frameworks like the Barents Euro-Arctic Cooperation, which had served as a key platform for collaboration on environmental protection, transport, and people-to-people contacts, highlights the broader fallout of the war. Although Nordic countries are eager to continue cooperating without Russia, the future of such arrangements remains uncertain. Simultaneously, Finland's decision to join NATO has increased military activity and infrastructure development in Lapland. While NATO's enhanced security role is generally welcomed, it raises important questions about resilience frameworks in the region. The militarization of land use and its connection to extractivist state power requires careful management to avoid exacerbating existing social tensions. The integration of NATO must be balanced with environmental protection and indigenous rights, particularly as the alliance seeks to green its preparations for warfare globally.

The war has also underscored the importance of reducing dependency on Russia in critical areas like energy and trade. While Finland's reliance on Russian gas was lower than that of many European countries, the need to secure alternative energy sources and infrastructure, such as LNG terminals, has still posed economic challenges. These shifts have been particularly acute in southeastern Finland, which had closer economic ties to Russia, but they resonate across the country, including Lapland.

2.9.9 Strengthening Nordic and EU Cooperation

In response to the disruptions caused by the war, Lapland has intensified its focus on strengthening cooperation with its Nordic neighbors and deepening its engagement with the EU. This reflects a broader geopolitical shift in Finland, which is increasingly aligning its security and economic interests with Western partners. At the Nordic level, there has been renewed emphasis on collaboration in areas such as infrastructure, cross-border mobility, and defense. Nordic countries have a strong history of cross-border integration, exemplified by shared labor markets and social security arrangements. However, realizing these ambitions has proven challenging in practice. Public transport connections between Lapland and its Nordic neighbors, for example, remain underdeveloped.

Lapland has also been actively involved in EU programs and initiatives aimed at promoting sustainable development, innovation, and regional cooperation. These include the Northern Periphery and Arctic Programme, the Interreg Nord Programme, and the EU's smart specialization agenda. Lapland has been lauded as a leader in smart specialization, with the Lapland Regional Council often cited as a model by the European Commission. However, the limited scale of EU cohesion funding in northern border regions, compared to Eastern Europe, remains a challenge. Most of these funds are allocated to feasibility studies or smaller projects, which, while strategically important, fail to deliver major economic impacts.

Looking forward, a more differentiated, place-based approach to EU regional policy is needed. Targeted investments in sectors such as sustainable tourism, the bioeconomy, and critical infrastructure like transport and digital connectivity could help address the unique challenges of northern peripheries while leveraging their strategic assets.

2.9.10 Reimagining cross-border collaboration

Although geopolitical tensions with Russia have disrupted traditional cross-border cooperation, they have also created new opportunities to reimagine collaboration in the north. Strengthening ties with Nordic and EU partners has become a priority, but there is also a need to explore alternative ways of engaging with Russia on shared challenges. One area of potential cooperation is environmental protection and climate change adaptation. Despite current political tensions, technical and scientific collaboration on issues like climate monitoring, biodiversity conservation, and pollution control could prove beneficial.

Tourism has also emerged as a critical sector for fostering cross-border collaboration. Initiatives like the Arctic Europe tourism cluster highlight the potential of shared resources and marketing strategies to position the region as a cohesive Arctic destination. By promoting sustainable tourism practices and emphasizing shared cultural narratives, such projects not only enhance the region's appeal to international visitors but also reinforce economic resilience and regional identity. Moreover, tourism offers a platform for integrating diverse communities, allowing them to showcase their heritage and collaborate on innovative experiences that cater to global markets.

Another promising area for cross-border collaboration lies in people-to-people contacts and cultural exchange. Despite political barriers, cultural and linguistic ties persist among communities in the border regions, particularly among the Sami people. The war and associated policies, such as Russia's foreign agent law, have restricted the mobility of Russian Sami communities, but connections among Sami populations in Finland, Sweden, and Norway remain strong. Supporting grassroots initiatives such as youth exchanges, cultural festivals, and joint educational programs could preserve and strengthen these ties, ensuring that cross-border understanding is maintained. Tourism can play a role here as well by creating opportunities for cultural exchange and fostering international appreciation for Arctic traditions, including Sami culture, which is deeply connected to the environment and sustainable practices.

Finally, there is a pressing need to rethink the institutional and financial frameworks that underpin cross-border cooperation. Existing platforms like the Barents Euro-Arctic Cooperation have been severely disrupted, and the future of EU cohesion policy remains uncertain. Addressing these challenges will require more flexible and adaptive approaches, with greater emphasis on soft cooperation, people-to-people ties, and targeted investments in key sectors. Enhanced funding mechanisms that prioritize long-term resilience and infrastructure development, such as improved transport and digital connectivity, will be essential.

2.9.11 Challenges and opportunities for building territorial exaptive resilience

Demographic and labor market pressures

. One of the key challenges facing Lapland in its efforts to build exaptive resilience is demographic change and labor market pressures. Like many peripheral regions in Europe, Lapland has struggled with population decline, an aging population, and the outmigration of young people to larger urban centers. These demographic shifts are closely tied to structural economic changes, particularly in

traditional industries like forestry and mining, which have become increasingly mechanized and require fewer workers. As a result, Lapland faces a shrinking labor force and a growing share of elderly residents, putting additional strain on public services and social security systems.

While tourism has emerged as a bright spot in the regional economy, its seasonal nature and vulnerability to external shocks pose ongoing challenges. The COVID-19 pandemic, for example, caused a sharp decline in tourism activity, though the sector has since recovered rapidly and is now on a growth trajectory. This recovery underscores the potential of tourism to drive economic development, but it also highlights the need to diversify offerings and reduce reliance on seasonal peaks.

To address these issues, Lapland has made significant investments in education and skills development, preparing its workforce for emerging sectors such as the bioeconomy, digital services, and creative industries. These efforts are complemented by initiatives to attract new talent and investment by leveraging Lapland's unique natural and cultural assets. By promoting boutique and high-value tourism in less saturated areas and integrating Arctic-themed cultural and culinary experiences into its offerings, the region is creating new opportunities for both economic growth and talent retention.

Experts stress, however, that these efforts must be part of a broader, long-term strategy to address the root causes of demographic decline. Comprehensive policies that improve work-life balance, access to affordable housing, and quality public services, alongside targeted measures to promote entrepreneurship and innovation, are essential for fostering sustainable and inclusive growth.

Infrastructure and connectivity gaps

Another significant challenge for Lapland is addressing its infrastructure and connectivity gaps. As a vast and sparsely populated area, Lapland struggles with aging transport networks, energy security issues, and digital divides. Poor road conditions are a particular challenge, as much of the region's road infrastructure was built decades ago with inadequate foundations, making it ill-suited to modern demands. Fixing these roads is a costly and time-intensive process, requiring the construction of entirely new foundations over long distances. Improved transport infrastructure is not only critical for economic development but also for regional security and emergency preparedness. This has gained renewed urgency in the context of Finland's NATO membership and the growing need for military mobility in the Arctic. Investments in infrastructure, such as roads and railways, are increasingly seen as dual-purpose, serving both defense and civilian needs. Digital connectivity has also become a priority for fostering innovation and attracting investment. Lapland is positioning itself as a "living lab" for testing technologies in areas like cold climate engineering, smart mobility, and e-health. These efforts aim to enhance the region's appeal as a hub of innovation while addressing its logistical challenges. However, the benefits of these initiatives are unevenly distributed. While cities like Oulu perform well in innovation metrics, smaller municipalities across Lapland often struggle to access the same resources and opportunities. Addressing these disparities requires more participatory and place-based approaches to infrastructure planning. Collaboration between regional authorities, businesses, universities, and civil society is essential to identifying and prioritizing investments that meet the needs of all communities. National and EU programs must also provide more targeted support to address the specific challenges of peripheral regions like Lapland.

Governance and institutional capacities

Lapland's governance structures face significant challenges in coordinating efforts across its diverse municipalities and sectors. The region's small and often under-resourced municipalities are responsible for delivering a wide range of services, which can strain their capacities. In some cases, municipalities serve populations of fewer than a thousand people, complicating efforts to mobilize resources and coordinate actions effectively.

Efforts to streamline governance, such as the establishment of regional health and social service councils, have helped address some inefficiencies. However, the system remains fragmented, limiting

its ability to respond quickly to crises or capitalize on opportunities. Better collaboration between academia, regional development agencies, and local authorities is needed to bridge knowledge gaps and foster more coordinated approaches to regional challenges.

Inclusive governance is particularly critical for ensuring that minority groups, such as the Sami, have a voice in decision-making processes. Long-standing disputes over legislative rights and the role of the Sami Parliament highlight the ongoing tensions between the Finnish government and the Sami community. Building trust and creating more inclusive platforms for dialogue will be essential for fostering equitable development and resilience. Relations between Finland and the Sami are still fraught with issues of colonialism which continue to reverberate in contemporary discourses and debates on land use in Finnish Lapland. While Finland's resilience strategy involves presenting an image of national and regional cohesion, the reality is one of fragmentation and social conflict. These conflicts between the Sami and Finland are at their most extreme in Finnish Lapland where the state is still perceived as a colonial power, intervening in Sami affairs, extracting their resources, destroying traditional livelihoods, and preventing them from achieving rightful ownership of their own lands and lives.

Fostering long-term transformative resilience

To build transformative resilience, Lapland must adopt a long-term vision that goes beyond short-term economic gains. While tourism plays a central role in the regional economy, relying heavily on seasonal peaks creates vulnerabilities, both economic and social. Concentrating tourism activity in hubs like Rovaniemi and major ski resorts helps manage immediate pressures, but it also risks reinforcing dependency on winter-specific attractions. Instead, a more sustainable approach would involve expanding year-round tourism offerings and diversifying activities to appeal to visitors across all seasons. Lapland has already made strides in this direction, promoting activities like autumn Northern Lights tours, summer mountain biking, and Arctic culinary experiences. These initiatives not only mitigate the risks associated with shorter and milder winters but also help distribute tourism flows more evenly throughout the year. By investing in infrastructure and marketing for year-round attractions, Lapland can reduce its reliance on peak seasons while creating more stable employment opportunities for local communities. A balanced approach to tourism would also integrate other key sectors, such as the bioeconomy and circular design, to create synergies that support innovation and environmental conservation. Initiatives like circular design spaces and sustainable resource management highlight Lapland's potential to position itself as a leader in responsible tourism and green development. These efforts can complement the growth of four-season tourism by emphasizing sustainability and local authenticity, attracting high-value visitors who appreciate Lapland's unique cultural and natural assets. Investing in key enablers of resilience, such as education, healthcare, and social cohesion, remains essential for fostering long-term stability. Improved connectivity with other peripheral regions in Europe could also open new pathways for collaboration and shared learning. Strengthening ties with regions like Galicia or Bari, which share similar challenges, could enhance Lapland's position within broader European networks. Ultimately, building resilience in Lapland requires a participatory approach that empowers local communities while fostering cross-border collaboration. By integrating social, cultural, and ecological dimensions into its development strategies and expanding year-round tourism, Lapland can work toward a more sustainable, inclusive, and prosperous future.

2.9.12 Implications for EU Cohesion Policy and cross-border cooperation

Recognizing the unique challenges and opportunities of northern peripherie

The case of Lapland offers several important insights and lessons for the future of EU Cohesion Policy and its approach to supporting the resilience and development of peripheral border regions. One key message is the need for a more differentiated and place-based approach that recognizes the specific challenges, assets, and opportunities of northern peripheries. As the experts noted, regions like Lapland face a unique set of environmental, demographic, and economic pressures that require tailored and adaptive responses. These include the impacts of climate change on traditional livelihoods and

ecosystems, the outmigration of young people and the aging of the population, and the need to diversify economies beyond resource-based industries. At the same time, northern peripheries also possess significant strengths and potentials that could be better leveraged for sustainable and inclusive development. These include their rich natural and cultural heritage, their expertise in cold climate technologies and services, and their strategic location at the crossroads of Europe and the Arctic. To fully harness these assets and address these challenges, EU Cohesion Policy needs to adopt a more flexible and responsive approach that is attuned to the specific needs and aspirations of each region. This could involve providing more targeted funding and support for key sectors and priorities identified by local stakeholders, such as sustainable tourism, the bioeconomy, and digital innovation. It could also mean investing in the institutional and governance capacities of northern peripheries to design and implement their own development strategies, in partnership with national and EU authorities. As one expert put it, "I think the government should be more proactive, and I don't mean just putting money in these regions, because that's not necessarily what is needed. It's more like having a set of policies that are more pro dispersed population."

Enabling adaptive and resilient cross-border cooperation

Another key lesson from the Lapland case is the importance of enabling more adaptive and resilient forms of cross-border cooperation in the face of changing geopolitical realities. As the experts noted, the region's long-standing ties with its neighbors, particularly Russia, have been severely disrupted by the war in Ukraine and the growing tensions between the EU and Russia. While some traditional forms of cooperation, such as the Barents Euro-Arctic Council, have been suspended or scaled back, there is a strong interest among the Nordic regions to continue collaborating on issues of common concern, such as environmental protection, transport infrastructure, and emergency preparedness. To support these efforts, EU Cohesion Policy could play a more active role in enabling and incentivizing adaptive and resilient forms of cross-border cooperation in the north. This could involve providing more flexible and long-term funding mechanisms that can respond to changing circumstances and priorities, rather than relying on short-term project cycles. It could also mean investing in the institutional and human capacities needed to sustain cross-border collaboration over time, such as language skills, cultural competencies, and networking platforms. As one interviewee noted, "Nordic countries, they've been quite experienced in cross-border activities. They have more than free movement of people, you have Nordic citizenship, you have very easy access to other labor markets and social security."

Investing in knowledge and innovation for regional resilience

A third implication of the Lapland case for EU Cohesion Policy is the importance of investing in knowledge and innovation as key drivers of regional resilience and development. As the experts noted, the region has a number of universities, research institutes, and innovation centers that are working to develop new solutions and technologies for sustainable development in the north. However, there are also challenges in translating this knowledge and expertise into concrete benefits for local communities and economies. As one interviewee put it, "We have quite poor connection between academia here and regional development experts in the regional council or municipalities. There are very few people in these institutions that the regional council or municipalities would come to in order to get policy advice." To address this gap, EU Cohesion Policy could do more to support the integration of research and innovation into regional development strategies and practices. This could involve providing more targeted funding and incentives for collaborative projects between universities, businesses, and public authorities, as well as for the dissemination and uptake of research results by local stakeholders.

Building more resilient and innovative regions in the north will require a concerted effort to bridge the gap between knowledge production and application, and to foster more collaborative and place-based approaches to regional development. EU Cohesion Policy has a key role to play in supporting these efforts, by providing the resources, incentives, and frameworks needed to unlock the potential of northern peripheries as living labs for sustainable and inclusive development.

2.9.13 Conclusion

. The case study of Lapland provides focused insights into the challenges and opportunities of building territorial exaptive resilience in the EU's northern peripheries. By examining how the region has adapted to economic restructuring, climate change, and shifting geopolitical dynamics, it underscores the critical role of leveraging local assets, fostering cross-border cooperation, and prioritizing knowledge and innovation for sustainable regional development.

Lapland's rich natural and cultural heritage, its expertise in cold climate technologies, and its strategic Arctic location are unique strengths that offer significant potential for growth. However, the region also faces pressing challenges, including demographic decline, infrastructure deficits, and fragmented governance structures. These obstacles highlight the need for a more tailored and place-based approach to EU Cohesion Policy, one that directly addresses the specific needs of northern peripheries.

Targeted support for key sectors such as sustainable tourism, the bioeconomy, and digital innovation is essential. Expanding four-season tourism, for example, could reduce economic vulnerabilities linked to seasonality while providing more stable employment opportunities. Equally important is strengthening institutional capacities to design and implement effective regional strategies. Addressing these gaps requires a proactive approach that goes beyond financial investment, creating policies that empower dispersed populations and adapt to their unique challenges.

The study also highlights the importance of adaptive and resilient cross-border cooperation. While traditional partnerships with Russia have been disrupted by the war in Ukraine, Nordic countries remain committed to collaboration on critical issues such as environmental protection, transport infrastructure, and emergency preparedness. EU Cohesion Policy can enhance these efforts by providing long-term funding mechanisms, supporting institutional development, and fostering people-to-people connections. Cultural exchanges, youth programs, and joint initiatives can strengthen social cohesion across borders, ensuring that collaboration remains robust even in the face of geopolitical challenges.

Investing in knowledge and innovation is another key lesson. While Lapland has a strong foundation of universities and research institutes, there is a need to bridge the gap between academic expertise and practical applications. Collaborative projects between universities, businesses, and public authorities, as well as targeted funding for regional innovation ecosystems, can ensure that research translates into tangible benefits for local communities.

Looking forward, building territorial exaptive resilience in northern peripheries like Lapland requires a transformative, long-term approach to regional development. This means addressing root causes of vulnerability while fostering inclusive and sustainable growth. Collaboration among stakeholders—regional authorities, businesses, universities, and local communities—is crucial to creating a shared vision for resilient development.

3. Cross-Case Synthesis and Comparison

The five case studies presented in this research - Maramureş County in Romania, Lapland Region in Finland, Szabolcs-Szatmár-Bereg County in Hungary, Olsztyn Region in Poland, and Vilnius County in Lithuania - provide a rich tapestry of experiences and insights into the dynamics of territorial (exaptive) resilience in the EU's eastern border regions. Each case offers a unique window into the complex interplay of geographical, historical, socio-economic, and institutional factors that shape the capacity of these regions to adapt and transform in the face of significant challenges and disruptions. At the same time, a comparative analysis of the cases reveals a number of common threads and patterns that cut across the specific contexts and shed light on the broader conditions and mechanisms that enable or hinder resilience in border regions. By highlighting these similarities and differences and examining their policy and practical implications, this synthesis seeks to deepen the detailed and region-specific understanding of territorial resilience.

3.1. Similarities and Common Themes

Peripheral location and socio-economic challenges

One of the most significant commonalities across the cases is the peripheral location and socio-economic challenges faced by these regions. Situated along the EU's eastern border, often in remote and sparsely populated areas, these regions have long been confronted with a range of structural handicaps and vulnerabilities that have constrained their development potential and quality of life. The studied regions – with an expectation of Vilnius county – are characterized by a relative economic underdevelopment compared to the national averages, with lower levels of GDP per capita, productivity, and innovation. They also face significant demographic pressures, such as population decline, brain drain, and aging, which have been exacerbated by the outmigration of young and skilled people to larger cities or abroad in search of better opportunities.

For example, in Maramureş County, Romania, the population has been steadily decreasing over the past decades, with a particularly sharp decline among the younger generations. This has led to a hollowing out of the local labor market and a weakening of the social fabric, as many villages and small towns struggle to maintain basic services and infrastructure. Similarly, in the Olsztyn Region of Poland, the peripheral location and limited accessibility have contributed to a process of depopulation and economic stagnation, particularly in the rural areas along the border with the Kaliningrad Oblast. The region has one of the highest rates of outmigration in the country, with young people leaving in droves to seek education and employment in larger cities like Warsaw or Gdansk. Even in relatively more prosperous regions like Lapland in Finland, the challenges of remoteness and sparse population are acutely felt. While the region has benefited from a strong tradition of innovation and entrepreneurship, particularly in sectors like academia and sustainable tourism, it still struggles to attract and retain talent and investment in the face of competition from larger urban centers in the south.

Across the cases, the peripheral location and socio-economic challenges emerge as a key factor shaping the vulnerability and resilience of these regions. On the one hand, the lack of critical mass and agglomeration economies makes it difficult for these regions to compete on a level playing field with more central and urbanized areas. On the other hand, the very conditions of peripherality and remoteness have also fostered a strong sense of community, self-reliance, and adaptability among the local populations, which has been a key source of resilience in times of crisis.

Reliance on traditional industries and potential for new growth paths

Another common theme that emerges from the case studies is the historical reliance of these regions on traditional and resource-based industries, such as agriculture, forestry, mining, and manufacturing. For decades, these sectors have been the backbone of the local economies, providing jobs and income for large parts of the population and shaping the cultural identity and social structures of the

regions. However, in recent years, many of these traditional industries have undergone significant restructuring and decline, due to a combination of global economic shifts, technological change, and environmental pressures. The case studies provide vivid examples of how these processes have played out in different contexts, and how they have impacted the resilience and development of the regions. In Maramureş County, for example, the collapse of the mining industry in the early 2000s had a devastating impact on the region, leading to massive job losses, social dislocation, and environmental degradation. The mining crisis left behind a legacy of abandoned sites and contaminated soils, posing long-term health and ecological risks for the local communities. Similarly, in Lapland, the traditional industries of forestry and reindeer herding have come under increasing pressure due to climate change, globalization, and changing consumer demand. The shorter and milder winters have made it harder to transport timber and maintain stable grazing conditions for reindeer, while the increasing competition from cheaper imports has squeezed the profitability of many local producers. In Szabolcs-Szatmár-Bereg County, Hungary, the decline of traditional agriculture and food processing has led to a hollowing out of the rural economy, with many small farms and businesses struggling to survive in the face of market consolidation and technological change.

Despite these challenges, the case studies also highlight the significant potential for new growth paths and economic diversification in these regions, based on their unique natural and cultural assets, strategic location, and human capital. In many cases, the very process of restructuring and decline in traditional industries has opened up new spaces and opportunities for innovation and entrepreneurship, as local actors have sought to valorize their resources and capabilities in new ways. For example, in Maramureş County, the SPIRE project has demonstrated how the environmental liabilities of the mining industry can be turned into new sources of value and resilience, through the use of phytoremediation techniques and the creation of green jobs and renewable energy. By engaging the local community and leveraging the expertise of universities and NGOs, the project has not only addressed the pollution problem but also created a new sense of purpose and identity for the region. Similarly, in Lapland, the growth of nature-based tourism and the bioeconomy has offered new pathways for sustainable development, building on the region's pristine landscapes, rich biodiversity, and traditional knowledge. In the Olsztyn Region, the potential for sustainable agriculture and food processing, as well as for cross-border trade and logistics, has been highlighted as a key opportunity for diversifying the local economy and creating new jobs. The region's strategic location at the intersection of different markets and transport corridors, as well as its rich natural and cultural heritage, have been identified as key assets that could be leveraged for smart specialization and place-based development. Across all five cases, the reliance on traditional industries and the potential for new growth paths emerge as a double-edged sword for territorial resilience. On the one hand, the dependence on a narrow range of sectors and the vulnerability to external shocks have exposed these regions to significant risks and uncertainties, particularly in times of crisis. On the other hand, the very process of restructuring and diversification has also opened up new spaces for creativity, experimentation, and cross-sectoral collaboration, which have been key drivers of exaptive resilience.

Cross-border ties and cooperation

A third common theme that cuts across the case studies is the importance of cross-border ties and cooperation for the resilience and development of these regions. As border regions, all five cases have a long history of interaction and exchange with their neighboring countries, which has shaped their cultural identity, social structures, and economic networks in profound ways. However, the nature and intensity of these cross-border ties vary significantly depending on the specific geographical, historical, and political contexts of each region. In some cases, such as Lapland and Szabolcs-Szatmár-Bereg County, the border has been a relatively open and permeable one, facilitating the flow of people, goods, and ideas across national boundaries. In other cases, such as the Olsztyn Region and Vilnius County, the border has been a more rigid and contested one, marked by geopolitical tensions, security concerns, and cultural differences. Despite these variations, the case studies highlight the crucial role that cross-border cooperation has played in building the resilience and adaptability of these regions, particularly in times of crisis. By leveraging their transnational networks and partnerships, local actors have been able to access new resources, knowledge, and opportunities that would have been unavailable to them within their own national contexts. For example, in Szabolcs-

Szatmár-Bereg County, the strong cultural and linguistic ties with Ukraine, including a sizable Ukrainian minority and dense personal, cultural, and economic connections with Transcarpathia, have been crucial in responding to the refugee crisis triggered by the war. These pre-existing networks have facilitated communication, integration, and the provision of assistance to refugees, while also strengthening the region's social capital, solidarity, and sense of shared identity.

In Lapland, the long-standing tradition of Nordic cooperation and the strong institutional frameworks for cross-border collaboration have been key enablers of resilience and innovation. By working together on issues like environmental protection, transport infrastructure, and tourism, the region has been able to leverage its unique assets and capabilities for sustainable development.

At the same time, the case studies also reveal the challenges and limitations of cross-border cooperation, particularly in the context of geopolitical tensions and crises. In the Olsztyn Region, for example, the hardening of the border with the Kaliningrad Oblast and the suspension of joint projects and initiatives have disrupted many of the traditional channels of collaboration and exchange, leaving local communities more isolated and vulnerable. Similarly, in Vilnius County, the weaponization of migration flows by the Belarusian regime and the increasing tensions between the EU and its eastern neighbors have put a strain on cross-border ties and raised new security concerns. While local actors have sought to maintain some degree of cooperation and dialogue across the border, the overall climate of mistrust and uncertainty has made it more difficult to build long-term partnerships and synergies. So the role of cross-border cooperation is a recurring factor shaping the exaptive resilience of these regions. By providing access to complementary resources, knowledge, and networks, cross-border ties have enabled local actors to diversify their options and adapt to changing circumstances. At the same time, the very process of cross-border collaboration has also fostered a sense of shared identity, solidarity, and purpose among border communities, which has been a vital source of social and psychological resilience. However, the effectiveness and sustainability of cross-border cooperation also depend on a range of enabling conditions and factors, such as the compatibility of legal and administrative systems, the availability of funding and resources, the level of political will and commitment, and the engagement of civil society and private sector actors. Strengthening and reforming cross-border governance arrangements, such as European Groupings of Territorial Cooperation (EGTCs), Interreg programs, or macro-regional strategies, could help to unlock the untapped potential of border regions and build more resilient and integrated territorial systems.

Vulnerability to external shocks and crises

A fourth common thread that emerges from the case studies is the heightened vulnerability of these regions to external shocks and crises, due to their location, socio-economic challenges, and geopolitical context. As border regions, these areas are particularly exposed to the spillover effects of events and processes that originate beyond their own territories, such as economic recessions, natural disasters, political conflicts, or public health emergencies. The case studies provide a vivid illustration of how these external shocks have played out in different contexts, and how they have tested the resilience of local communities and institutions. In Maramureş County, for example, the COVID-19 pandemic has had a severe impact on the local economy, particularly on the tourism and hospitality sectors, which were already struggling with the legacies of deindustrialization and environmental degradation. The sudden drop in international visitors and the restrictions on mobility have exposed the vulnerability of the region to global market fluctuations and supply chain disruptions. Similarly, in Szabolcs-Szatmár-Bereg County and Vilnius County, the war in Ukraine and the associated refugee crisis have put a significant strain on local resources and capacities, forcing local actors to quickly adapt and repurpose their assets and capabilities to meet the urgent needs of displaced persons. The influx of refugees has not only created logistical and humanitarian challenges, but also raised complex social and political questions about identity, solidarity, and integration. In the Olsztyn Region, the geopolitical tensions between the EU and Russia, as well as the ongoing militarization of the Kaliningrad Oblast, have heightened the sense of insecurity and uncertainty among local communities. The hardening of the border and the decrease in cross-border interactions have not only disrupted traditional economic and social ties, but also raised concerns about the long-term resilience and sustainability of the region in the face of external threats. Even in relatively stable and prosperous regions like Lapland, vulnerability to external shocks remains a significant concern. The region's heavy

reliance on exports and international tourism leaves it particularly exposed to global economic downturns, currency fluctuations, and disruptions like those caused by the COVID-19 pandemic. Additionally, the impacts of climate change on its fragile Arctic ecosystem further underscore the challenges faced by the region.

Across the cases, the exposure to external shocks and crises emerges as a key challenge for building territorial resilience. While their openness and global interconnectedness have amplified their susceptibility to external events beyond their control, these experiences have also nurtured a strong capacity for adaptability and resourcefulness within local communities. This ability to navigate past disruptions has proven to be a vital source of resilience during times of adversity.

Mobilization of local resources and networks

A fifth common theme that emerges from the case studies is the crucial role of local resources and networks in the exaptive resilience of border regions. Despite their peripheral location and socio-economic challenges, all five regions have demonstrated a remarkable ability to mobilize and repurpose their endogenous assets and capabilities to adapt and recover from external shocks and disruptions. The case studies provide numerous examples of how local communities, businesses, and institutions have been able to leverage their social, cultural, and environmental capital to create new opportunities and solutions in the face of adversity. In Maramureş County, for example, the SPIRE project has shown how the region's rich natural and cultural heritage, as well as its strong community ties and traditions of self-reliance, can be harnessed for sustainable development and resilience-building. By engaging local residents in the phytoremediation of contaminated mining sites, and by using the resulting biomass for renewable energy production, the project has not only addressed the environmental legacies of the past, but also created new sources of income and identity for the region. The active involvement and ownership of the local community, as well as the collaboration between different sectors and stakeholders, have been key success factors of the project. Similarly, in Szabolcs-Szatmár-Bereg County, the mobilization of local volunteers, faith-based organizations, and civil society groups has been instrumental in providing emergency assistance and support to Ukrainian refugees. The ability to draw on pre-existing social networks and relationships across the border, as well as the cultural and linguistic competencies of many local residents, has greatly facilitated the humanitarian response and fostered a sense of solidarity and empathy. In Lapland, the region's strong tradition of innovation and entrepreneurship, as well as its unique natural and cultural assets, have been key drivers of economic diversification and resilience. The growth of nature-based tourism, and the bioeconomy has been largely based on the creative valorization of the region's endogenous resources and capabilities, such as its pristine landscapes, traditional knowledge, and expertise in sustainable resource management.

At the same time, the case studies also highlight the importance of cross-sectoral and multi-level networks and partnerships for mobilizing and leveraging local resources effectively. In many cases, it has been the collaboration and synergies between different actors and sectors, such as businesses, universities, NGOs, and public authorities, that have enabled the region to tap into new sources of knowledge, funding, and opportunities. For example, in the Olsztyn Region, the active engagement of local universities and research centers in the development of sustainable agriculture and food processing has been a key factor in the region's efforts to diversify its economy and create new value chains. The collaboration between academia, businesses, and policy-makers has enabled the region to access cutting-edge technologies and expertise, while also ensuring that the research and innovation activities are grounded in the specific needs and potentials of the local context. Similarly, in Vilnius County, the cooperation between local authorities, civil society organizations, and international partners has been crucial in managing the complex challenges of the refugee crisis and building long-term resilience. The ability to mobilize and coordinate different resources and capacities across sectors and levels, such as housing, education, health care, and social services, has been a key success factor in the region's response to the crisis.

So the mobilization of local resources and networks emerges as a key enabler of exaptive resilience in border regions. By harnessing the endogenous assets and capabilities of these regions, and by fostering collaboration and synergies between different actors and sectors, local communities have

been able to create new opportunities and solutions that are more sustainable, inclusive, and resilient. However, the case studies also reveal the challenges and limitations of relying solely on local resources and networks for building long-term resilience. In many cases, the mobilization of endogenous assets and capabilities has been hampered by a lack of critical mass, institutional capacity, or political will, as well as by the fragmentation and competition between different actors and interests. To fully unlock the potential of local resources and networks for resilience-building, there is a need for more enabling and supportive policy frameworks at the national and EU levels. This includes not only providing adequate funding and incentives for local initiatives and partnerships, but also creating more flexible and responsive governance arrangements that can adapt to the specific needs and opportunities of each region.

The role of EU cohesion policy and funding

Finally, a sixth common theme that cuts across the case studies is the important but complex role of EU funding in supporting the resilience and development of border regions. As some of the most peripheral and disadvantaged areas in Europe, some of these regions have been a key target and beneficiary of the EU's efforts to promote economic, social, and territorial cohesion, and to reduce regional disparities. The case studies provide several examples of how EU cohesion policy and structural funds have contributed to the mobilization of local resources and capabilities, and to the creation of new opportunities and partnerships for resilience-building. In Maramureş County, for example, the SPIRE project has been largely funded through the European Regional Development Fund (ERDF) and the Cohesion Fund, which have provided critical support for the development of renewable energy infrastructure, and the engagement of local communities. Similarly, in the Olsztyn Region, the EU cohesion policy has been a key driver of economic diversification and cross-border cooperation, particularly through the Interreg and European Neighborhood Instrument programs. The funding and support provided by these programs have enabled the region to develop new value chains in sustainable agriculture and food processing, to improve its transport and digital infrastructure, and to strengthen its ties with neighboring regions in Poland and Russia. In Lapland, the EU's smart specialization strategy and the Northern Periphery and Arctic program have been instrumental in fostering innovation and entrepreneurship in key sectors such as sustainable tourism. The support provided by these programs has not only helped to mobilize the region's endogenous assets and capabilities, but also to attract new investments and partnerships from outside the region.

At the same time, the case studies also highlight the limitations and challenges of relying on EU cohesion policy and funding for building long-term resilience in border regions. One of the main issues raised by several experts and stakeholders is the lack of flexibility and responsiveness of many EU programs and instruments to the specific needs and opportunities of each region. In many cases, the funding and support provided by the EU are still based on a top-down and sectoral logic, which does not always take into account the complex interplay of social, economic, environmental, and political factors that shape the resilience of border regions.

Another challenge highlighted by the case studies is the lack of coordination and synergies between different EU policies and instruments, as well as between the EU, national, and regional levels of governance. In many cases, the EU cohesion policy operates in parallel or even in competition with other EU policies, such as those related to agriculture, environment, or migration, which can create inconsistencies and trade-offs for border regions. The case studies also reveal the importance of institutional capacity and administrative capacity at the regional and local levels for effectively accessing and managing EU funds. In many cases, the lack of technical expertise, human resources, or co-financing capabilities has hindered the ability of border regions to fully benefit from the opportunities provided by EU cohesion policy.

3.2. Patterns and Implications

Drawing on the analysis of five case studies, several key patterns and implications emerge for understanding and fostering territorial exaptive resilience in the EU's eastern border regions.

Table 2.3
Summary of the case studies

Region	Geopolitical context	Key challenges	Main assets and opportunities	Exaptive practices	Governance and institutional context	EU policy implications
Maramureş County, Romania	Borders Ukraine; historical and cultural ties; affected by refugee flows	Deindustrialization; environmental degradation; outmigration	Natural and cultural heritage; cross-border networks; social capital	Phytoremediation of industrial sites; community engagement; diaspora involvement	Centralized and top-down; limited local autonomy; weak civil society	Need for more place-based and bottom-up approaches; support for social innovation and community empowerment
Lapland Region, Finland	Borders Sweden, Norway, Russia; different border regimes; Arctic dimension	Peripherality; climate change; dependence on natural resources	Cold climate expertise; renewable energy potential; Sami culture	Bioenergy from forestry waste; Arctic testing facilities; nature-based tourism	Strong innovation and smart specialization policies; active civil society	Importance of differentiated strategies for northern peripheries; potential of Arctic cooperation
Szabolcs-Szatmár-Bereg County, Hungary	Borders Ukraine; strong cross-border ties; directly affected by refugee flows	Economic underdevelopment; social exclusion; outmigration	Cultural diversity; strategic location; thermal waters	Repurposing public facilities for refugees; mobilizing volunteers and donations	Fragmented and politicized; strong role of churches and NGOs	Need for more flexible and responsive crisis management frameworks; support for cross-border solidarity networks
Olsztyn Region, Poland	Borders Kalinin-grad Oblast; geopolitical tensions; decreased interactions	Peripherality; depopulation; dependence on EU funds	Natural assets; agri-food potential; strategic location	Reorientation towards Baltic partnerships; investment in renewable energy and digital infrastructure	Ongoing decentralization and capacity-building of regions	Importance of alternative integration scenarios and connectivity; role of inter-regional cooperation

Region	Geopolitical context	Key challenges	Main assets and opportunities	Exaptive practices	Governance and institutional context	EU policy implications
Vilnius County, Lithuania	Borders Belarus; exposed to hybrid threats and migration pressures	Socio-economic disparities; brain drain; Russian influence	Multicultural heritage; strong institutions; innovation potential	Repurposing infrastructure for migrant reception; mobilizing public-private partnerships	Centralized crisis management; active role of NGOs and international organizations	Need for targeted support to border regions; investment in resilience and security infrastructures

Importance of place-based and asset-based approaches

One of the most salient patterns across the case studies is the importance of adopting place-based and asset-based approaches to building resilience in border regions. While all five regions face common challenges related to their peripheral location, economic underdevelopment, and exposure to external shocks, they also have distinct strengths, opportunities, and aspirations that require tailored and context-sensitive strategies for resilience-building.

The case studies highlight how border regions can leverage their unique natural, cultural, and human capital to create new development paths and adapt to changing circumstances. For example, Lapland's smart specialization strategy focused on sustainable tourism, cold climate technologies and services builds on the region's Arctic location, traditional knowledge, and research and innovation capabilities to create new economic opportunities and jobs. Similarly, Maramureş County's SPIRE project demonstrates how the region's post-industrial landscapes and community ties can be transformed into new sources of sustainable value creation and social innovation. These examples underscore the need for a more differentiated and place-based approach to EU Cohesion Policy that recognizes and supports the diversity and specificity of border regions. Rather than imposing a one-size-fits-all model of growth and competitiveness, EU policies and programs should empower local and regional actors to identify and valorize their own assets and potentials, while also providing them with the necessary resources, capacities, and incentives to experiment and innovate.

Centrality of cross-border cooperation and governance

Another key pattern that emerges from the case studies is the centrality of cross-border cooperation and governance in building exaptive resilience in border regions. These regions have a long history of cross-border interactions and exchanges that have shaped their cultural identity, social capital, and economic networks. However, the nature and intensity of these cross-border ties vary significantly depending on the geopolitical context, institutional frameworks, and social and economic realities of each region. The case studies highlight how cross-border cooperation can provide border regions with access to complementary assets, knowledge, and markets that can enhance their resilience and adaptability. For example, Szabolcs-Szatmár-Bereg County's strong cultural and economic ties with Transcarpathia have been instrumental in mobilizing resources and solidarity during the refugee crisis, while also creating new opportunities for cross-border trade and investment. Similarly, Lapland's participation in various Arctic cooperation frameworks has enabled the region to access new funding, expertise, and partnerships for sustainable development and innovation.

At the same time, the case studies also reveal the challenges and limitations of cross-border cooperation, particularly in the context of geopolitical tensions, institutional mismatches, and power asymmetries between border regions. For example, Vilnius County's efforts to counter hybrid threats and migration pressures from Belarus have been hampered by the lack of trust and coordination between

border authorities, as well as by the limited capacity and resources of local actors to deal with complex security issues. Similarly, the Olsztyn Region's traditional ties with the Kaliningrad Oblast have been disrupted by the increasing isolation and militarization of the Russian exclave, as well as by the EU's sanctions and visa restrictions.

These examples underscore the need for more effective and inclusive cross-border governance arrangements that can foster trust, reciprocity, and mutual understanding between border regions, while also ensuring the coherence and coordination of their development strategies. This requires a more strategic and multi-level approach to cross-border cooperation that goes beyond project-based initiatives and sectoral interventions, and that seeks to build long-term partnerships and synergies between different actors and territories. It also implies a more flexible and differentiated approach to EU Cohesion Policy that can adapt to the specific needs and realities of each border region, rather than imposing a uniform model of integration and harmonization. Border regions should be empowered to co-design and co-implement their own cross-border strategies and programs, while also being supported by adequate resources, capacities, and incentives from the EU and national levels.

Need for transformative resilience

A third key pattern that emerges from the case studies is the need for more exaptive and transformative forms of resilience-building in border regions. While all five regions have demonstrated a remarkable capacity to cope with and recover from various crises and shocks, they also face the challenge of moving beyond short-term survival and incremental adjustment towards more fundamental and long-term changes in their development models and trajectories. The case studies highlight how border regions can use crises and shocks as opportunities for innovation, experimentation, and transformation. For example, Maramureş County's SPIRE project shows how the region's environmental and social challenges can be turned into new sources of sustainable value creation and community empowerment, through the creative reuse of post-industrial landscapes and the mobilization of local knowledge and resources. Similarly, Lapland's efforts to diversify its economy towards bio-economy and circular solutions demonstrate how the region can adapt to the impacts of climate change and resource depletion, while also creating new jobs and business opportunities. However, the case studies also reveal the limitations and trade-offs of current approaches to resilience-building in border regions, which often focus on short-term coping and recovery rather than long-term adaptation and transformation. For example, Szabolcs-Szatmár-Bereg County's emergency response to the refugee crisis has been effective in providing immediate humanitarian assistance and solidarity, but it has also raised questions about the sustainability and inclusiveness of the region's development model in the face of increasing social and economic pressures. Similarly, Vilnius County's efforts to militarize and securitize its border with Belarus may enhance its short-term protection and deterrence, but they may also undermine its long-term prospects for cross-border cooperation and reconciliation.

These examples underscore the need for a more holistic and forward-looking approach to resilience-building in border regions, which can balance short-term needs with long-term aspirations, and which can foster more inclusive, sustainable, and transformative development pathways. This requires a shift from a reactive and defensive mode of resilience to a more proactive and adaptive one, which can anticipate and shape future challenges and opportunities, rather than simply responding to them. It also implies a more integrated and cross-sectoral approach to EU Cohesion Policy, which can address the complex and interrelated dimensions of territorial development, such as economic competitiveness, social cohesion, environmental sustainability, and democratic governance.

Potential of social innovation and community empowerment

A fourth key pattern that emerges from the case studies is the potential of social innovation and community empowerment for building resilience in border regions. While all five regions face significant challenges related to economic underdevelopment, social exclusion, and demographic decline, they also have a rich and diverse fabric of community-based initiatives, grassroots movements, and civic engagement that can be harnessed for resilience-building. The case studies highlight how social innovation and community empowerment can provide border regions with new sources of creativity,

solidarity, and agency in the face of crises and shocks. For example, Szabolcs-Szatmár-Bereg County's mobilization of local volunteers, faith-based organizations, and NGOs during the refugee crisis shows how community-based initiatives can fill the gaps and complement the efforts of public authorities and international organizations, while also fostering a sense of belonging and empathy among local populations. Similarly, Maramureş County's SPIRE project demonstrates how the active involvement and ownership of local communities in the co-design and co-implementation of sustainable development solutions can enhance their legitimacy, effectiveness, and scalability.

However, the case studies also reveal the challenges and limitations of social innovation and community empowerment, particularly in the context of structural inequalities, power imbalances, and lack of institutional support. For example, the Olsztyn Region's efforts to promote sustainable agriculture and rural development through community-based initiatives have been hampered by the limited access to land, capital, and markets of small-scale farmers and producers, as well as by the dominant role of large agribusiness corporations and retailers in shaping the food system. Similarly, Vilnius County's attempts to foster intercultural dialogue and minority rights through grassroots initiatives have been challenged by the increasing polarization and radicalization of public discourse, as well as by the lack of recognition and funding from national and European authorities.

These examples underscore the need for a more enabling and supportive environment for social innovation and community empowerment in border regions, which can value and scale up their contributions to resilience-building. This requires a shift from a top-down and technocratic approach to regional development to a more bottom-up and participatory one, which can engage and empower local communities as active agents of change, rather than passive recipients of aid or services. It also implies a more flexible and responsive approach to EU Cohesion Policy, which can provide social innovators and community-based initiatives with the necessary resources, capacities, and spaces for experimentation and learning, while also ensuring their autonomy and sustainability.

Importance of multi-level and multi-stakeholder governance

A final key pattern that emerges from the case studies is the importance of multi-level and multi-stakeholder governance for building exaptive resilience in border regions. While all five regions operate within the broader framework of EU Cohesion Policy and multi-level governance, they also have specific institutional and governance arrangements that shape their capacity to coordinate and align their development strategies with other actors and levels.

The case studies highlight how effective multi-level and multi-stakeholder governance can enhance the coherence, complementarity, and synergies of resilience-building efforts in border regions. For example, Lapland's participation in various Arctic cooperation frameworks has enabled the region to access new resources, knowledge, and partnerships for sustainable development and innovation, while also influencing the broader policy agendas and priorities at the national and European levels. Similarly, Szabolcs-Szatmár-Bereg County's collaboration with international organizations, such as the UNHCR and the IOM, during the refugee crisis has helped to coordinate and streamline the humanitarian response, while also leveraging the expertise and capacities of local actors and communities. However, the case studies also reveal the challenges and limitations of current multi-level and multi-stakeholder governance arrangements, particularly in the context of geopolitical tensions, institutional fragmentation, and power asymmetries between different actors and levels. For example, Vilnius County's efforts to counter hybrid threats and migration pressures from Belarus have been hampered by the lack of trust and coordination between national and local authorities, as well as by the limited involvement and ownership of civil society organizations and citizens in the design and implementation of security policies. Similarly, the Olsztyn Region's attempts to promote sustainable development and cross-border cooperation through EU-funded projects have been challenged by the increasing bureaucratization and centralization of Cohesion Policy, as well as by the diverging interests and priorities of different stakeholders and territories.

These examples underscore the need for more effective and inclusive multi-level and multi-stakeholder governance arrangements that can foster trust, dialogue, and collaboration between different

actors and levels involved in resilience-building in border regions. This requires a shift from a hierarchical and siloed approach to governance to a more networked and polycentric one, which can enable the co-creation and co-management of development strategies and programs by a wide range of stakeholders and citizens. It also implies a more place-based and adaptive approach to EU Cohesion Policy, which can empower regional and local authorities to design and implement their own territorial development strategies, while also ensuring the coherence and coordination with other policy domains and levels. Border regions should be supported to develop and experiment with new governance models and practices, such as public-private-people partnerships, living labs, or territorial impact assessments, which can enhance the legitimacy, effectiveness, and resilience of their development efforts.

3 Synthesis of Quantitative and Qualitative Results - What Have We Learned?

EASTERN BORDER REGION PARADOX

Despite systemic disadvantages such as peripherality and lower institutional quality, many eastern border regions exhibit exaptive resilience by creatively reallocating resources and leveraging endogenous strengths, enabling them to adapt in ways that contrast with the stability-focused resistance of central regions.

The primary aim of this study was to investigate territorial exaptive resilience, focusing on the capacity of regions to repurpose and redeploy existing assets, resources, and capabilities for new applications when faced with changing circumstances. This concept, rooted in the evolutionary biology term "exaptation" (Gould & Vrba, 1982), offers a framework for understanding how regions adapt and transform in innovative ways during crises. Exaptive resilience moves beyond the traditional notion of "bouncing back" to a pre-crisis state, emphasizing proactive and transformative adaptation to foster new growth paths (Boschma, 2015; Martin & Sunley, 2015). By integrating these insights, the study provides a future-oriented perspective on regional resilience, with an emphasis on leveraging endogenous resources to navigate transitions and challenges (Grillitsch & Sotarauta, 2020).

The relevance of territorial exaptive resilience is particularly evident in the EU's eastern border regions, which face unique challenges due to their historical, institutional, and socio-economic trajectories. These areas are often disadvantaged, peripheral, and agrarian, characterized by lower levels of economic development, innovation capacity, and institutional quality compared to their central and western counterparts (Batista et al 2024). Factors such as geographic isolation, limited economic diversification, and reliance on traditional sectors exacerbate their vulnerability to external shocks (Capello & Caragliu, 2021). These findings align with the clustering results from this study, which clearly distinguished these regions based on their socio-economic and structural characteristics, confirming their systemic disadvantages.

Despite these systemic disadvantages, the findings reveal that many eastern border regions have demonstrated remarkable exaptive resilience. By reallocating and restructuring their resources and capabilities, they have creatively responded to crises and disruptions. The Territorial Exaptive Resilience index highlights that, in contrast to central regions—where resistance (maintaining economic stability) is predominant—eastern border regions often thrive by adopting exaptive strategies. These regions leverage their endogenous resources in innovative ways to forge potential new opportunities.

This pattern, which we call the "Eastern Border Region Paradox", draws an analogy to the "Singapore paradox" (Briguglio et al., 2009; Miskolczi 2020). The Singapore paradox suggests that small, open, and vulnerable economies can build resilience through a combination of economic diversification, human capital development, and institutional quality. Similarly, the eastern border region paradox aligns with the growing evidence of successful economic development and resilience-building in several countries and regions in the area, such as Poland, Estonia, Lithuania, Finland, and Romania (Gyórfy 2022). These cases demonstrate the potential of peripheral and lagging regions to break out of the "middle-income trap" and achieve smart, sustainable, and inclusive growth through place-based strategies that build on their unique strengths and potentials.

3.1 Key Drivers of Exaptive Resilience

KEY DRIVERS OF EXAPTIVE RESILIENCE

Exaptive resilience is driven by three critical dimensions: the mobilization of local actors and networks, supportive institutional frameworks, and investments in skills, capacities, and infrastructure. These factors enable regions to repurpose resources, foster innovation, and adapt to crises.

To identify the factors driving exaptive resilience, the study employed a mixed-methods approach, combining quantitative analysis with qualitative case studies. The econometric analysis revealed that higher institutional quality, knowledge-intensive sectors, and local resilience factors positively influence the ability of regions to withstand and recover from shocks (Cortinovis et al., 2017; Crescenzi & Giua, 2020, Miskolczi 2020). For exaptive regions, traditional sectors such as agriculture and industry also emerge as significant contributors. This finding suggests that innovation within these sectors can be pivotal for peripheral regions to diversify and adapt. The study further highlights the importance of EU funds, which have provided critical support for structural transformation in border regions, particularly by enhancing infrastructure and fostering economic diversification.

The qualitative component of the study offers a deeper understanding of how exaptive resilience manifests in practice. Each region's response to crises illustrates the dynamic interplay between local resources, institutional frameworks, and socio-economic strategies. In **Maramureş**, the SPIRE project exemplifies how environmental challenges linked to mining were converted into opportunities through phytoremediation. This initiative not only addressed pollution but also revitalized the community, empowering residents to reimagine their region's economic potential. Similarly, **Lapland** leveraged its pristine environment and traditional knowledge to expand nature-based tourism and bioeconomy initiatives, creating sustainable economic diversification while capitalizing on its unique assets. The case of **Szabolcs-Szatmár-Bereg** illustrates the role of social capital in resilience-building. The region mobilized local networks and civil society organizations to provide emergency assistance to Ukrainian refugees, strengthening its social cohesion and capacity for collective action. **Olśztyn** and **Vilnius** highlight the importance of institutional coordination and skills development. Olśztyn's potential for sustainable agriculture is constrained by structural barriers, but targeted investments in inclusive rural development could unlock its latent potential. In Vilnius, effective policy coordination was instrumental in managing the challenges posed by refugee crises and geopolitical tensions.

The convergence of quantitative and qualitative findings reinforces the robustness of the three overarching dimensions of exaptive resilience: mobilization of local actors and networks, supportive institutional frameworks, and investments in skills, capacities, and infrastructures. These dimensions emerged consistently across both methodological approaches, offering a coherent framework for understanding and fostering resilience. Quantitative analyses underscore the significance of these dimensions by identifying key drivers of resilience. Higher institutional quality, the presence of knowledge-intensive sectors, and local resilience factors were found to positively influence regions' ability to adapt and recover. These findings align with the qualitative insights, where institutional frameworks and investments in human and physical capital repeatedly surfaced as critical enablers. For example, the econometric results highlighted the role of institutional quality in shaping adaptive capacities, resonating with the qualitative evidence from Vilnius, where coordinated policies facilitated effective crisis management.

Similarly, the mobilization of local actors, captured in the qualitative data, complements quantitative observations about the importance of social cohesion and community-level resilience. The case studies of Maramureş and Szabolcs-Szatmár-Bereg illustrate how local engagement and grassroots efforts can repurpose existing resources, while the quantitative data suggest that social capital and local governance are instrumental in translating these efforts into measurable outcomes.

Investments in skills, capacities, and infrastructures also link the two approaches. The econometric findings point to the importance of economic diversification and knowledge-intensive industries, which require substantial investments in human capital and innovation. This aligns with the qualitative insights from Lapland and Olsztyn, where strategic investments in education, infrastructure, and sectoral innovation were identified as pathways to unlocking resilience potential.

3.2 Adaptability and Exaptibility: A Theoretical Conclusion

BALANCING ADAPTABILITY AND EXAPTIBILITY

Regional growth depends on balancing adaptability, which fosters stability through structural investments like institutional quality and economic diversification, with exaptibility, which drives transformation by leveraging local networks, social capital, and flexible policies for innovation and new opportunities.

The findings of this study highlight the interconnected roles of adaptability and exaptibility in shaping territorial resilience. These concepts, introduced earlier in the study, provide a nuanced framework for understanding the mechanisms through which regions navigate crises and capitalize on opportunities for transformation. While **adaptability** refers to the capacity for incremental adjustments within an existing development trajectory, **exaptibility** emphasizes the ability to repurpose and recombine resources to create entirely new pathways for growth and resilience. The distinction between these capacities provides a valuable lens for interpreting the study's findings. **Adaptability** reflects the structural conditions that enable regions to respond to shocks by enhancing their existing systems, such as improving institutional quality, diversifying their economies, and investing in foundational infrastructures. This aligns with the econometric results, which identify institutional quality and economic diversification as critical drivers of resilience. For example, regions with robust institutional frameworks, as seen in Vilnius, demonstrated greater capacity to coordinate responses to complex crises, such as the refugee influx. In contrast, **exaptibility** highlights the capacity that allow regions to leverage crises as opportunities for transformation. This capacity is closely tied to fluid factors such as local networks, social capital, and flexible policy environments, which enable experimentation and innovation. The case studies vividly illustrate exaptive processes: Maramureş transformed environmental liabilities into sustainable opportunities, and Szabolcs-Szatmár-Bereg leveraged social cohesion and grassroots mobilization to provide critical support during the refugee crisis while fostering resilience and community solidarity.

The interplay between adaptability and exaptibility is essential for understanding the multidimensional nature of resilience and growth. While resilience itself represents only the potential for transformation, it is through the dynamic interaction of adaptability and exaptibility that this potential can materialize into actual structural change. Exaptive resilience is about the latent capacity for regions to repurpose and recombine their existing assets and capabilities in novel ways when confronted with crises. It opens up the possibility space for change, creating opportunities for regions to break from their established trajectories and chart new courses for growth and development.

However, the mere presence of exaptive resilience does not guarantee that these possibilities will be realized. Rather, it is the cultivation of adaptability and exaptibility that shapes whether and how

regions actually navigate these possibilities and translate them into concrete outcomes. Adaptability provides the necessary stability and flexibility for regions to incrementally adjust and improve their existing systems, while exaptibility represents the proactive and future-oriented cultivation of the enabling conditions and capacities that allow regions to fundamentally reinvent themselves when faced with disruption.

The degree to which regions can leverage their exaptive resilience to forge new development pathways, then, is a function of the strength and interplay of their adaptability and exaptibility. In line with this, the study's findings suggest that regions must balance structural stability with creative dynamism to achieve sustainable and inclusive development. Structural investments, such as improving institutional quality and economic diversification, lay the groundwork for adaptability. At the same time, fostering exaptibility requires targeted efforts to build social capital, engage local actors, and create policy environments that encourage experimentation. For instance, the econometric evidence underscores how institutional quality enhances both resistance and exaptive resilience. High-quality institutions provide the predictability and support needed for incremental improvements, while also enabling the experimentation necessary for transformative change. Similarly, the qualitative insights show how mobilizing local networks bridges these capacities, as grassroots initiatives often combine adaptive responses with innovative strategies.

To fully realize the potential of exaptive resilience, regions must develop policies and strategies that integrate adaptability and exaptibility.

The following framework synthesizes the key dimensions identified in this study:

1. **Structural Factors for Adaptability:**
 - High-quality institutions to provide stability and governance
 - Economic diversification and related variety to reduce dependency on narrow sectors.
 - Investments in transport and digital infrastructures to enhance regional connectivity and accessibility.
2. **Dynamic Factors for Exaptibility:**
 - Strengthening local networks and social capital to enable collective action and innovative solutions
 - Encouraging institutional entrepreneurship and leadership to challenge status quos and drive transformation.
 - Designing flexible and responsive policy frameworks that support experimentation and adaptive governance.
3. **Integrated Strategies:**
 - Combining structural investments with initiatives that empower local actors and foster creativity.
 - Aligning regional development policies with long-term resilience goals, emphasizing inclusivity and sustainability.

By embedding these principles into regional development strategies, policymakers can foster both adaptability and exaptibility, creating the conditions necessary to transform resilience potential into actual structural change and **and enhanced regional competitiveness**. This integrated approach is particularly relevant for peripheral and disadvantaged regions, where structural challenges necessitate adaptability, while opportunities for transformation hinge on exaptive processes.

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4. Appendix:

Interview Guide for Expert Interviews on Territorial Exaptive Resilience in EU Eastern Border Regions

4.1. Introduction:

- Introduce yourself and explain the research project you are conducting.
- Explain the purpose of the interview and outline the structure it will follow. Mention the topic of interest and how the interviewee's responses will contribute to a better understanding of the subject matter.
- Assure the interviewee that all the information provided during the interview will be treated with the utmost confidentiality. Explain that their responses will be anonymized.
- Request the interviewee's permission to record the interview to ensure the accuracy of your notes and analysis. Clarify that the recording will be used solely for the purpose of the research and will be securely stored, with access limited to the research team.

4.2. Theme 1: Interviewee's Role and Local Experience

- Could you please describe your current role and main responsibilities?
- How long have you been working in this field and specific area?
- To what extent is your organization or community involved in cross-border co-operation and processes?

4.3. Theme 2: Local Impacts of Crises and Adaptive Responses

- Has your specific area been affected by any major crises or disruptions recently (e.g., economic, environmental, social, geopolitical)?
- How have these crises impacted local communities, businesses, or institutions?
- How have different types of crises (e.g., economic shocks, migration pressures, environmental issues, political tensions) affected the region, and what distinctive coping strategies have emerged?
- What local strengths, assets, or capacities have been most important for enabling these adaptive responses?
- Can you think of any instances where local businesses, organizations, or communities have found creative ways to reuse or redeploy existing assets or capabilities to address new challenges or opportunities?
 - For example, have any traditional industries or skills been adapted to serve new markets or needs?
 - Or have underutilized resources like vacant spaces or natural assets been put to innovative uses?

- How have local actors sought to diversify their economic activities or revenue streams in response to changing circumstances?
 - Have there been efforts to develop new products, services, or business models that are less vulnerable to disruption?
 - Or to tap into alternative markets or funding sources?
- In what ways have local institutions, networks, or governance arrangements been adapted or restructured to better support resilience and adaptability?
 - For instance, have new partnerships or collaborations been formed to pool resources, share risks, or coordinate strategies?
 - Or have decision-making processes or support mechanisms been reformed to be more responsive and inclusive?
- How has the local community drawn on its cultural heritage, traditional knowledge, or social capital to cope with adversity and drive positive change?
 - Are there examples of grassroots initiatives or citizen-led projects that have filled gaps or met needs in innovative ways?
 - Or of efforts to preserve and valorize local assets and identities as sources of resilience and renewal?
- What role have digital technologies, data, or online platforms played in enabling local actors to adapt and innovate in the face of challenges?
 - For example, have virtual tools been used to maintain services, connections, or markets during physical disruptions?
 - Or have new digital skills or infrastructures been developed to support smarter, more agile ways of working and living?
- How have experiences with past crises or disruptions shaped the adaptive capacities and strategies of local actors over time?
 - What lessons have been learned about what works and what doesn't in terms of building resilience?
 - And how have these insights been incorporated into current and future plans and initiatives?

4.4. Theme 3: Cross-Border Dynamics and Cooperation

- How does your area's location near a border shape its socio-economic situation and development opportunities?
- What types of cross-border interactions, flows, or dependencies are most significant for local communities and businesses?
- Have there been any notable changes or disruptions to these cross-border dynamics recently, and how have local actors responded?
- Can you provide examples of successful cross-border initiatives, partnerships, or networks that have benefited your area?
- How has the current war context affected cross-border interactions and cooperation in your area?
- What specific disadvantages or challenges has your region faced due to the disruption of cross-border dynamics?

- What strategies or initiatives have been implemented to adapt to the new geopolitical realities and maintain the benefits of previous cross-border collaborations?
- In light of the current challenges, what new forms of cross-border cooperation or regional partnerships could be explored to support the resilience and development of border areas?

4.5. Theme 4: Role of EU Cohesion Policy and Funding

- To what extent has your area participated in or benefited from EU cohesion policy programs and projects?
- Which types of EU-funded interventions or investments have had the most tangible impacts on local development and resilience?
- Can you provide specific examples of EU-funded projects or initiatives that have directly contributed to enhancing the adaptive capacity and resilience of your border area in the face of recent challenges?
- How do local stakeholders perceive the relevance, accessibility, and effectiveness of EU cohesion funding instruments?
- What challenges or barriers do local actors face in accessing, managing, or leveraging these funds for adaptive purposes?
- How could EU cohesion policy be improved to better support the specific needs and potential of border areas like yours?
- What specific adjustments or innovations in EU cohesion policy would you recommend to ensure that border regions can effectively access and utilize funding to build resilience and adapt to the evolving challenges they face?

4.6. Theme 5: Future Priorities and Untapped Opportunities

- Looking ahead, what do you see as the most pressing issues or promising opportunities for your area's future development?
- What types of support, resources, or policy changes would be most helpful for local communities and businesses to thrive and adapt?
- How can local voices, experiences, and ideas be better integrated into broader regional and cross-border strategies and decision-making processes?

4.7. Closing:

- Before concluding the interview, provide an opportunity for the interviewee to add any further comments or insights they think might be relevant to the research topic.
- Ask the interviewee if they have any suggestions for other local stakeholders or information sources that could contribute to the research.

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