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# Cohesion and Competitiveness in CEE

## The Impact of EU Cohesion and Development Policies on the Competitiveness and Energy Transition in Central and Eastern Europe

*The admission of Central and Eastern European (CEE) countries to the European Union (EU) caused significant economic growth, yet achieving sustained competitiveness within the EU continues to present difficulties. The paper analyses the competitiveness of CEE economies within the EU context, emphasising the effects of EU cohesion and development policies, energy transition initiatives and developments in digital infrastructure. This work examines the distinct economic and structural issues confronting CEE nations, utilising ideas from major EU papers such as The Future of European Competitiveness (Draghi Report), Much More than a Market (Letta Report) and the Ninth Cohesion Report. Particular attention is given to energy dependency, regional digital divides and the socio-economic impact of green transitions on traditionally coal-reliant economies.*

*Our analysis utilises statistical data – such as GDP growth, renewable energy adoption rates and digital readiness scores – to evaluate policy effectiveness. Statistical analyses of NUTS 2 areas in Hungary and Poland reveal regional disparities, emphasising the relationship between EU funding allocations and improvements in economic indicators such as internet accessibility and renewable energy adoption. Findings indicate that centralised governance structures and regional variations in CEE nations limit the effectiveness of EU initiatives, highlighting the necessity for localised, adaptable approaches in cohesion policy. This study adds to ongoing policy debates on the competitiveness of CEE countries by highlighting key areas where*

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*strategic investments can help create a more cohesive and sustainable Single Market with a view to the corresponding role of EU funding programmes.*

**Keywords:** Central and Eastern Europe, competitiveness, cohesion policy, energy transition, digital infrastructure, green economy

## Introduction

Joining the European Union (EU) has transformed the economic landscape of Central and Eastern European (CEE) countries, offering access to the Single Market, Structural and Cohesion Funds, and development programs that have driven economic growth and deeper EU integration. However, sustaining competitiveness within the EU requires constant adjustments to adapt to an always-changing economic and policy world, where digitalisation, energy transition and economic resilience are central to future success.

Cohesion policy has played a crucial role in addressing regional disparities and supporting less developed regions within the CEE region. By funding infrastructure projects, educational opportunities, social inclusion measures, improving broadband access and promoting renewable energy adoption, the EU has helped these nations overcome structural disadvantages. Yet, as the analysis revealed, significant disparities persist between urban hubs like Budapest and Warsaw and rural regions such as Észak-Alföld and Lubelskie, where growth and digital infrastructure improvements lag behind despite EU investments.

This study explores the factors shaping economic competitiveness in CEE countries, focusing on case studies of Hungary and Poland. It is supported by statistical data and regional performance metrics. Insights from key reports – Mario Draghi's *The Future of European Competitiveness,* Enrico Letta's *Much More than a Market* and the European Commission's *Ninth Cohesion Report* – further contextualise these findings, offering a nuanced view of successes and challenges.

The Draghi Report underscores the urgent need for coordinated EU energy policies to reduce dependency and mitigate the economic damage of high energy costs. This is a critical issue for coal-dependent regions like Poland's Śląskie and Hungary's Nógrád, where the reliance on fossil fuels creates significant economic vulnerabilities. Meanwhile, the Letta Report advocates for a Single Market that bridges the digital divide, enabling rural regions like Poland's Lubelskie and Hungary's Észak-Alföld to participate more fully in the EU's digital and economic ecosystems. The Ninth Cohesion Report provides a broader perspective on how EU cohesion policy has fostered economic growth but also highlights persistent "development traps" that hinder progress in less developed areas, such as Észak-Alföld and Lubelskie, which face structural barriers to competitiveness.

By critically analysing statistical trends and regional disparities, this study emphasises the importance of tailored EU strategies that address local needs while aligning with broader sustainability and digitalisation goals. As the EU strives for a cohesive and sustainable future, integrating CEE economies remains essential for achieving its vision of economic solidarity and resilience.

## Theoretical framework

Economic integration theory posits that removing trade barriers and creating a unified market enhances efficiency, fosters growth and promotes convergence, as exemplified by the EU's Single Market.[3] For CEE countries, accession to the EU and integration into the Single Market have opened significant opportunities for economic modernisation and enhanced competitiveness. Building on this foundation, Porter's theory of competitive advantage highlights that national and regional competitiveness is shaped by the productivity with which resources are utilised.[4] Factors such as market conditions, institutional quality, infrastructure, skilled labour and innovation systems all play a critical role in determining competitiveness.

However, as Krugman's work on economic geography suggests, an economic activity often clusters in regions with favourable conditions, leading to regional disparities.[5] This concentration of growth highlights the importance of policies that address inequalities to ensure that the benefits of economic integration are evenly distributed across regions. The convergence theory further reinforces this idea, asserting that less developed economies tend to grow faster than their more developed counterparts, reducing income disparities over time.[6] Yet, while EU cohesion policy has made significant progress in promoting convergence, challenges persist, particularly in regions with structural weaknesses.[7] This necessitates a place-based approach to development, which tailors policies to the unique needs and potential of individual regions.[8] Without such localised strategies, cohesion policy risks perpetuating inequalities rather than mitigating them, as Rodríguez-Pose and Ketterer argue.[9] Therefore, empowering regional authorities and integrating local priorities are critical for achieving sustainable and inclusive development.

Beyond economic disparities, energy dependency presents another significant challenge for CEE countries. Energy dependency theory explores the vulnerabilities of reliance on external energy sources.[10] For Europe, where energy prices are typically higher than in other major economies, this dependency constrains industrial competitiveness, particularly for energy-intensive sectors.[11] Research by Böhringer and Rutherford[12] highlights the economic strain caused by energy price shocks, which can reduce industrial output and limit overall competitiveness. However, ecological modernisation theory offers an alternative perspective, suggesting that energy and environmental challenges can drive innovation, positioning sustainability as a competitive advantage for regions that invest in renewable energy and efficient technologies.[13] For CEE countries, which often exhibit

3 Balassa 1961.
4 Porter 1990.
5 Krugman 1991.
6 Barro – Sala-i-Martin 1992.
7 Leonardi 2006.
8 Barca 2009.
9 Rodríguez-Pose – Ketterer 2020.
10 Pindyck 1979.
11 European Commission 2024a.
12 Böhringer–Rutherford 2010.
13 Huber 2000.

high energy intensity and significant reliance on fossil fuels, transitioning to renewable energy represents both a challenge and an opportunity to align with EU climate goals and enhance regional competitiveness.[14]

In addition to energy concerns, digital transformation has emerged as a central driver of economic growth in the modern era. Schwab's concept of the Fourth Industrial Revolution emphasises how digital technologies are reshaping industries and societies, creating both opportunities and challenges.[15] Similarly, Castells's theory of the network society highlights how information and communication technologies (ICT) enable new forms of economic and social organisation.[16] However, achieving sustainable economic growth also requires balancing digitalisation with environmental and social considerations, as emphasised by sustainable development theory.[17]

## EU development and cohesion policies

Introduced in 1986 under the Single European Act, the EU's cohesion policy is a cornerstone of European integration. Its goal is to reduce regional disparities and foster economic, social and territorial cohesion. Over successive programming periods, the policy has evolved to address new challenges, including climate change, digital transformation and the transition to a green economy, while reinforcing long-term stability and convergence. However, critiques regarding the policy's ability to achieve deeper EU integration have prompted ongoing reforms to enhance its relevance and effectiveness.

Cohesion policy follows a place-based framework, emphasising tailored interventions that empower regions to address unique social, economic and cultural challenges. This approach seeks to empower local authorities and communities to harness their distinctive strengths while addressing structural difficulties. By allocating resources to less developed regions, cohesion policy fosters convergence and inclusive growth, addressing diverse regional needs in infrastructure, workforce skills and resources. Commissioner Elisa Ferreira underscores the centrality of territorial competitiveness, highlighting the need for regions to create attractive and sustainable environments for residents and businesses, a fundamental aim of cohesion policy.[18]

The evolution of cohesion policy is marked by its integration of performance measurement to ensure accountability and alignment with regional needs. The European Commission's Directorate-General for Regional and Urban Policy (DG REGIO) uses indicators like the Regularity Indicator (RTER) in its Annual Activity Reports to assess the compliance of cohesion-funded projects.[19] While the 2014–2020 programming period introduced a performance-based model focusing on measurable milestones, the RTER specifically addresses the legality and regularity of fund implementation. This dual approach aims to balance effectiveness with proper financial management. Such

14 SZEMZŐ et al. 2020.
15 SCHWAB 2016.
16 CASTELLS 2000.
17 SOLOW 1974; SACHS 2015.
18 European Commission 2023a.
19 European Commission 2023a.

adaptations underscore the policy's responsiveness to regional diversity while reinforcing its capacity to address disparities effectively and ensure proper use of EU funds. This shift aligns with insights from the European Spatial Planning Observation Network (ESPON)[20] and the Ninth Cohesion Report, both of which advocate for decentralised performance metrics tailored to reflect local challenges and opportunities.[21] Such adaptations underscore the policy's responsiveness to regional diversity, reinforcing its capacity to address disparities effectively.

In recent years, additional layers of complexity have been introduced to cohesion policy, mainly through the establishment of the Recovery and Resilience Facility (RRF). Designed as a temporary mechanism to support economic recovery from the Covid–19 pandemic, the RRF complements the cohesion policy's goals by promoting resilience and reducing disparities. However, its coexistence with cohesion policy has sparked debates about policy coherence, particularly in funding allocation and strategic alignment. Legislative discussions for the post-2027 programming period are expected to address these concerns, aiming to harmonise the RRF and cohesion policy frameworks to balance short-term recovery with long-term sustainability.[22]

The *Territorial Agenda 2030* and the *Just Transition Mechanism (JTM)* exemplify the EU's adaptability to emerging challenges. The *Territorial Agenda 2030* emphasises the importance of flexible, forward-looking approaches to regional development, particularly as regions confront the dual pressures of green and digital transitions.[23] Similarly, the *Just Transition Mechanism* aims to mitigate the socio-economic impacts of transitioning to a greener economy, focusing on supporting regions heavily reliant on carbon-intensive industries.[24] Meanwhile, the JTM demonstrates the EU's commitment to supporting regions disproportionately affected by industrial shifts, particularly those transitioning away from carbon-intensive industries. Together, these initiatives reflect the critical role of cohesion policy in fostering a resilient and competitive EU, capable of addressing future challenges while maintaining its foundational commitment to reducing disparities.[25]

Cohesion policy integrates ecological modernisation theory, investing in renewable energy, energy efficiency and digital infrastructure to align growth with social and environmental goals. This vision aligns with Schwab's[26] concepts of the Fourth Industrial Revolution, which underscores the transformative potential of digital technologies in shaping competitive, sustainable and inclusive economies.

While EU cohesion policy aims to foster economic growth and reduce regional disparities,[27] the literature presents a more nuanced perspective. Studies such as Ederveen et al. (2002) emphasise the crucial role of efficient fund allocation and spending in maximising the impact of cohesion policy. However, concerns have been raised about

20 ESPON 2017.
21 European Commission 2024b.
22 Hunter 2023.
23 European Commission 2020.
24 European Commission s. a.
25 Böhme–Redlich 2023.
26 Schwab 2016.
27 European Commission 2021.

the potential for diminishing returns or even negative effects, with Becker et al. (2012) questioning whether "too much of a good thing" can hinder growth in certain regions. Furthermore, Boldrin and Canova (2001) critique the effectiveness of European regional policies in achieving convergence, suggesting that alternative approaches may be needed to address persistent inequalities.

## Competitiveness of CEE countries in the EU

CEE countries have benefitted significantly from EU membership, which has facilitated economic growth and integration through trade liberalisation, foreign direct investment (FDI) and cohesion funding. GDP per capita in CEE countries has risen steadily, with Poland achieving 80% of the EU average by 2023, compared to 51% at the time of its EU accession in 2004. Similarly, Hungary increased its GDP per capita from 64% to 76% of the EU average over the same period.[28]

Despite these advancements, rural regions remain disadvantaged. For example, GDP per capita in Slovakia's Bratislava region is 184% of the EU average, while Eastern Slovakia lags at 54%.[29]

As Dijkstra et al. emphasise, "EU cohesion policy has acted as a buffer against the negative impacts of the crisis in regions that receive substantial funding, allowing for a faster recovery compared to regions with fewer support mechanisms".[30] This highlights the critical role cohesion policy has played in buffering CEE countries against shocks such as the 2008 global financial crisis. This resilience was similarly evident during the Covid–19 pandemic, where cohesion funds supported a quicker rebound in GDP growth for countries like Poland (6.8%) and Hungary (7.1%) in 2021, exceeding the EU average of 5.4%.[31] However, the region's competitiveness within the EU is shaped by stark regional disparities. While cohesion policy has significantly boosted economic growth in the region, these classifications underscore the persistent gaps in regional competitiveness.[32]

Energy dependency remains a critical factor affecting competitiveness in CEE countries. Poland, Hungary and Bulgaria have historically relied heavily on coal and other non-renewable energy sources, making them vulnerable to energy price fluctuations. Poland's Śląskie region, a major coal-mining area, has faced significant economic and social costs in reducing coal dependency.[33] Despite these challenges, there are success stories. Latvia, for instance, has diversified its energy portfolio, achieving a 43% share of energy from renewables in 2023, significantly higher than Hungary's 17% and Poland's 16%.[34] The energy transition in CEE countries presents a complex challenge, requiring both strategic investments and effective governance. While CEE countries have made progress in adopting renewable energy sources, their historical reliance on fossil fuels

28 Eurostat 2023.
29 European Commission 2024b.
30 Dijkstra et al. 2015: 942.
31 Eurostat 2022.
32 European Commission 2024b: 94.
33 European Commission 2024a.
34 Eurostat 2024.

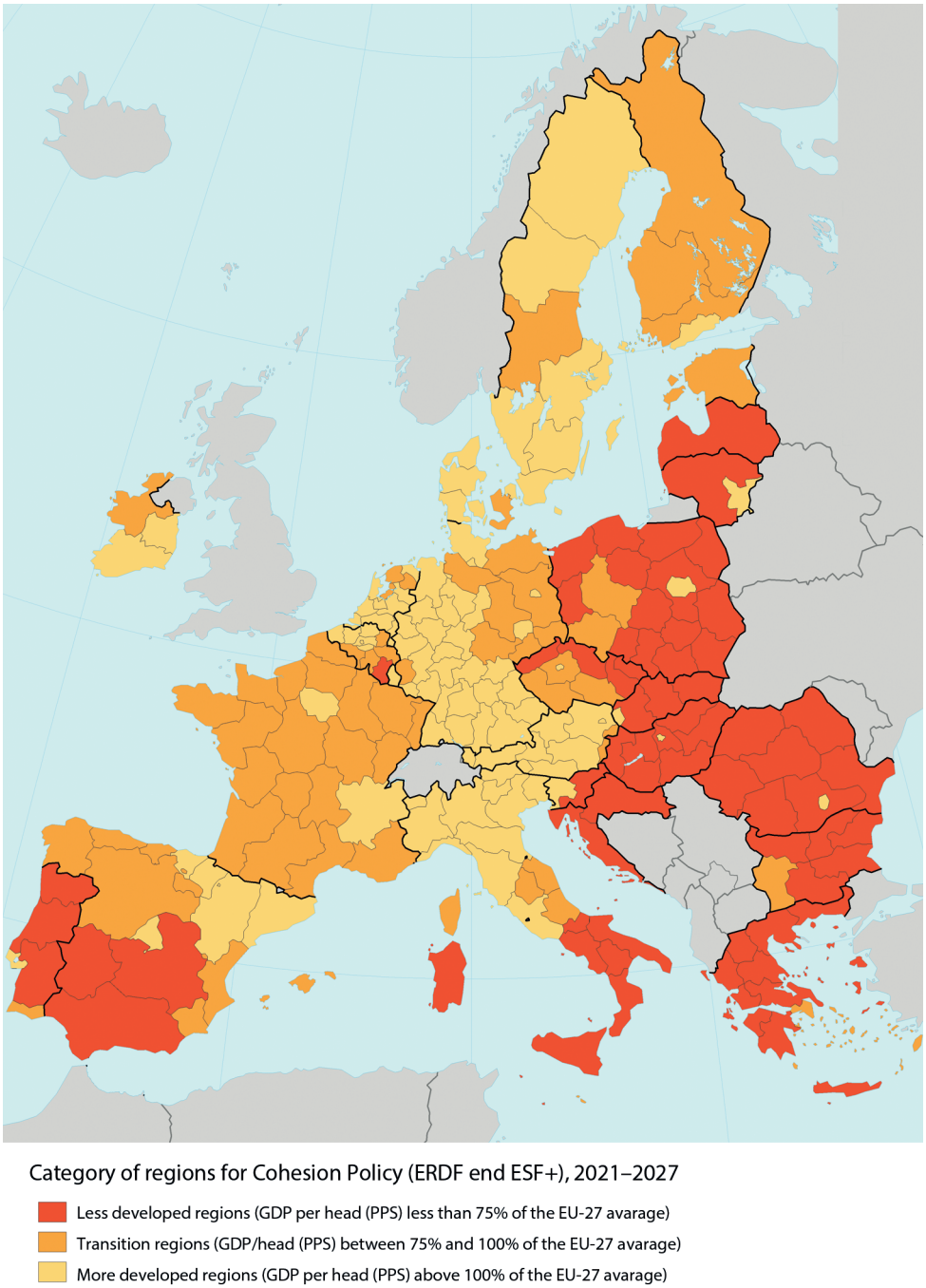


*Figure 1: Category of regions for Cohesion Policy*

*Source: Eurostat*

and varying national strategies impact the pace and nature of this transition. The United Nations Development Programme (2023) highlight the importance of effective governance in driving energy transitions, while European Council on Foreign Relations in it's 2023 report explains Poland's resistance to EU energy and climate policies, which is rooted in its energy security complex.

Digital infrastructure plays a crucial role in enhancing regional competitiveness and bridging socio-economic disparities within CEE countries. This development extends beyond mere connectivity, encompassing the creation of smart, sustainable cities as highlighted by Bibri and Krogstie (2017) in their extensive review. Toader et al. (2018) further quantify the impact of ICT infrastructure on regional development within the EU, demonstrating its importance for economic growth. If we look at the data, we can see that while urban areas like Warsaw and Budapest benefit from robust digital networks, many rural regions face significant connectivity challenges. For example in Romania, the lack of high-speed internet in rural areas is a significant issue, with approximately 30% of these areas lacking access, which widens the digital divide between urban and rural regions.[35]

Governance models shape how effectively EU funds address disparities. Decentralised approaches like Poland's enable regions such as Wielkopolskie to tailor funds to local needs, fostering growth. Conversely, Hungary's centralised approach has concentrated resources in Budapest, exacerbating inequalities in less developed regions like Northern Hungary. Similar trends are evident in the Czech Republic, where Prague attracts a disproportionate share of EU funding compared to less developed Moravian regions, which remain below the EU average in competitiveness indicators.[36]

## Case study: EU funds and their impact on Hungary and Poland

This case study examines how EU funds have influenced green and digital transitions in Hungary and Poland, revealing regional disparities shaped by governance, economic priorities and fund allocation. The study focuses on four regions: Central Hungary (Közép-Magyarország) and Mazowieckie, representing Budapest and Warsaw, and Észak-Alföld and Lubelskie, rural areas in Hungary and Poland, highlighting urban–rural contrasts in EU investment outcomes.

It is important to acknowledge the heterogeneity within the selected regions. For example, within Mazowieckie, significant disparities exist between the Warsaw metropolitan area and the surrounding rural areas. Similarly, Central Hungary is largely driven by the economic performance of Budapest, with other parts of the region experiencing slower growth. While the NUTS 2 level provides a useful level of aggregation for comparative analysis, these intraregional differences should be considered when interpreting the results. Further research could explore the impact of cohesion policies at a more granular level to capture these nuances.

35 Energynomics 2024.
36 European Commission 2023a.

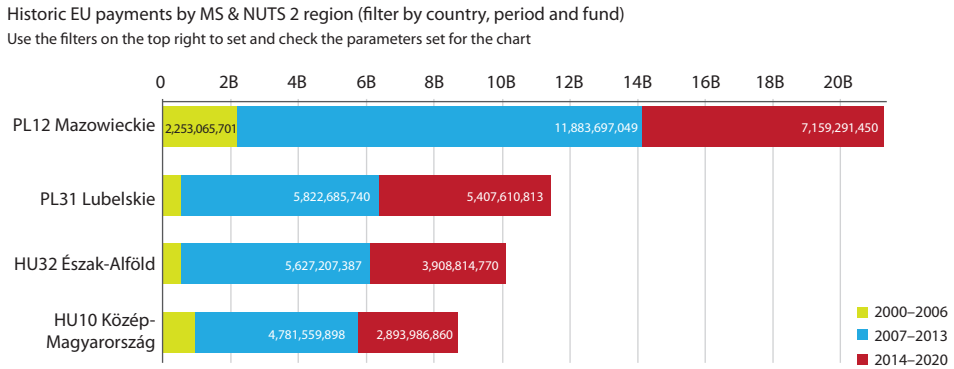


*Figure 2: EU Payments towards Mazowieckie, Lubelskie, Közép-Magyarország és Észak-Alföld regions between 2000 and 2020*

*Source: Eurostat*

As the above chart shows, EU payments to NUTS 2 regions in Poland and Hungary reveal important trends in fund allocation. Mazowieckie received the highest EU funding in Poland, aimed at boosting the capital's infrastructure and competitiveness, while significant allocations to Lubelskie and Észak-Alföld targeted regional disparities.

In contrast, Hungary's funding is more centralised, with Central Hungary receiving significant investment, though less than Mazowieckie, leaving rural regions relatively underserved. The noticeable increase in funding from 2007–2013 to 2014–2020 underscores the EU's intensified commitment to regional development. These patterns illustrate how governance models shape fund distribution and impact. These differences align with findings in the *Ninth Cohesion Report,* which emphasises that a "one-size-fits-all" approach is insufficient for addressing diverse regional needs across the EU.[37]

Simply examining fund allocations is insufficient; understanding their impact requires analysing additional factors influencing regional competitiveness. One valuable tool for this purpose is the Regional Competitiveness Index, which provides a comprehensive framework for assessing the strengths and weaknesses of regions and their capacity to capitalise on funding opportunities.

The European Commission's Regional Competitiveness Index (RCI) benchmarks NUTS 2 regions based on three sub-indexes: Basic factors (e.g. infrastructure, health), Efficiency factors (e.g. education, labour market) and Innovation factors (e.g. technology, innovation capacity). Updated every three years, the RCI provides a detailed snapshot of regional strengths and weaknesses, highlighting disparities across the EU.

37 European Commission 2024c.

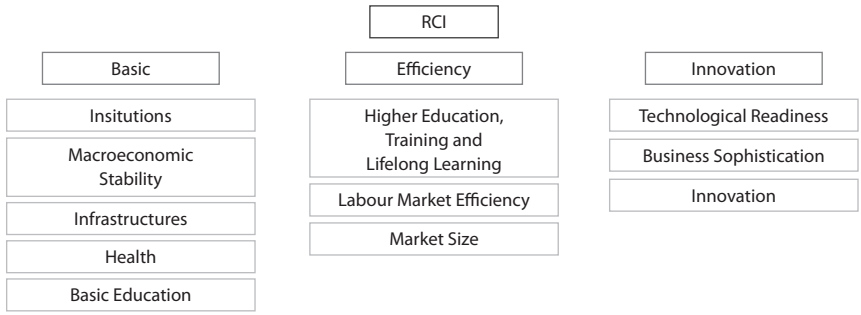


*Figure 3: Data matrix used for the Regional Competitiveness Index*

*Source: Eurostat*

For our study, the RCI offers a robust framework to analyse how EU cohesion policies impact competitiveness in CEE regions. It allows us to track progress in areas like infrastructure development, digitalisation and innovation, which are central to green and digital transitions. Additionally, the RCI's multidimensional approach aligns with our focus on evaluating regional disparities, making it a valuable tool for identifying both achievements and ongoing challenges. To better align the RCI with the specific objectives of this study, we focus on three key dimensions: 'Innovation', 'Digital Readiness' and 'Basic Factors'. The 'Innovation' dimension is particularly relevant as it reflects a region's capacity to develop and adopt new technologies, crucial for energy transition and digital infrastructure development.[38] 'Digital Readiness' is essential for assessing a region's ability to participate in the digital economy and benefit from increased connectivity.[39] 'Basic Factors', specifically infrastructure, are vital, representing enablers of the green transition.

Table 1 presents the Regional Competitiveness Rankings (RCI 2022) for selected regions, including Warszawski stołeczny, Central Hungary, Lubelskie and Észak-Alföld, categorised by their respective stage of development. The regions are ranked based on their RCI scores, which measure competitiveness across factors such as infrastructure, education, innovation and economic performance.

*Table 1: Regional Competitiveness Rankings for Warszawski stołeczny, Central Hungary, Lubelskie and Észak-Alföld 2022*

| Rank | Region name | Stage of development | RCI 2022 |
|---|---|---|---|
| 36 | Mazowieckie | MD | 118 |
| 93 | Central Hungary | MD | 105.5 |
| 180 | Lubelskie | LD | 79 |
| 202 | Észak-Alföld | LD | 67.9 |

*Source: Eurostat*

[38] European Commission 2023a.
[39] European Commission 2024b.

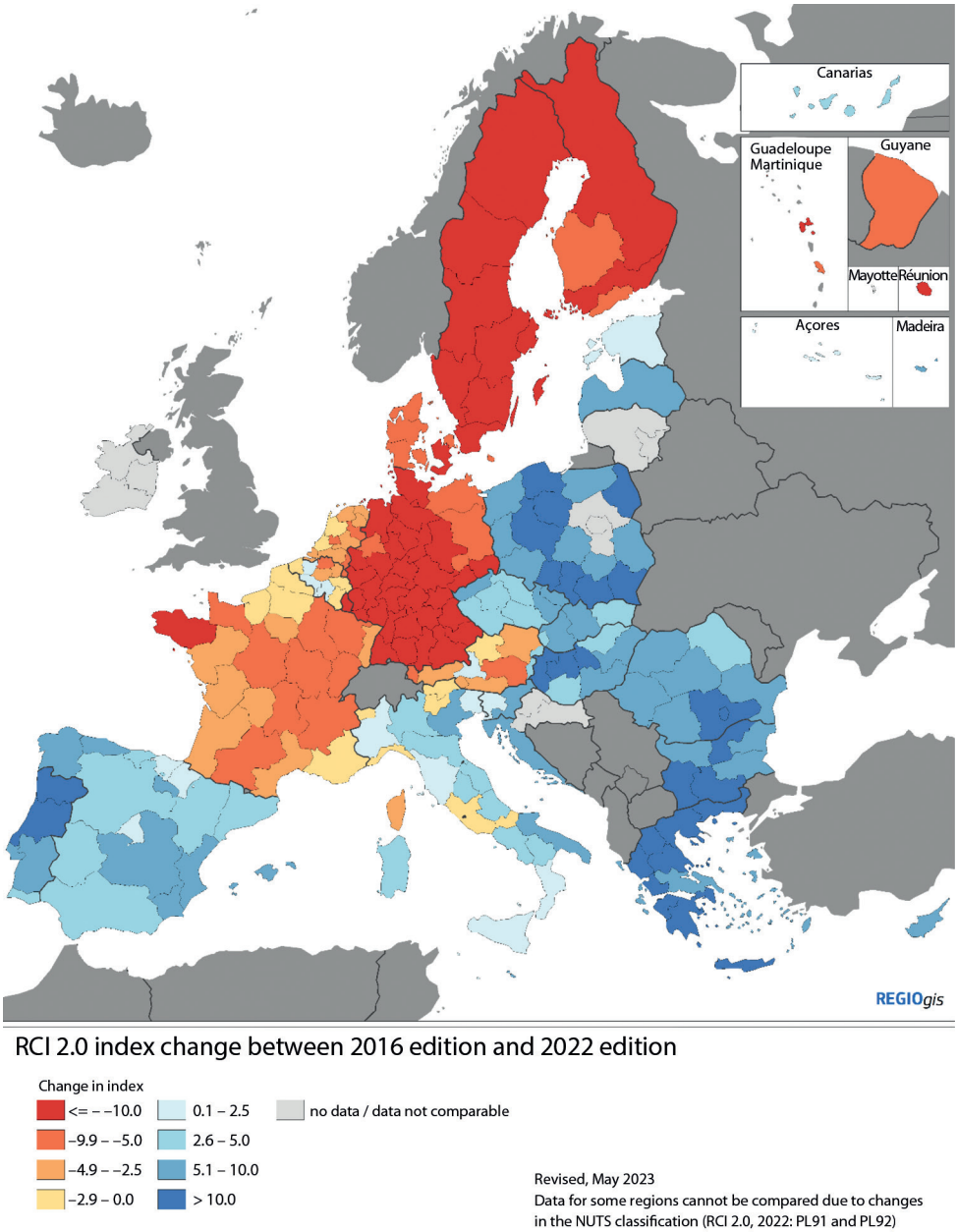


*Figure 4: Regional competitiveness rankings changes between 2016 and 2022*

*Source: Eurostat*

Cohesion policy in the period 2021–2027 uses three categories of regions based on the GDP per capita for the years 2015, 2016 and 2017:

- *Less developed (LD): less than 75% of EU27 average*
- *Transition: between 75% and 100% of EU27 average*
- *More Developed (MD): above 100% of EU27 average*

As we can see from Table 1, Mazowieckie, representing Poland's capital region, leads the group with an RCI score of 118 and is classified under the more developed (MD) category. The region showed notable improvements in its competitiveness index, especially between the 2019 and 2022 editions, where it increased by 13 index points. This trend is in close connection with the fact that the region has consistently received the highest EU fund allocations across all programming periods, as shown in Figure 2. The other regions in Poland, such as Lubelskie, also increased by approximately 10 points during the same period. These improvements suggest progress in economic and structural areas, with some regions, particularly urban and more developed ones, catching up to EU standards. However, regional disparities remain, with Eastern Polish regions lagging behind Western regions' competitiveness.

Hungary displayed a mixed performance across its regions. Central Hungary follows with a score of 105.5, falling under the more developed (MD) category. The region remained relatively competitive, aligning closer to EU averages, but other regions, particularly in the eastern and rural parts of the country, continued to face challenges. In contrast, Lubelskie and Észak-Alföld, both categorised as less developed (LD) regions, score significantly lower at 79 and 67.9, respectively. The disparity between Budapest and peripheral regions is significant, illustrating the uneven economic development within Hungary. RCI scores correlate with funding allocation, as regions like Mazowieckie and Central Hungary outperform less funded areas such as Lubelskie and Észak-Alföld.

While the RCI offers a comprehensive overview of regional competitiveness, it includes factors (e.g. health, higher education) that are not directly linked to the study's focus on cohesion policy, energy transition and digital infrastructure. To mitigate this, the analysis focuses on interpreting the RCI in conjunction with other indicators, such as GDP growth, renewable energy adoption and broadband access, providing a more nuanced understanding of the impact of EU funding. These dimensions were chosen based on the priorities outlined in the Draghi and Letta reports, as well as the EU's broader strategic objectives for sustainable and inclusive growth.

Table 2 offers a detailed overview of the socio-economic and infrastructural impacts of EU cohesion funds on selected regions. It highlights key indicators, including total EU fund allocations since accession, regional GDP and household internet access rates. Additionally, the table incorporates the share of energy from renewable sources, presented at the country level due to data availability constraints.

*Table 2: Impact of EU Cohesion Funds on Regional Competitiveness Indicators in selected regions of Hungary and Poland (2014–2022)*

| | EU fund allocation total (€ millions) | Regional GDP (€ millions) 2011 | Regional GDP (€ millions) 2022 | Renewable energy share (2004) | Renewable energy share (2023) | Broadband access (2012) | Broadband access (2023) |
|---|---|---|---|---|---|---|---|
| **Central Hungary** | 35,373 | 10,761 | 19,911 | 4% | 15% | 76% | 95% |
| **Észak-Alföld** | 38,288 | 9,858 | 16,214 | | | 58% | 88% |
| **Mazowieckie** | 44,918 | 20,014 | 35,862 | 6% | 16% | 74% | 93% |
| **Lubelskie** | 47,712 | 14,859 | 23,910 | | | 62% | 92% |

*Source: Eurostat*

The data for this study were primarily sourced from Eurostat, the statistical office of the European Union. Regional GDP data for 2011 and 2022 were obtained from the "Regional Economic Accounts – GDP and Main Components" dataset (nama_10r_2gdp). Data on household broadband access were sourced from the "Households with Broadband Access" dataset (isoc_r_broad_h). Due to limitations in regional-level data availability, renewable energy share data were obtained from the "Share of Energy from Renewable Sources" indicator (nrg_ind_ren) at the national level. These data were accessed and extracted in January 2025 using the Eurostat online database.

To analyse the relationship between EU fund allocations and regional development indicators, we calculated the percentage change in GDP between 2011 and 2022 for each region. Broadband access improvements were measured as the percentage point difference in household access rates between 2012 and 2023. Regional performance was compared using a difference-in-differences approach, examining the change in key indicators between regions receiving high levels of EU funding and those receiving lower levels.

Table 2 reveals that urban and economically advanced regions like Mazowieckie and Central Hungary have experienced notable GDP growth and improvements in digital infrastructure, reflecting the substantial EU investments directed toward these areas. For instance, Mazowieckie's GDP grew from €20,014 million in 2011 to €35,862 million in 2022, while Central Hungary's GDP more than doubled from €10,761 million to €19,911 million over the same period. These results underscore the advantages of concentrated funding in urban centres, where infrastructure, innovation capacity and educational attainment levels drive enhanced labour market efficiency.

In contrast, rural regions such as Lubelskie and Észak-Alföld have shown positive but comparatively modest economic progress. Lubelskie's GDP increased from €14,859 million to €23,910 million between 2011 and 2022, while Észak-Alföld's rose from €9,858 million to €16,214 million. These figures highlight the ongoing challenges faced by less developed regions in catching up with their urban counterparts. While growth is evident, these rural areas continue to grapple with structural limitations.

Between 2004 and 2023, Hungary increased its renewable energy share from 4% to 15%, while Poland's share rose from 6% to 16%. Despite these advancements, both countries remain below the EU average of 25% as of 2022, highlighting the slower pace of energy transition compared to Western European nations. For instance, Sweden's renewable energy share was nearly 50% in 2022, with Denmark and Finland also exceeding 40%.[40] This disparity underscores Eastern European countries' significant challenges in accelerating their energy transitions.

Broadband access saw significant improvements across all regions, further emphasising the impact of EU digital infrastructure programs. Central Hungary achieved a high broadband coverage rate, rising from 76% in 2012 to 95% in 2023, while Mazowieckie recorded a comparable increase from 74% to 93%. Rural regions also made substantial progress, with Lubelskie improving from 62% to 92% and Észak-Alföld from 58% to 88%, bridging much of the digital divide. However, disparities in digital readiness persist, requiring sustained focus on equipping rural areas with advanced digital skills and connectivity.

These findings echo the Draghi and Letta Reports, which stress inclusive, region-specific strategies for digital and energy transitions to enhance resilience. The observed trends also correlate with the RCI scores, as more developed regions like Mazowieckie and Central Hungary lead in competitiveness, benefiting from targeted EU support, while less developed regions like Lubelskie and Észak-Alföld lag behind, highlighting the necessity for continued, differentiated investments to balance regional disparities.

## National policy examples

Hungary and Poland have implemented various national policies that align with the goals of EU cohesion policy, demonstrating their efforts to enhance regional competitiveness and address disparities. In Hungary, the Modern Cities Program (2015–2020) aimed to improve urban infrastructure, digital connectivity and overall development, focusing heavily on urban centres.[41] This centralised approach benefited Budapest with 95% broadband penetration but left rural areas like Észak-Alföld lagging. Similarly, Hungary's National Energy and Climate Plan (2020) has sought to transition the country toward renewable energy and increased energy efficiency. However, this transition has been slower in less developed rural regions, emphasising the uneven impact of centralised policies.[42] Another noteworthy initiative, the Digital Welfare Program (2015), aimed to bridge the digital divide by increasing digital literacy and e-government services.[43] While the program has succeeded in advancing urban digital integration, rural areas continue to face challenges in achieving similar progress.

In Poland, the Digital Poland Operational Program (2014–2020) has been a cornerstone of its decentralised governance model, empowering regional authorities to allocate

40 IEA 2022.
41 Government of Hungary 2015a.
42 Ministry of Innovation and Technology 2022.
43 Government of Hungary 2015b.

EU funds to local digitalisation efforts. This program significantly increased broadband coverage in rural regions like Lubelskie (from 62% to 92%), demonstrating the success of tailoring policies to local needs.[44] Poland has also prioritised environmental sustainability through the Clean Air Programme (2018–ongoing), which focuses on improving energy efficiency and reducing reliance on coal, particularly in regions like Śląskie.[45] Additionally, regional development strategies, developed at the voivodeship level, showcase Poland's commitment to addressing local disparities.[46] These decentralised strategies have enabled regions like Mazowieckie to achieve exceptional GDP growth and competitiveness, contrasting with slower progress in rural areas.

## Methodological limitations

The analysis is subject to several limitations. The use of secondary data from Eurostat introduces the potential for measurement errors or biases inherent in the original data collection process. Data validation was performed by cross-referencing with national statistical offices where possible; however, data quality problems may persist. Given the small sample size of regions selected for case study analysis, findings may not fully represent the diversity of experiences across all CEE countries. Analysis is also constrained by data availability at the regional level for certain indicators, such as renewable energy share, which is only available at the national level. As a result, interpretations of the results are made.

### *The withholding of EU funds and its implications*

The ongoing disputes between Hungary and the EU over governance, rule of law and institutional reforms have resulted in significant financial consequences. The European Commission has withheld Hungary's access to substantial funds from the EU Cohesion Policy, Horizon Europe, and Erasmus+ programs due to concerns about judicial independence, anti-corruption measures and public procurement practices.[47] Similarly, Poland experienced a temporary suspension of its RRF, which was only resolved after commitments were made to align judicial reforms with EU standards.[48]

For Hungary, the freezing of funds includes approximately €6.3 billion under the RRF and a portion of the €22 billion allocated for the Cohesion Policy for 2021–2027.[49] Moreover, its exclusion from Horizon Europe, the EU's flagship research and innovation program, and Erasmus+ funding for education and exchange initiatives further compounds the issue. Together, these measures represent a substantial share of resources crucial to Hungary's efforts to advance digitalisation, sustainability initiatives and

44 Ministry of Digital Affairs 2014.
45 National Fund for Environmental Protection and Water Management 2018.
46 Ministry of Development Funds and Regional Policy 2021.
47 European Commission 2023b.
48 European Commission 2024b.
49 Hunter 2023.

higher education. Poland, in contrast, managed to unlock its RRF funds of €35.4 billion after demonstrating progress in addressing EU concerns.[50]

The suspension of EU funds poses significant risks to Hungary's socio-economic development and competitiveness. Economic disparities will likely deepen, particularly in rural and less developed regions, which rely on cohesion funds to bridge infrastructure, education and digital access gaps. The lack of access to Horizon Europe funding jeopardises research institutions and businesses dependent on EU support for innovation projects, potentially stalling technological progress and weakening their position in the Single Market.[51] Similarly, the suspension of Erasmus+ funding limits opportunities for students and academics, threatening long-term human capital development and international collaboration. Beyond financial impacts, these disputes damage Hungary's reputation within the EU, potentially deterring foreign investment and cross-border partnerships.[52] Prolonged withholding of funds could exacerbate existing inequalities. This situation underscores the central question of this study: the suspension of funds not only disrupts immediate financial stability but also undermines broader cohesion policy goals, which aim to reduce disparities and foster integration.

## Conclusion and future outlook

This study has examined the complex interplay between EU cohesion policies, national governance and regional competitiveness in Central and Eastern Europe. Our analysis reveals that while EU membership and cohesion funding have significantly boosted economic growth and integration in CEE countries, persistent regional disparities and external challenges, such as energy dependency and the digital divide, continue to hinder their ability to achieve sustained competitiveness within the Single Market.

Moreover, our analysis underscores the vulnerability of CEE economies to energy price shocks and the urgent need for a transition to renewable energy sources. While some countries, like Lithuania, have made significant progress in diversifying their energy portfolios, others, like Poland and Hungary, continue to rely heavily on fossil fuels. Addressing this energy dependency is crucial for enhancing competitiveness and achieving EU climate goals. Finally, the recent withholding of EU funds from Hungary poses significant risks to the country's socio-economic development and its ability to address these challenges.

Reflecting on the findings, the competitiveness of CEE countries hinges on the dynamic interplay between cohesion policies and national governance. As illustrated by the varied trajectories of Hungary and Poland, future strategies must align local needs with broader EU objectives. The Draghi Report underscores the importance of energy policy in fostering resilience and competitiveness. These findings underscore the necessity of a coordinated EU energy policy to ensure equitable progress across diverse regions.

50 European Commission 2024b.
51 IEA 2023.
52 Science Business 2024.

Sustained investments in renewable energy projects and localised support mechanisms are crucial to achieving economic and environmental sustainability.

The new European Commission has a unique opportunity to address these regional imbalances by integrating the lessons from cohesion policy into a broader competitiveness strategy. The *Budapest Declaration,*[53] proposed by the Hungarian Government on 8 November 2024, during Hungary's EU Council Presidency, emphasises enhancing national flexibility in implementing EU policies. This initiative aligns with Hungary's broader push for increased subsidiarity and has sparked discussions about its potential implications for the EU's cohesion framework. These debates are particularly relevant as the EU begins planning the next Multiannual Financial Framework (MFF), with cohesion policy reform being a critical agenda item. Recent dialogues within the European Parliament and Council have stressed the need to re-evaluate the effectiveness of cohesion policy in light of challenges like the green transition and digital integration, advocating for reforms to enhance its impact and alignment with broader EU goals.[54]

Looking ahead, the future competitiveness of CEE countries will depend on the EU's ability to adapt its policies to the unique challenges of each region while maintaining coherence within the Single Market. Tailored strategies that address disparities in energy dependency, digital infrastructure and institutional capacity will be essential. The Draghi Report's conclusions on energy policy highlight the urgency of a unified but flexible approach to the energy transition, ensuring that regions with differing starting points can remain competitive in a greener Europe. The commitment of the new Commission to innovative, inclusive cohesion policies will be vital for fostering resilience, equity and long-term competitiveness within the EU. By balancing cohesion with flexibility, the EU can create a sustainable and integrated future that benefits all its member states.

By reflecting on the evolving dynamics of cohesion policy and the implications of the *Budapest Declaration,* the EU can refine its frameworks to ensure that no region or member state is left behind in its pursuit of competitiveness and sustainability. These discussions highlight the ongoing importance of collaboration and reform in navigating the complexities of regional integration and development.

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[53] Council of the European Union 2024.

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