



EUROPEAN CLUSTER
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Clusters meet Regions' event in Cluj-Napoca “Clusters for Technology Transfer” – the case of the North-West Region

Input paper

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Executive Summary

The following paper presents observations on the cluster landscape and innovation ecosystem of the Romanian North-West Region, to support strategic discussions during the Clusters Meet Regions event in Cluj-Napoca on 1-2 July 2025. It outlines the region's economic profile, innovation performance, and specialisation patterns, and highlights the role that clusters play in supporting regional development. In line with the event's focus on the role of clusters in technology transfer, the paper explores how cluster organisations contribute to fostering technology transfer and innovation within SMEs. By analysing existing cooperation structures and Smart Specialisation priorities, the paper identifies areas of strength, ongoing initiatives, and potential directions for future policy development. The insights aim to support discussions among policymakers, cluster managers, SMEs, and other regional stakeholders at the event.

The key takeaways of this paper are summarised below:

Context: Economic profile of the North-West Region

- In 2023, the GDP of the North-West Region of Romania was €39.2 billion, accounting for 12% of Romania's national GDP of €324.4 billion, making it the second-largest contributor after București-Ilfov. The region experienced strong GDP growth over the past ten years, with an average annual growth rate of 4.5%, outpacing the EU and national averages. The region's GDP per capita (PPS) in 2023 was €27,000, below the national average of €29,700 and the EU27 average of €38,100, positioning it as a mid-level region in Romania regarding economic output per capita.
- The Romanian North-West Region is transitioning from its traditional reliance on agriculture and mining to an economy with a growing emphasis on the services sector, as reflected in the increasing share of services in the regional Gross Value Added (GVA). Despite this shift, industry and agriculture continue to play a vital role in the region's economy.
- The industrial ecosystems of Construction, Mobility-Transport-Automotive, Energy Intensive Industries, Textile, Electronics, and Renewable Energy stand out in terms of employment by surpassing the national and EU average.
- According to the 2023 Regional Innovation Scoreboard, the North-West Region of Romania is classified as an "Emerging Innovator" with a 34.5 Regional Innovation Index (RII) score, below the EU27 average of 100 but slightly above the national average of 33.1. The region performs well compared to the regional average in metrics such as scientific publications and trademark applications, and digital skills, but faces challenges in R&D expenditure, especially in the private sector, and lags in business process innovation.

Cluster organisations in the North-West Region and their importance for regional economic development

- Out of the 68 ECCP-registered cluster organisations active in Romania, 12 are based in the North-West Region, placing the region second in terms of the number of cluster organisations after the capital region of Bucharest-Ilfov. The regional cluster landscape is relatively centralised, with most organisations located in the Cluj county. These cluster organisations span seven of the 14 EU industrial ecosystems. The most prominent industrial ecosystem is Renewable Energy, with three cluster organisations.
- At the national level, Romania's cluster policy is part of the broader industrial policy, focusing on disseminating the cluster concept without dedicated support. In contrast, at the regional level, the

North-West Regional Development Agency (ADR Nord-Vest) actively integrates clusters into the region's Smart Specialisation Strategy (S3), offering project-based funding, fostering international cooperation, and promoting digitalisation and strategic development, positioning clusters as key implementation tools and engaging them in the Entrepreneurial Discovery Process (EDP).

- Cluster organisations play a key role in enhancing regional industrial competitiveness by fostering collaboration, innovation, productivity and technology transfer. They also support the twin transition by facilitating the uptake of digital and green technologies, particularly in energy-intensive and manufacturing sectors. As regional intermediaries, clusters help firms align with sustainability goals and promote cross-sectoral cooperation for long-term transformation.

Cross-border cooperation and the involvement of clusters of the North-West Region in European networks and support initiatives

- Four Cluster organisations from the North-West Region participated in five different ESCP-4i (internationalisation) projects, with the projects focusing on the topics of the single market, cosmetics, agri-food, and green transition. In addition, one cluster participated in one ESCP-4x (cluster excellence) project.
- Two cluster organisations from the North-West region participated in four Eurocluster projects that focus on supporting green and digital transition in sectors such as furniture, health, and manufacturing.
- One cluster from this region is participating in one Interregional Innovation Investment (I3) project, namely, I3HIES, which focuses on healthcare innovations.
- The North-West Region hosts two of Romania's seven EDIHs, reflecting the national approach of building digital hubs around clusters and cluster consortia, and highlighting the role of clusters as drivers of digital transformation.

Smart Specialisation in the North-West Region

- Smart Specialisation is a strategic approach developed by the European Commission that requires regions to identify and focus on their unique strengths and capabilities to foster innovation-driven economic growth. North-West Region's S3 2021–2027 focuses on three thematic priority areas: Innovation for Health and Wellbeing, New Materials and Advanced Manufacturing, and Information and Communication Technologies (ICT). These areas aim to enhance the quality of life through health innovations, promote industrial transformation with advanced materials, and enable digital innovation across various sectors, facilitating regional competitiveness and sustainability.
- Cluster organisations are pivotal in implementing the North-West Region's S3, driving innovation and economic transformation. They facilitate cooperation among businesses, research institutions, and public authorities. Notably, clusters like Transilvania IT and AgroTransilvania play critical roles in knowledge transfer and internationalisation. The region's involvement in S3 Partnerships such as the Traceability and Big Data in the Agri-food Value Chain and the GO4Cosmetics Partnership highlights its commitment to interregional collaboration, leveraging these platforms to advance Smart Specialisation priorities and strengthen regional integration in European value chains.



01

Context: Economic profile of the North-West Region



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1. Context: Economic profile of the North-West Region

The following section provides a concise socio-economic overview of the Romanian North-West Region, encompassing key aspects, such as its macroeconomic profile and sectoral specialisation, as well as its innovation and regional competitiveness performances. North-West Romania is one of the eight regions of the country, comprising six counties: Bihor, Bistrița-Năsăud, Cluj-Napoca, Maramureș, Satu Mare, and Sălaj. With a population of approximately 2.5 million, it represents around 10% of Romania's total population.¹ The region is anchored by the city of Cluj-Napoca, with a population of 287,000, a key urban centre and economic engine.

Macroeconomic profile of the North-West Region

This first section has the purpose of providing a headline of economic indicators that position the North-West Region of Romania within the national and EU context. Despite the predominance of the services sector, North-West Romania has historically been mainly fuelled by agriculture and mining, due to the richness and diversity of its natural resources. This is still true for rural areas, where the regional economy is still driven by these sectors.² Nonetheless, efforts are underway to diversify the economic landscape, with incentives offered to investors seeking to expand the region's economic activities, with sectors such as ICT, technology, and renewable energy emerging. Additionally, the region also benefits from a growing network of universities and research centres, making it one of the most competitive and dynamic regions in Romania's academic and research field.³ The North-West Region **contributes significantly to Romania's GDP**. In 2023, the region's GDP was **€39.2 billion**, representing approximately 12% of the national GDP of €324.4 billion.⁴ This makes the North-West Region the second largest contributor to the national GDP after the capital region of București-Ilfov, which accounts for 29.4% of the national GDP. The North-West Region has experienced sustained economic growth in recent years. Since 2014, the regional GDP has increased by 44.4%⁵, which translates to an average growth rate of 4.5% annually, significantly above average growth rates of the EU (1.7%) and Romania (3.7%) during the same time.⁶ In 2023, **the region's PPS per capita was €27,000**, neither surpassing the Romanian national average (€29,700 PPS) nor the EU27 average of €38,100.⁷ This positioned North-West as one of the mid-table Romanian regions in terms of economic output per capita.

The North-West Region of Romania exhibits a diverse economic structure, with significant contributions from various sectors. Despite a strong historical presence of agriculture and mining, the service sector is gaining importance for the regional economy. In 2023, it accounted for **66.5%** of the region's **gross value added (GVA)**, which is still below the EU average of 72.5% but showcases significant growth over the past years.⁸ The shift towards the services sector underlines the region's structural shift towards a knowledge-based and consumer-driven economy. The **industrial sector** contributes **28.7% of regional GVA** (EU: 25.7%), a strong decrease

¹ Eurostat (2025): [Population on 1 January by age group, sex and NUTS 3 region](#) (last access 03.06.2025).

² Collavitti et al. (2021): Rural Areas as Actors in the Project of Regional Systems: A Comparison between Sardinia and the North-West Development Region of Romania. *Contesti. Città, Territori, Progetti*, 2(2), 209–234, pp. 209-234. Available online: <https://oajournals.fupress.net/index.php/contesti/article/view/13032> (last access 10.06.25).

³ European Parliament (2017): The economic, social and territorial situation of Romania – North-West Region. Available online: https://www.europarl.europa.eu/cmsdata/131182/Briefing%20on%20Romania_%20EN.pdf (last access 03.06.2025).

⁴ Eurostat (2025): [Gross domestic product \(GDP\) at current market prices by NUTS 2 region](#) (last access 03.06.2025).

⁵ To account for inflation, GDP at market prices was adjusted using a deflator derived from national-level chain-linked volumes with a 2010 base year, based on Eurostat data.

⁶ Eurostat (2025): [Gross domestic product \(GDP\) and main components \(output, expenditure and income\)](#) (last access 10.06.2025).

⁷ *ibid.*

⁸ Eurostat (2025): [Gross value added at basic prices by NUTS 3 region](#) (last access 10.06.2025).

compared to ten years prior (37.5%), but still a substantial share. Industrial activity is concentrated in cities like Cluj-Napoca, Oradea, Baia Mare, Bistrița, Satu Mare, and Zalău, where a diverse range of manufacturing, from heavy industry to high-tech and light industry, forms the backbone of regional exports and employment.⁹ In contrast, **agriculture, forestry, and fisheries** now account for only **3.7% of regional GVA**, continuing a downward trend (5.9% in 2013).¹⁰ Nevertheless, the sector remains economically and socially significant, particularly in rural communities where it provides livelihoods and sustains local economies. In some areas, nearly half of household earnings still derive from agricultural activities.¹¹ Overall, the economic profile of the North-West Region underscores the rising services sector, with substantial contributions from industry, while agriculture maintains a crucial role in rural economies. This multifaceted structure reflects both historical legacies and forward-looking development trends.

Employment composition and specialisation of the North-West Region

As part of its Industrial Strategy (March 2020), the European Commission has identified 14 industrial ecosystems that encompass all players operating in a value chain.¹² In the North-West Region, the Agri-Food ecosystem stands out as the largest in terms of employment, accounting for 22.2% of total employment across the industrial ecosystems, exceeding the EU27 average of 8.3% while being below the national average of 27.2% (see Figure 1). This underlines the importance of the agricultural sector for the regional and national economy. The Retail industrial ecosystem follows this with 15.6% but remains below the national and EU average. The third largest industrial ecosystem in terms of employment is Construction with 14.8%, surpassing both the EU and national average. Besides Construction, the industrial ecosystems of Mobility-Transport-Automotive, Energy Intensive Industries, Textile, Electronics, and Renewable Energy show a strong economic specialisation by surpassing the EU and national average. The employment composition in these industrial ecosystems highlights the importance of industry for the regional economy.

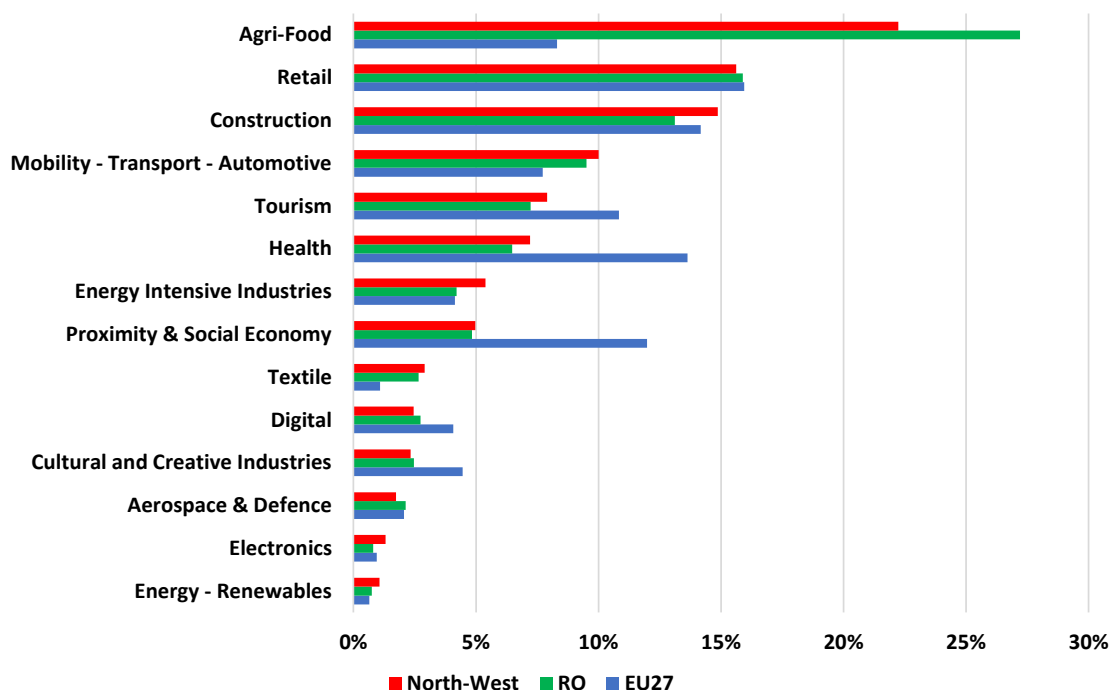
⁹ ADR Nord-Vest (2020): Planul de Dezvoltare Regională Nord-Vest 2021–2027. Extras: Profilul Socio-Economic al Regiunii (draft 1). Available online: <https://www.nord-vest.ro/wp-content/uploads/2020/02/0.-Profil-socio-economic-Regiunea-Nord-Vest-draft-1.pdf> (last access 10.06.2025).

¹⁰ Eurostat (2025): [Gross value added at basic prices by NUTS 3 region](#) (last access 10.06.2025).

¹¹ ADR Nord-Vest (2020): Planul de Dezvoltare Regională Nord-Vest 2021–2027. Extras: Profilul Socio-Economic al Regiunii (draft 1). Available online: <https://www.nord-vest.ro/wp-content/uploads/2020/02/0.-Profil-socio-economic-Regiunea-Nord-Vest-draft-1.pdf> (last access 10.06.2025).

¹² See here for more information: <https://clustercollaboration.eu/in-focus/industrial-ecosystems> (last access 17.05.2024).

Figure 1: Employment across the EU industrial ecosystems for the North-West Region, Romania and the EU27, in 2022



Source: ECCP (2025), own elaboration based on Eurostat. Note that the classification of the 14 industrial ecosystems has been calculated by aggregating NACE 2-digit activities, following the methodology established by the European Commission (2022).

Regional competitiveness level of the North-West Region

To provide an overview of the North-West Region's performance in key dimensions of regional competitiveness, the ranking of the Romanian regions in the **Regional Competitiveness Index (RCI) 2022** is presented.¹³ This index measures key aspects of competitiveness among regions across the EU in three dimensions: the Basic Sub-Index, the Efficiency Sub-Index, and the Innovation Sub-Index.

According to this, the North-West Region overall performs significantly below the EU average, with a score of **56.0** (EU = 100), ranking 226th out of all 234 regions and third out of all regions in Romania assessed in the Regional Competitiveness Index. Given the score, the **North-West Region is classified as a less developed region**, with all Romanian regions besides the capital region of Bucharest-Ilfov being in that category. Since 2019, the overall score in the North-West Region has increased by 3 percentage points. A detailed overview of the region's performance in various indicators and dimensions of the Regional Competitiveness Index is provided in Figure 12 in the Annex.

Looking across the three dimensions of the Regional Competitiveness Index, the North-West Region demonstrates a mixed performance. In the **Basic Sub-Index**, the North-West Region performs significantly below the EU average, reflecting persistent weaknesses in key enablers of competitiveness such as infrastructure and basic education. This suggests that investments in both infrastructure and basic education are needed to promote regional competitiveness.

¹³ European Commission (2022): EU Regional Competitiveness Index 2.0 - 2022 edition. Available online: https://ec.europa.eu/regional_policy/assets/regional-competitiveness/index.html#/ (last access 10.06.2025).

In the **Innovation Sub-Index**, the region remains well below the EU average but performs in line with the national baseline. It shows moderate results in technological readiness while continuing to underperform in business sophistication and innovation outputs. This pattern points to structural weaknesses within the regional innovation system, including limited R&D intensity, weak linkages between research and business, and a lack of scale in innovation-oriented enterprises, as it is also shown in the section below.

The **Efficiency Sub-Index** presents a more favourable picture, while still below the EU average, the region's performance is considerably closer to the European benchmark compared to the other two dimensions. This relative strength is primarily driven by a well-functioning labour market and solid outcomes in higher education and lifelong learning. These factors reflect a comparatively efficient mobilisation of human capital and institutional support for workforce development. However, limitations such as the small internal market continue to constrain economic expansion and underscore the importance of improving access to external markets and fostering cross-border economic integration. Addressing foundational gaps in education, infrastructure, and innovation is, therefore, crucial to improving long-term competitiveness and building on existing strengths.

Regional innovation performance and landscape of the North-West Region

The **2023 Regional Innovation Scoreboard (RIS)** provides an evidence-based and comparative avenue for assessing its level of innovativeness. The RIS contains data on 21 innovation-related indicators across 10 dimensions for European regions at either the NUTS 1 or NUTS 2 levels.¹⁴ According to the RIS, the North-West Region is an **"Emerging Innovator"** with an RII score of 34.5 (EU27 = 100), exhibiting a lower innovation performance than the EU27 average but higher than the national average of **33.1**. Over time, its innovation performance has increased by 4 points since 2016.¹⁵ Despite this modest classification, the region demonstrates **notable strengths in key innovation-related indicators** (see Figure 2). Compared to the country's average, it performs particularly well in "Most-cited scientific publications" and in "International scientific co-publications". The region also stands out for its "Public-private co-publications", hinting at collaborative ties between academia and industry, a crucial component for applied research and innovation transfer. This solid research base is further used to foster innovation. Key research actors like the Babeş-Bolyai University and the Technical University in Cluj-Napoca actively contribute their expertise and research capacity to the Transylvanian Digital Innovation Hub (TDIH).¹⁶

The "Above average digital skills" and "Lifelong learning" scores also exceed the national average, indicating a digitally literate workforce that continues to develop its skills and knowledge throughout life, with the potential to support innovation-driven activities. In addition, the strong performance in "Trademark applications", compared to the national average, suggests a growing culture of intellectual property awareness.

However, **several critical weaknesses persist**. The region lags behind both national and EU27 averages in R&D expenditure. "Private sector R&D intensity" is among the lowest in the country, while "Public R&D expenditure" also scores below the country's average. In 2021, R&D expenditure in the North-West Region stood at 0.25%.¹⁷ Low R&D expenditure is not only limited to the North-West Region, but reflects a broader pattern of Romania, which ranks as the country with the lowest R&D intensity in the EU, with 0.46% of GDP in 2022, compared to the

¹⁴ European Commission (2023): Regional Innovation Scoreboard 2023 – Methodology Report. Available online: https://research-and-innovation.ec.europa.eu/document/download/5357c81b-9222-464b-8468-38ccd83b5624_en?filename=ec_rtd_ris-2023-methodology-report.pdf (last access 06.06.2025).

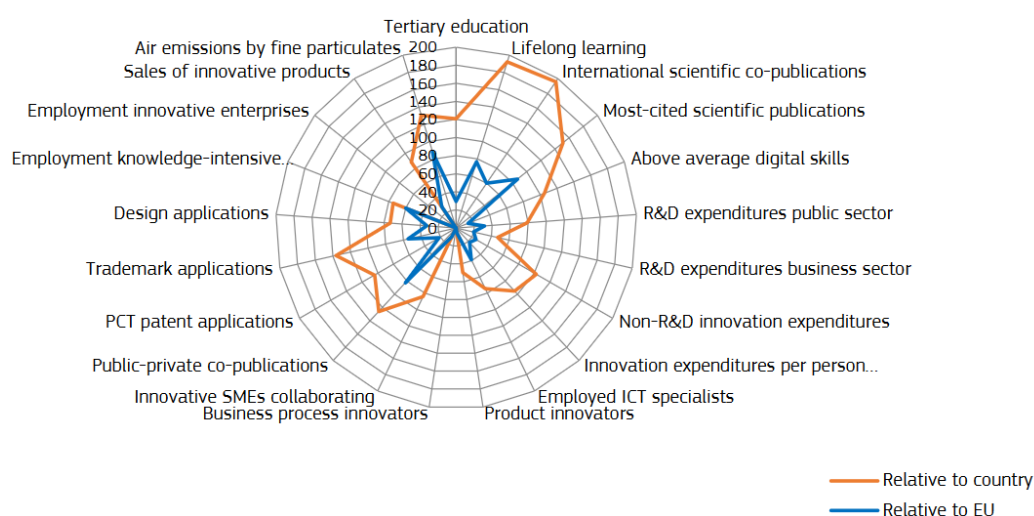
¹⁵ European Commission (2023): Regional Innovation Scoreboard 2023 – Regional profiles Romania. Available online: https://ec.europa.eu/assets/rtd/ris/2023/ec_rtd_ris-regional-profiles-romania.pdf (last access 06.06.2025).

¹⁶ For more information see: <https://transilvaniadih.ro/> (last access 23.06.2025).

¹⁷ Eurostat (2025): [Intramural R&D expenditure \(GERD\) by NUTS 2 region](#) (last access 23.06.2025).

EU average of 2.24%.¹⁸ “Non-R&D innovation expenditure” and “innovative SMEs collaborating” also score poorly. These figures point to structural limitations in transforming knowledge into market-ready innovations and a lack of coordinated investment in research-intensive business sectors. Moreover, the region reports one of the lowest scores for “Product innovators”. These gaps highlight the need for increased R&D investment, especially from the private sector, and for programmes that encourage SME participation in innovation networks.

Figure 2: Performance of the North-West Region in the 2023 Regional Innovation Scoreboard



Source: European Commission (2023): [Regional Innovation Scoreboard 2023 – Regional profiles Romania](#).

The North-West Region hosts several key actors shaping its innovation ecosystem. These include major universities like Babeş-Bolyai University in Cluj-Napoca, which has a strong research output and international partnerships. The region is also home to the **Cluj Innovation Park**¹⁹, a flagship project by the municipality of Cluj-Napoca to support start-ups, spin-offs, and tech-based enterprises by offering physical infrastructure and business support services, and the **North-West Regional Development Agency (ADR Nord-Vest)**²⁰, which plays a leading role in regional development, managing EU structural funds and coordinating the implementation of the regional Smart Specialisation Strategy. Additionally, out of the seven **European Digital Innovation Hubs (EDIH)** in Romania, two are located in the North-West Region.²¹ The **Transilvania Digital Innovation Hub (TDIH)** has been operational since 2019. It supports SMEs and public sector organisations in the North-West Region of Romania and the EU, offering services in AI, HPC, Big Data, digital health, Industry 4.0, and green transformation.²² The **Digital Innovation Hub for a Smarter, Safer and more Sustainable Society (DIH4Society)** was launched in 2019. It offers free services such as digital maturity assessments, prototyping (“test-before-invest”), cybersecurity audits, smart robotics pilots, advanced-skill training, innovation consulting, and access to funding.²³

¹⁸ European Commission (2024): 2024 Country Report – Romania. Available online : https://economy-finance.ec.europa.eu/document/download/dcac26a0-120e-4233-88b6-8c7b0d919257_en?filename=SWD_2024_623_1_EN_Romania.pdf (last access 23.06.2025).

¹⁹ For more information see: <https://clujinnovationpark.ro/> (last access 10.06.2025).

²⁰ For more information see: <https://www.nord-vest.ro/en/despre-noi/> (last access 10.06.2025).

²¹ For more information see: <https://european-digital-innovation-hubs.ec.europa.eu> (last access 23.06.2025).

²² For more information on the TEDIHT, see: <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/t dih> (last access 19.06.2025).

²³ For more information on the EDIH4Society, see: <https://dih4society.ro/> (last access 19.06.2025).

Together, these institutions serve as pillars of the regional innovation system, fostering technology transfer, skills development, and cross-sectoral collaboration. Their alignment with the regional Smart Specialisation Strategy (RIS3) makes them central actors in promoting innovation in priority areas like ICT, bioeconomy, health, and advanced manufacturing. The integration of these actors into broader European initiatives could play a decisive role in improving regional innovation capacity and competitiveness.



02

Clusters in North-West Romania and their importance for regional economic development



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2. Cluster organisations in the North-West Region and their importance for regional economic development

The involvement of clusters in regional economic governance, policy design, and implementation at the regional level is of central importance for regional economic development. This chapter provides an overview of cluster organisations in the North-West Region, including their geographic distribution and key characteristics such as size, membership structure, and thematic orientation based on industrial ecosystems. Furthermore, the chapter outlines the policy framework supporting cluster development at both the national and regional levels.

ECCP-registered cluster organisations in the North-West Region

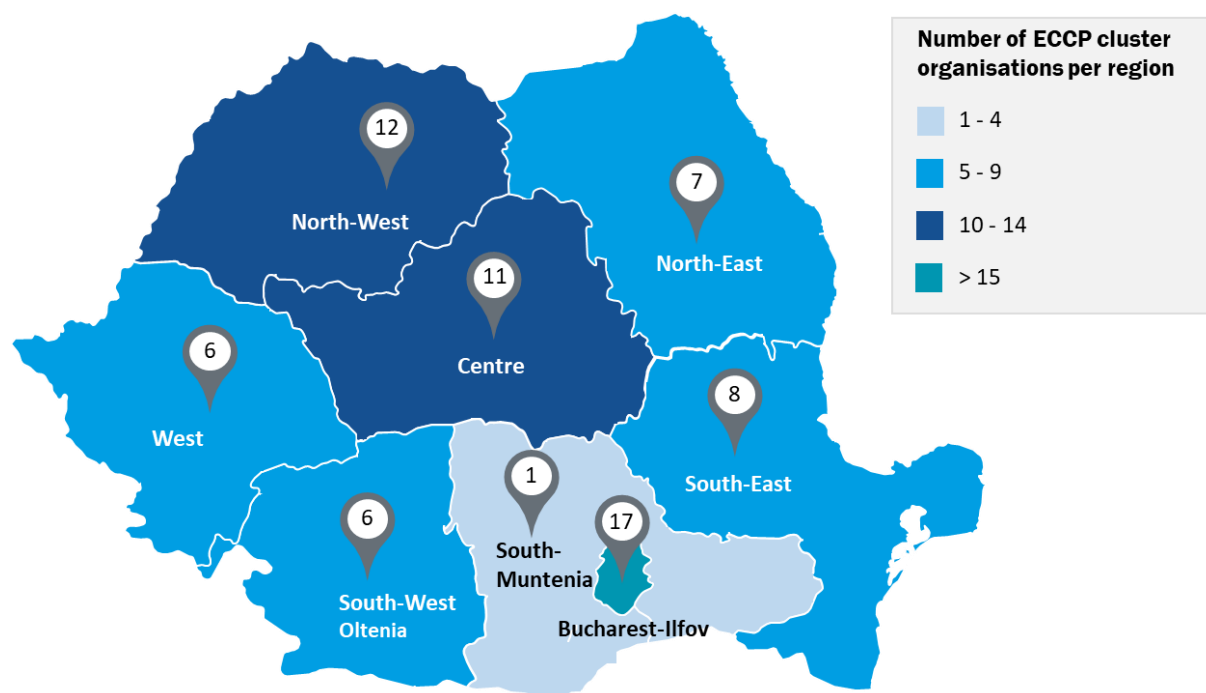
Cluster organisations are **key actors in the European economy**, facilitating collaboration, networking and knowledge sharing between diverse innovation stakeholders within a geographical or sectoral cluster.²⁴ The European Cluster Collaboration Platform serves as a one-stop shop for cluster organisations at the European level. Therefore, the number of registered cluster organisations and other innovation actors in the North-West Region on the ECCP gives the first impression of the intensity of organisation in regional industrial networks.

Figure 3 shows the geographical distribution of the ECCP-registered cluster organisations in Romania. Out of the total 1,252 registered EU27 cluster organisations on the ECCP, there are 68 registered cluster organisations in Romania, with **12 of these being located in the North-West Region**. Therefore, the region has a strong cluster landscape, with Bucharest-Ilfov, the capital region, being the only Romanian region that hosts more cluster organisations. Looking at the geographical distribution of cluster organisations in the North-West Region, the landscape appears **highly centralised**. Eleven of the 12 ECCP-registered cluster organisations are located in the Cluj county. The remaining cluster organisation is located in the city of Bistrița.

The cluster organisations in the North-West Region can be associated with seven out of the 14 EU industrial ecosystems (see also Table 2 in the Annex). The most prominent industrial ecosystem is Renewable Energy, with three cluster organisations active in this field. This is followed by Digital, Creative & Cultural Industries, and Energy Intensive Industries, all represented by two cluster organisations.

²⁴ A cluster, in economic terms, refers to the concentration of interconnected businesses, suppliers and associated institutions that are geographically proximate or related by sector.

Figure 3: Overview of cluster organisations in the North-West Region



Source: ECCP (2025). Own elaboration based on <https://reporting.clustercollaboration.eu/all> (last accessed 03.06.2025).

Figure 4, below, shows the information on organisational, membership, and thematic structure of cluster organisations in the North-West Region.

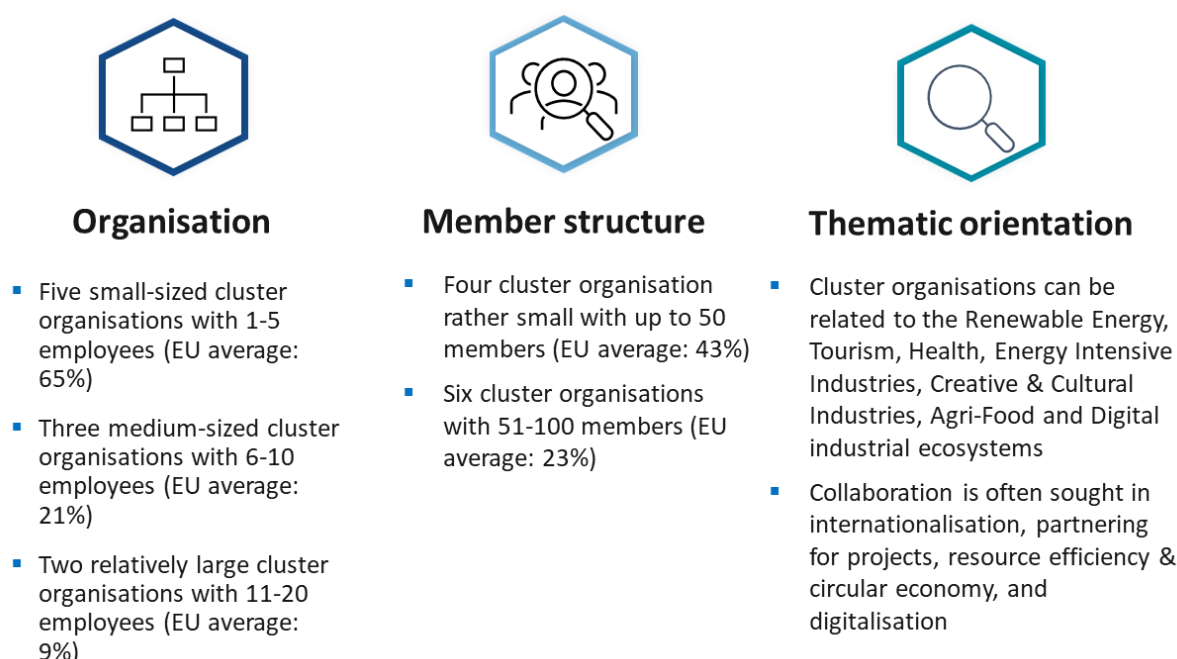
- Five cluster organisations (50%)²⁵ in the North-West Region employ between one and five staff members. This is significantly lower than the EU average of 65% and the Romanian national average of 77% for clusters of similar size. Three clusters (30%) are medium-sized and employ between 6-10 staff members, which is above the EU and Romanian average (21% and 20%, respectively). Two organisations (20%) are relatively large, employing between 11 and 20 staff members. This proportion is notably higher than both the EU average (9%) and the national average (3%) for clusters of similar size. Moreover, these two organisations are the only Romanian clusters with a management team of this size. These comparisons suggest that clusters in the North-West Region typically have larger management teams, indicating a higher administrative capacity than both the national and European averages.
- In terms of members, four cluster organisations (40%)²⁶ have up to 50 members, while six clusters (60%) comprise between 51 and 100 members. While the North-West Region does not host any cluster with a member size above 100, 39% of the European clusters are in that group, which indicates that the clusters in the North-West Region are, on average, smaller than the EU average. This trend can also be observed when looking at the national level, 69% of clusters have up to 50 members, compared to the EU average of 34%. This suggests that Romanian clusters are generally characterised by a smaller number of members when compared to the EU average. This is also supported when comparing the median values of cluster members, which are 33 for Romania and 80 for the EU.

²⁵ Of the twelve cluster organisations in the North-West Region, only ten provided information on their management size. The values in percentage account only for these ten cluster organisations that have indicated their management staff.

²⁶ Of the twelve cluster organisations in the North-West Region, only ten provided information on their member size. The values in percentage account only for these ten cluster organisations that have indicated their member size.

- Collaboration interests among these cluster organisations are primarily oriented towards internationalisation, project partnerships, digitalisation, and resource efficiency & circular economy, which are consistent with broader trends observed across EU cluster networks.

Figure 4: Overview of organisation, structure, and thematic orientation of ECCP-registered cluster organisations in the North-West Region



Source: ECCP (2025)

Apart from the ECCP and the Ministry of Economy, the national cluster association of Romania, **CLUSTERO**, also gives an overview of the national and regional cluster landscape. Out of the 78 cluster initiatives recorded by the Ministry of Economy at the national level, CLUSTERO presents 54 cluster organisations as its members,²⁷ as well as six regional and six thematic cluster consortia.²⁸ The regional meta-clusters are grouped as the North-Eastern, Lower Danube (South-East), Bucharest-Ilfov, Wallachia (South), Northern Transylvania (North-West), and Transylvania (Centre) cluster consortia. The thematic meta-clusters encompass textiles and fashion, wood and furniture, agrifood, healthcare, ITC services, and ecological agrifood cluster consortia. Romanian clusters rank high in the excellence of cluster management, with seven gold, 13 silver, and 41 bronze-labelled clusters according to the European Secretariat for Cluster Analysis (ESCA) methodology. The North-West Region stands out as the region with the highest number of gold-labelled cluster organisations, with four in total. In addition, one cluster in the region holds a silver label, while two others have bronze labels.

In line with the focus of the Clusters Meet Regions event in Cluj-Napoca on the role of clusters in fostering technology transfer and innovation within SMEs, the following section presents several prominent cluster organisations from the North-West Region. These clusters operate in diverse thematic areas, including information technology, sustainability, health, and manufacturing, yet all contribute to strengthening the regional innovation ecosystem. Through collaboration within their respective networks, they promote knowledge exchange, support enterprise development, and help drive industrial transformation.

²⁷ For more information, see: <https://clustero.eu/about-us/> (last access 23.06.2025).

²⁸ For more information, see: <https://clustero.eu/cluster-consortia/> (last access 23.06.2025).

With the Clusters Meet Regions event in Cluj-Napoca focusing on the **pivotal role of clusters in driving technology transfer and innovation within SMEs**, the following section highlights several regional clusters that exemplify this alignment through their activities and initiatives. Although the following clusters focus on different thematic areas, including IT, sustainability, health, and manufacturing, all of them align in their goals to foster innovation and technology transfer by collaborating within their respective ecosystems. Among the region's most prominent cluster initiatives are AgroTransilvania, Cluj IT Cluster, Transilvania Energy Cluster (TREC), Transilvania IT Cluster and Transylvanian Furniture Cluster, which operate in important sectors like digital technologies, furniture and wood processing, bioeconomy and agri-food and renewable energy. A more detailed description of these clusters is provided below.

- **AgroTransilvania** is a research, development, innovation and support centre in the field of bioeconomy. Its main aim is to become the most relevant technology transfer centre for research, development and innovation in the Agri-Food ecosystem at a regional and national level. In this regard, the mission of this cluster is to be an active and viable research, development and innovation partner in the agro-industrial field for economic actors at the national level and a model of good practices for international collaboration.²⁹
- The **Transilvania Energy Cluster (TREC)** is a renewable energy-focused innovation hub in the North-West region. Founded in 2015, this cluster is a result of the awareness of local actors on the relevance of changing the perception towards renewable energy resources capitalisation and the opportunities resulting from their correct exploitation. Therefore, this cluster's main objective is to secure an efficient cooperation framework among its 46 members, so they obtain tangible benefits to represent their interests towards third parties, and can promote renewable energy production and use. Other objectives include improving the capitalisation of research results, developing a common knowledge base, and strengthening collaboration with additional research and innovation institutions.³⁰
- The **Transylvanian Furniture Cluster (TFC)** brings together SMEs, educational institutions, public authorities, and support organisations to drive innovation and sustainable growth in the furniture industry. It fosters collaboration through shared resources, training, and access to funding while promoting international partnerships and public policy advocacy. TFC aims to strengthen its members' competitiveness by facilitating knowledge exchange, reducing costs, and increasing visibility both locally and globally.³¹
- **Cluj IT Cluster** was founded in 2012, and the cluster counts over 100 members - including companies, universities and research centres and public institutions -, active in the technology and software & services solutions field. With this background, the Cluster aims to become a major IT services and products as well as organisational support systems supplier in Central and Eastern Europe. More specific goals include understanding the integrated support of the industry, facilitating R&D projects financing, supporting efficient resource usage, increasing the human resource team and promoting the cluster to participate in further and larger international projects.³²
- **Transilvania IT Cluster** operates at the intersection of entrepreneurship, research, innovation, and public administration, driving digital transformation to support community development through digitisation. Founded in 2013 by ARIES Transilvania, the cluster initially focused on helping member company employees develop technical and soft skills while providing a platform for knowledge

²⁹ For more information on the AgroTransilvania Cluster, see: <https://agrocluster.ro/en/> (last access 23.06.2025).

³⁰ For more information on the TREC cluster, see: http://www.transylvaniaenergycluster-trec.ro/en/index_en.php (last access 23.06.2025).

³¹ For more information on the Transylvanian Furniture Cluster, see: <https://transylvanianfurniture.com/> (last access 23.06.2025).

³² For more information on the Cluj IT Cluster, see: <https://www.clujit.ro/> (last access 23.06.2025).

exchange and collaborative projects. Over time, it has evolved in line with the dynamic growth of the tech sector in Cluj-Napoca.³³

To better understand the contribution of clusters to regional competitiveness, the Transylvanian Furniture Cluster (TFC) is examined more closely. This case study illustrates how a cluster rooted in a traditional manufacturing sector can promote industrial transformation by offering targeted support services and fostering cross-sectoral collaboration. It also underlines the role of international cooperation and participation in European projects in enhancing cluster visibility and strengthening innovation capacity. An overview of the results of this case study can be found in Box 1.

Box 1: ECCP Cluster Solutions Library – Transylvanian Furniture Cluster

Advancing International Competitiveness through Regional Cooperation – Transylvanian Furniture Cluster

Background: The Furniture Ecosystem in the North-West Region

Romania's North-West Region shows a strong manufacturing base rooted in traditional industries. The region plays a key role in the national furniture sector, benefiting from a long-standing tradition in wood processing and access to forest resources. It is home to major exporters, including some of Romania's largest furniture producers, and holds a strong position in global value chains. However, the transition toward higher value-added activities, branding, and compliance with sustainability standards presents key challenges for local firms. Addressing these challenges has become a regional priority, supported by both policy instruments and collective initiatives.

The Role of the Transylvanian Furniture Cluster in the Ecosystem

The Transylvanian Furniture Cluster (TFC) was established in 2012 with support from the North-West Regional Development Agency, as part of efforts to foster regional innovation. Based in Cluj-Napoca and managed by Hygia Consult, the cluster now unites over 100 members, including producers, universities, R&D institutions, and public organisations. Recognised with the European Gold Label for cluster management excellence, TFC stands out for its strategic focus and solid governance. Its activities range from training and funding support to internationalisation and infrastructure access. A key asset of the cluster is the 4,000 m² Center of Excellence for Furniture (CEF), offering space for design, prototyping, testing, and collaboration.

Supporting Transformation through Cooperation and Visibility

TFC has established itself as a regional driver of industrial transformation by promoting sustainability, digitalisation, and innovation in the furniture industry. It contributes actively to policy dialogue, regional development strategies, and EU cooperation projects. Through participation in European initiatives such as SILEO, EXCELIVING, Furniture Go International, and BETTER FACTORY, the cluster supports SME transformation, strengthens international partnerships, and enhances the visibility of the region. Its involvement in the Transylvanian Digital Innovation Hub further reinforces its role in cross-sectoral collaboration and support for digital transition.

Lessons Learned and Transferability

The case of the Transylvanian Furniture Cluster (TFC) shows how limited national support can accelerate professionalisation when clusters engage early with EU funding and policy priorities. This strategic alignment boosted TFC's visibility and maturity. Investments in shared infrastructure, like the Center of Excellence for Furniture, strengthened service quality and member collaboration. Cross-sectoral cooperation through initiatives such as the Transylvanian Digital Innovation Hub created integrated support for SMEs. The approach offers valuable insights for other regions aiming to boost competitiveness through EU cooperation, infrastructure, and coordinated cluster action.

Source: ECCP (2025). Note: the full case study on the Transylvanian Furniture Cluster can be found in the [ECCP Cluster Solutions Library](#).

³³ For more information on the Transilvania IT Cluster, see: <https://www.transilvaniait.ro/> (last access 23.06.2025).

Cluster policy in the North-West Region

At the **national level**, the **Romanian cluster policy** was implemented in 2009 as **part of the national industrial policy**. There is no dedicated and explicit cluster policy, but clusters as a concept are an integral part of the wider national industrial policy. However, the current support targeted to cluster development under the industrial policy is rather unclear as it does not set any specific objectives or initiatives in this sense. Although the policy has never been formally interrupted or terminated, actual support (either financial or through technical assistance) has been inconsistent over the years. Where financial support has been provided, it has been through EU funds channelled through various national programmes, but discontinuously, i.e. in some years and not in others. The policy's main role has been to disseminate the cluster concept at the national and regional levels and help clusters get involved in various European projects.³⁴

At the regional level, **regional economic development programmes** are run by the eight Regional Development Agencies (RDA). Importantly, they oversee the regional **Smart Specialisation Strategy** RIS3 and coordinate the process with companies, universities, R&D centres, public administration, and civil society. The RDAs are actively promoting the establishment and operation of clusters in the framework of the RIS3. Furthermore, through the agencies, clusters were able to take part in the development of the **regional development plan**. In the case of the North-West Region, the **Regional Development Agency of the North-West Region (ADR Nord-Vest)** is the main body responsible for supporting clusters, offering project-based funding (including ERDF grants), facilitating international cooperation, and capacity-building services such as digitalisation support and strategy development.³⁵ While there is no standalone regional cluster strategy, clusters are explicitly positioned as implementation vehicles within the S3 and are strongly encouraged to engage in the Entrepreneurial Discovery Process (EDP). Their involvement also contributes to shaping innovation governance and aligning regional initiatives with EU-level platforms and priorities.

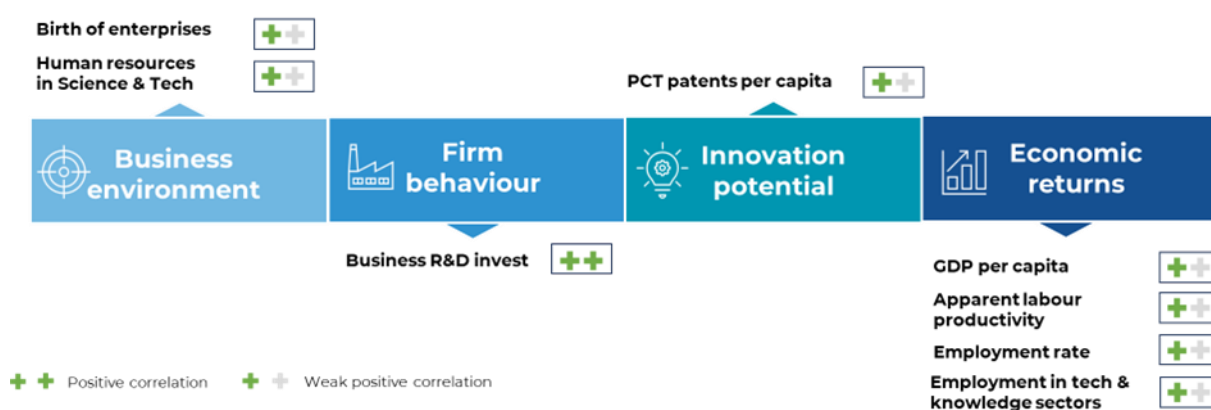
³⁴ This section draws on the ECCP country factsheet Romania (2023). Available online: <https://clustercollaboration.eu/in-focus/policy-acceleration/country-factsheets-on-cluster-policies-and-programmes> (last access 04.06.2025).

³⁵ See <https://www.nord-vest.ro/en/> (last access 04.06.2025).

The importance of cluster organisations for regional economic competitiveness and twin transition

Cluster organisations play a significant role in enhancing **regional industrial competitiveness and productivity** by fostering collaboration, specialisation and innovation. The findings of the Cluster Panorama Report reinforce this role showing strong, positive correlations between the presence of clusters and multiple indicators of **economic returns, innovation potential, firm behaviour**, and **business environment**. This is shown in Figure 5.

Figure 5: Relationship of clusters and regional competitiveness, correlation results



Source: ECCP (2024). Own elaboration based on [European Cluster Panorama Report 2024](#). Note: The symbols in the table indicate Pearson correlation coefficients that are significant at 95% level. Positive/negative Correlations include coefficients ≥ 0.3 , weak correlations include coefficients ≥ 0.1 . Green fields indicate a positive relationship and red a negative relationship.

Within the **business environment** dimension, regions with a strong cluster presence tend to exhibit higher levels of human resources in science and technology, which suggests that clusters are magnets for skilled talent and contribute to the development of regional innovation ecosystems. These environments are also more conducive to entrepreneurship and firm creation, as evidenced by the positive correlation with the birth of enterprises. This implies that clusters help build dynamic local economies where new firms are more likely to emerge and thrive.

In the area of **firm behaviour**, cluster organisations are closely linked with increased business R&D investment and the employment of ICT specialists, both of which are fundamental for enhancing firms' innovation capacities and digital readiness. These results indicate that clusters do not just passively reflect the strength of their member firms but actively contribute to improving their performance by facilitating knowledge transfer, cooperation, and access to specialised services and infrastructure.

Under the dimension of **innovation potential**, a particularly notable result is the positive correlation between cluster presence and patenting activity, including PCT patents per capita and digital patents, which are important proxies for technological advancement and international competitiveness. The results also show some degree of correlation with green patents, suggesting that clusters may increasingly support the development of sustainable technologies, although this relationship is still emerging.

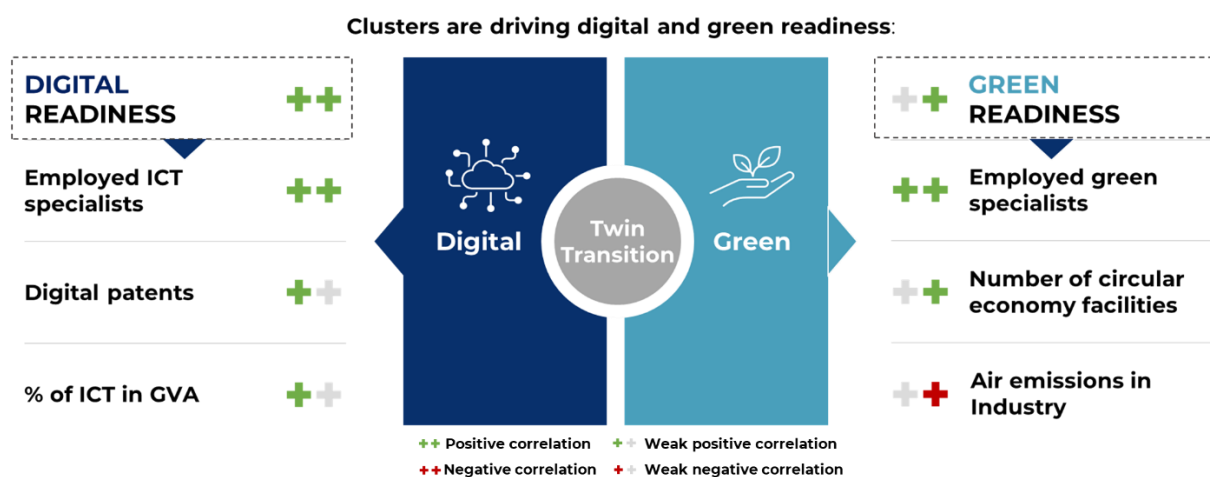
Concerning **economic returns**, the presence of clusters is positively associated with key performance indicators such as GDP per capita, employment rate, labour productivity, and employment in knowledge-intensive sectors. These macro-level outcomes underscore the broader economic benefits of strong cluster ecosystems, which are able to leverage regional assets, support structural transformation, and contribute to long-term growth.

These correlations imply that clusters not only support economic growth but also enhance resilience and adaptability through innovation and entrepreneurship. Moreover, the Cluster Panorama highlights the influence

of clusters in creating enabling environments for enterprise formation and knowledge exchange, which are foundational for long-term competitiveness.

Cluster organisations are not only engines of economic competitiveness and innovation—they are also emerging as **key enablers of the twin transition**, which encompasses both digital and green transformation processes. Recent findings from the European Cluster Panorama Report underline the significant positive link between cluster presence and many factors associated with the green and digital transition (see Figure 6).

Figure 6: Relationship of cluster organisations and digital and green readiness, correlation results



Source: ECCP (2025). Own elaboration based on [European Cluster Panorama Report 2024](#). Note: The symbols in the table indicate Pearson correlation coefficients that are significant at 95% level. Positive/negative Correlations include coefficients ≥ 0.3 , weak correlations include coefficients ≥ 0.1 . Green fields indicate a positive relationship and red a negative relationship.

With respect to the **green transition**, the analysis shows that the presence of cluster organisations is positively correlated with green readiness indicators, indicating that regions with a higher number of clusters tend to be better prepared for adopting environmentally sustainable practices. This implies that clusters may facilitate the green transition by supporting eco-innovation, promoting sustainable production models, and mobilising relevant actors across value chains. Interestingly, a positive correlation is also observed between cluster presence and air emissions in industry, suggesting that clusters are often located in more industrialised regions, where emissions are naturally higher due to economic activity. This underlines the importance of involving clusters in decarbonisation strategies, given their influence over industrial ecosystems. Rather than being seen as part of the problem, clusters can be leveraged as platforms for change, helping industries within their networks to implement cleaner technologies and reduce their environmental footprint.

Regarding the **digital transition**, cluster organisations are strongly associated with higher performance indicators such as the share of ICT in gross value added, the employment of ICT specialists, and the number of digital patents. These relationships underscore the critical role of clusters in enabling the diffusion of digital technologies across regional economies. Furthermore, regions with high cluster intensity tend to demonstrate greater digital readiness, as measured by comprehensive indicators including connectivity, digital skills, and ICT usage in firms. This suggests that clusters not only support the digital upgrade of existing industries but also help foster new digital business models through cooperation with research institutions, digital innovation hubs, and testing environments. Importantly, cluster organisations are among the few regional intermediaries that can simultaneously drive firm-level digitalisation and contribute to the broader transformation of industrial ecosystems.

Furthermore, cluster organisations play an **important role in facilitating technology transfer** by fostering collaboration between businesses, research institutions, and innovation actors, while also supporting cross-border cooperation and participation in EU programmes. This is further outlined in Box 2.

Box 2: How cluster organisations facilitate technology transfer

As Europe sees itself in a race to gain competitiveness in the technologies of the future, it is not only about innovation capacity at the technological frontier, but also about **diffusion capacity** in the broader economy.³⁶ Cluster organisations provide the institutional infrastructure to foster the collaboration between small and large businesses, research organisations and academia, and innovation support actors in enabling **technology transfer for broad application and commercialisation**.³⁷ As analysed in the ECCP Panorama Report 2024, EU cluster organisations facilitate innovation diffusion and technology transfer through networking activities including events and fairs, brokering collaboration between companies and innovation labs and research institutions and providing information material, consultancy services and trainings on topics such as funding programmes, IP management and business models – and not least by raising awareness, a crucial point also highlighted by the participants of the EU Cluster Talk on ‘Facilitating Technology Transfer through Clusters’.³⁸ Finally, technology transfer is nothing that is confined to the region but **cross-border cooperation and investment linkages** are crucial³⁹ – something that cluster organisations are supporting actively by raising regional industries’ visibility and by facilitating or even directly managing participation in EU programmes like the Interregional Innovation Investment (I3) instrument.⁴⁰

³⁶ Ding, Jeffrey (2024). The diffusion deficit in scientific and technological power: re-assessing China’s rise. Review of International Political Economy, 31:1, 173-198. Available online: <https://doi.org/10.1080/09692290.2023.2173633> (last access 13.06.2025).

³⁷ As recently discussed in the ECCP’s EU Cluster Talk ‘From Research to Revenue: Facilitating Technology Transfer through Clusters’. Available online: <https://www.clustercollaboration.eu/content/eu-clusters-talk-research-revenue-facilitating-technology-transfer-through> (last access 13.06.2025).

³⁸ ECCP (2024): European Cluster Panorama Report 2024. Available online: https://www.clustercollaboration.eu/sites/default/files/document-store/Cluster_Panorama2024.pdf (last access 11.06.2025). For the EU Cluster Talk, see footnote 37, the recording is available online: https://prognos.sharepoint.com/:p/r/GE2/2_GE2/23_Projekte_aktiv/00_EU%20Services/B100872_EISMEA_ECCP_JKR/06%20Pr%C3%A4sentationen/02_ClustersmeetRegions/09_Foligno_June25/ECCP_CmR_Input_Paper_Foligno.pptx?d=w768ff9709ea347b9b0e1366123ade05e&csf=1&web=1&e=kGNpsY (last access 19.06.2025).

³⁹ Crescenzi, Riccardo & Roberto Ganau (2025): When the rain comes, don’t stay at home! Regional innovation and FDI in the aftermath of the Great Recession. Regional Studies, 59:1. Available online: <https://www.tandfonline.com/doi/full/10.1080/00343404.2025.2503967> (last access 13.06.2025).

⁴⁰ The I3 instrument supports collaboration projects between participants from different EU regions and countries for close-to-market innovation, scale-up and commercialization. See: https://eisma.ec.europa.eu/programmes/interregional-innovation-investments-i3-instrument_en (last access 13.06.2025).

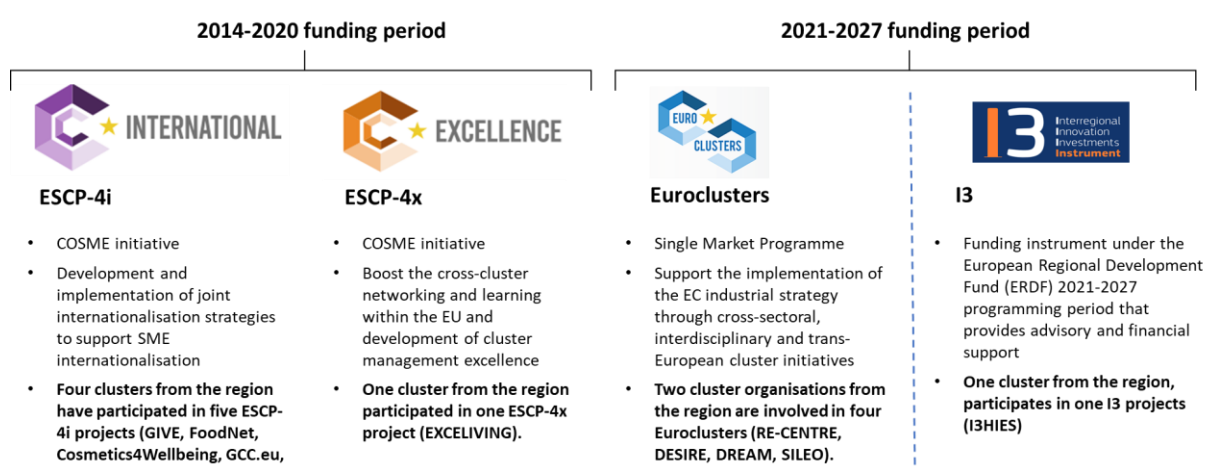
03

Cross-border cooperation and the involvement of clusters in the North-West Region in European networks and support initiatives

3. Cross-border cooperation and the involvement of clusters of the North-West Region in European networks and support initiatives

Findings from the Evaluation Study of and Potential Follow-Up to Cluster Initiatives under COSME, H2020 and FPI of the European Commission (2021) show that cross-border cooperation is perceived by innovation stakeholders as a highly relevant activity for clusters to support sustainable growth and resilience-building of their SME members.⁴¹ To gain an overview of the existing cross-border cooperation of clusters in the North-West Region, a closer look will be taken in this chapter at their involvement in relevant European support initiatives (see Figure 7).

Figure 7: Overview of selected EU support initiatives that involve cluster organisations from the North-West Region



Source: ECCP (2025).

Involvement of cluster organisations from the North-West Region in the European Strategic Cluster Partnerships (ESCP)

The European Strategic Cluster Partnership (ESCP) initiative, funded under the EU Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME), is a relevant EU support initiative to increase cross-border cooperation of EU cluster organisations and other intermediary organisations. The ESCP initiative established partnerships of European clusters and intermediary organisations from the different EU Member States or associated countries. Those partnerships focused on two different thematic areas, which were internationalisation (ESCP for Going International)⁴² and cluster excellence (ESCP for Excellence)⁴³,

⁴¹ Prognos et al. (2021): Evaluation Study of & Potential Follow-Up to Cluster Initiatives under COSME, H2020 & FPI (DG GROW, Unit D2 - Industrial Forum, alliances, clusters). Study on behalf of the European Commission. Available online: <https://op.europa.eu/en/publication-detail/-/publication/a2c3e9e1-3deb-11ec-89db-01aa75ed71a1/language-en/format-PDF/source-241039860> (last access 11.06.2025).

⁴² For more information on the ESCP-4i, see: <https://www.clustercollaboration.eu/eu-cluster-partnerships/escp-4i> (last access 19.06.2025).

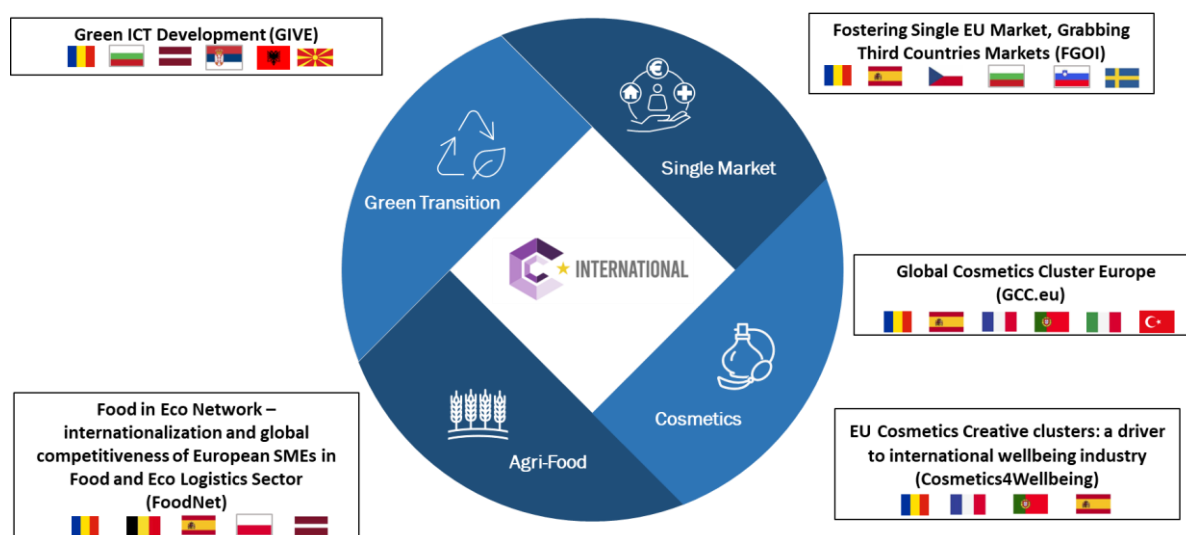
⁴³ For more information on the ESCP-4x, see: <https://www.clustercollaboration.eu/eu-cluster-partnerships/escp-4x> (last access 19.06.2025).

out of which the ESCP for Going International was still running throughout 2024⁴⁴ and the ESCP for Excellence⁴⁵ already ended in December 2023.⁴⁶

Figure 8 gives an overview of the participation of clusters from the North-West Region in the ESCP for Going International (ESCP-4i) projects. Four clusters have participated in five ESCP-4i projects, while one cluster has participated in one ESCP for Excellence (ESCP-4x).

The five ESCP-4i projects focused on four different topics. The project **GIVE** focused on green transition topics, with the Cluj IT Cluster being a participant. Focusing on agri-food, the project **FoodNet** incorporated the cluster Agro Transylvania. Furthermore, one association from the North-West Region, the Transylvania Lifestyle cluster (managed by the Association of Employers and Craftsmen in the Cluj county), participated in the two cosmetics projects, namely, **Cosmetics4Wellbeing** and **GCC.eu**. Lastly, the **FGOI** project focused on the EU single market, where the North-West Region's cluster, Transylvanian Furniture Cluster (managed by Hygia Consult) participated. Concerning the one ESCP-4x project, **EXCELIVING** aimed to promote better living environments, and the Transylvanian Furniture Cluster, managed by Hygia Consult, participated in it.

Figure 8: Overview of participation of cluster organisations from the North-West Region in the ESCP-4i



Source: ECCP (2025). Note: the flags indicate the origin of the involved project partners.

Involvement of cluster organisations based in the North-West Region in the Eurocluster initiative

For the 2021-2027 funding period, the European Commission has launched the implementation of the EU Industrial Strategy. In this context, so-called Euroclusters⁴⁷ are funded under the Single Market Programme. The Eurocluster initiative⁴⁸ aims at supporting cross-sectoral, cross-regional European industry clusters cooperating with other economic stakeholders such as companies or business organisations. The **Cluj IT Cluster** and

⁴⁴ For more information, see: <https://clustercollaboration.eu/eu-cluster-partnerships/escp-4i/fourth-generation> (last access 11.06.2025).

⁴⁵ <https://clustercollaboration.eu/eu-cluster-partnerships/escp-4x> (last access 11.06.2025).

⁴⁶ For more information on the European Cluster Partnerships, see: <https://clustercollaboration.eu/eu-cluster-partnerships> (last access 11.06.2025).

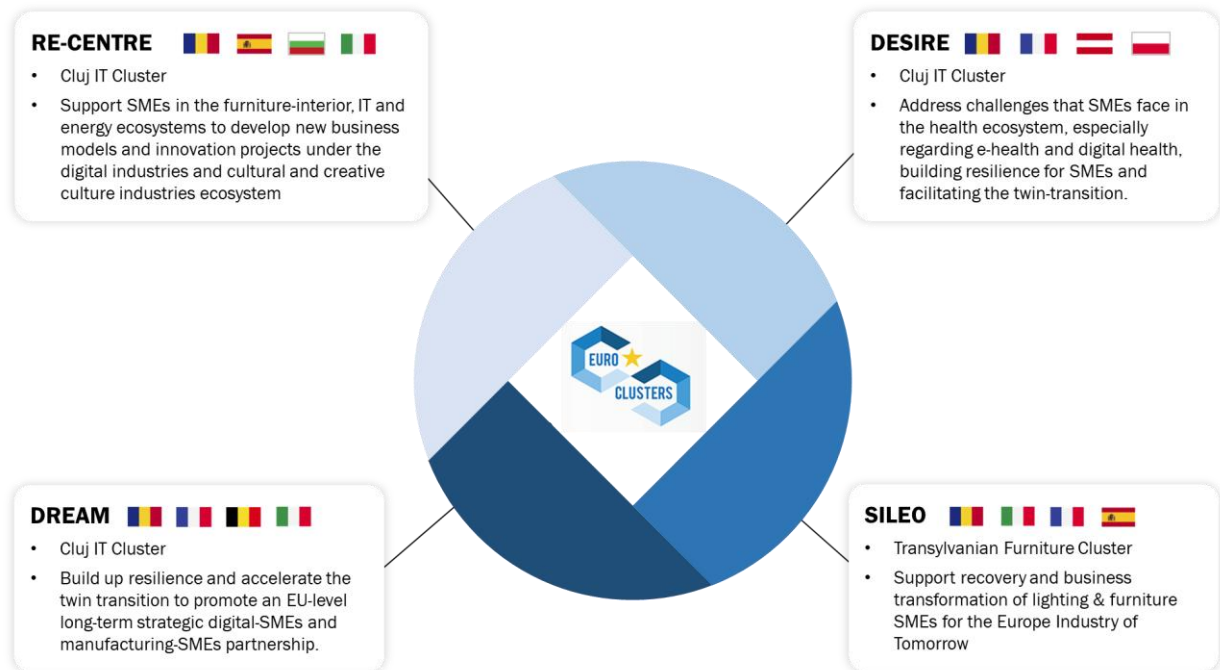
⁴⁷ For more information on the Euroclusters, see: https://eisma.ec.europa.eu/funding-opportunities/calls-proposals/joint-cluster-initiatives-euroclusters-europes-recovery_en (last access 11.06.2025).

⁴⁸ For more information on the Eurocluster initiative, see: <https://www.clustercollaboration.eu/euroclusters> (last access 19.06.2025).

Transylvanian Furniture Cluster from the North-West Region participate in four different Euroclusters. An overview is shown in Figure 9.

- **RE-CENTRE:** The mission of the **Cross-Sectoral Cluster Approach for Higher Competitiveness through Digital, Green Transition, and Resilience** Eurocluster was to support SMEs in three sectors (furniture-interior, IT, and energy) to develop new business models and innovation projects under the Digital and Creative & Cultural Industries ecosystem. The goal is to make those SMEs more competitive and resilient through collaboration in a two and a half years duration project, which ended in February 2025. While it was ongoing, the project also had the aim to identify challenges in the twin transition (digital and green transition) that would help identify and overcome challenges common to the three sectors. Additionally, the project aimed at providing networking opportunities, fostering innovation, adopting digital and green practices, as well as training for SMEs.
- **DESIRE:** The Eurocluster **Development of E-Health Solutions Improving Resilience in Europe** aims to strengthen the resilience of SMEs in the health ecosystem by addressing key challenges in e-health and digital health, while also supporting their green and digital transitions. The project's direct support is directed to plan activities that contain an open call dedicated to SME projects in product innovation, to reduce dependency on critical inputs and technologies in the Euroclusters' value chains. Additionally, it also considers business process innovations linked with technology adoption that help SMEs meet requirements for their successful green and digital transitions. Lastly, this project also supports internationalisation efforts towards specific third countries.
- **DREAM:** The Eurocluster **Digital Resilient Europe for Advanced Manufacturing** aimed at building up resilience and accelerating the twin transition (digital and green transitions) to initiate, develop and maintain an EU-level long-term strategic partnership between SMEs from the Digital ecosystems and the manufacturing domain. The main purpose of this Eurocluster was to boost innovation for strategic autonomy, build capacity in the Digital ecosystem, and reinforce transformation into a greener and more digital economy through the deployment of technologies and processes from the Digital ecosystem into the manufacturing sector. This helped to foster up and re-skill the workforce in this ecosystem, as well as boost access to global supply and value chains.
- **SILEO:** This Eurocluster has the objective of **Supporting (the) recovery and business transformation of lighting & furniture SMEs for the Europe Industry of Tomorrow**. To achieve this purpose, the Eurocluster has proposed to provide SMEs with business support services such as initiatives to drive innovation in the sector by hosting technology providers like DIH, competence centres, incubators, etc. Furthermore, the Eurocluster also promotes SILEO Business Digital Transformation Vouchers so that SMEs in the furniture and lighting industries can support cross-sector collaboration between companies and digital technology providers and experts. Lastly, it also tries to push Sileo Advance Technologies Uptake Vouchers forward, so that SMEs can integrate new technologies into their company production and service processes.

Figure 9: Overview of participation of cluster organisations from the North-West Region in the Eurocluster initiative



Source: ECCP (2025). Note: the flags indicate the origin of the involved project partners.

Involvement of the North-West Region in the Interregional Innovation Investments (I3) initiative

The Interregional Innovation Investments (I3) Instrument is a funding initiative under the European Regional Development Fund (ERDF) for the 2021–2027 programming period. It provides financial and advisory support through the European Innovation Council and the SMEs Executive Agency (EISMEA). The aim is to support interregional innovation projects in their commercialisation and scaling-up phases, helping them overcome regulatory and market-related barriers to reach investment readiness. A total of €490 million is available for the 2021-2027 period, with up to €10 million per project, and a 70% EU co-financing rate applies to all beneficiaries and cost categories.⁴⁹

One cluster organisation (Cluj IT Cluster) from the region takes part in one I3 project, namely **Boosting Interregional Innovation Investment and cooperation among Health Innovation EcoSystems (I3HIES)**. This project focuses on the Health ecosystem, particularly on pushing interregional innovation investments and cooperation in this ecosystem. This project's objective is thus to achieve the desired efficacy of the healthcare sector. With this approach, the project that will end by August 2027, would boost and sustain efficient international collaboration of the relevant quadruple helix innovation actors. Additionally, more specific objectives aim at accelerating the development of validated innovation investments in the thematic focus areas of the project, as well as enhancing interregional cooperation and participation in EU value chains. For the partners, this initiative hands a great community-building opportunity, helps develop infrastructure as business cases, as well as it increases the companies' capacities to receive funding.

⁴⁹ For more information, see: https://eisma.ec.europa.eu/programmes/interregional-innovation-investments-i3-instrument_en (last access 23.06.2025).

Further Involvement of cluster organisations from the North-West Region in European networks and partnerships

The clusters in the North-West Region also participate in other important European initiatives. One relevant programme of interregional cooperation is INTERREG. It is the EU's flagship scheme for cooperation across borders and assists local, regional and national governments in policymaking for regional development issues.⁵⁰ INTERREG is about cooperation between communities, regions and countries in the EU and covers the following topics: Smarter Europe, greener Europe, more connected Europe, more social Europe, Europe closer to citizens and better regional governance. Public institutions and private non-profit organisations from all 27 EU member states, plus Norway and Switzerland, are eligible to participate in the programme, which is co-funded by the European Union and has a budget of €379 million from the European Regional Development Fund (ERDF) for the period from 2021-2027. INTERREG has multiple subprogrammes, which are divided into three types of programmes: cross-border, transnational and interregional.

The **Interreg Danube Programme** focuses on reducing socio-economic disparities among the countries on the Danube basin river, while fostering climate resilience, efficient public administration and innovation. Key priorities include boosting innovation and technology transfer, enhancing skills for industrial transition, promoting renewable energy, preserving biodiversity, and addressing climate-related risks. Social inclusion, through an effective labour market, education, training, as well as collaboration among EU member states and candidate countries to achieve common goals is also pushed forward by this programme. One cluster from the North-West Region (**Cluj IT Cluster**) participates in the **CapTTict Project**. The CapTTict project, coordinated by the Cluj IT Cluster, aims to enhance technology transfer and innovation capabilities in the Danube Region. It focuses on building sustainable collaboration between academia, businesses, and research institutions to foster ICT entrepreneurship. The project promotes regional knowledge exchange and the commercialisation of research results. It involves stakeholders from nine countries, strengthening the regional innovation ecosystem through training, pilot actions, and strategy development.⁵¹ In total, this project counts 16 project partners from the Czech Republic, Germany, Slovakia, Croatia, Serbia, Bosnia and Herzegovina, Montenegro, Romania and Ukraine.⁵²

Clusters in the North-West Region also **contribute to the establishment of European Digital Innovation Hubs (EDIHs)**. The region hosts two of Romania's seven EDIHs. These hubs reflect the national approach of building digital hubs around clusters and highlighting the role of clusters as drivers of digital transformation and collaboration. The **European Digital Innovation Hub in Transilvania (EDIHT)** is coordinated by the Transilvania IT Cluster, with implementation partners including the Babeş-Bolyai University, the Technical University of Cluj-Napoca, the National Institute for Research and Development in Isotopic, among others. The EDIHT is located in Cluj-Napoca and builds on the Smart Transilvania initiative and the Northern Transylvania Cluster Consortium.⁵³ The **Digital Innovation Hub for a Smarter, Safer and more Sustainable Society (DIH4Society)** was launched by the Cluj IT Cluster in 2019 and has been fully operational since 2020. Headquartered in Cluj-Napoca, it is supported by local hubs in key cities including Oradea, Bistrița-Năsăud, Baia Mare, Satu Mare, and Zalău. The Hubs is currently led by a consortium of four partners (Cluj IT Cluster, Technical University Cluj-Napoca, University Oradea and Chamber of Commerce and Industry Bistrita-Nasaud).⁵⁴

⁵⁰ For more information on INTERREG see: <https://www.interregeurope.eu/> (last access 04.06.2025).

⁵¹ For more information see: https://www.clujit.ro/capttict-project/?utm_source=chatgpt.com (last access 04.06.2025).

⁵² For more information see: <https://interreg-danube.eu/news/successful-kick-off-meeting-of-the-capttict-project-in-cluj-napoca-romania> (last access 04.06.2025).

⁵³ For more information on the TEDIHT, see: <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/tedih> (last access 19.06.2025).

⁵⁴ For more information on the EDIH4Society, see: <https://dih4society.ro/> (last access 19.06.2025).



04

Smart Specialisation in the North-West Region



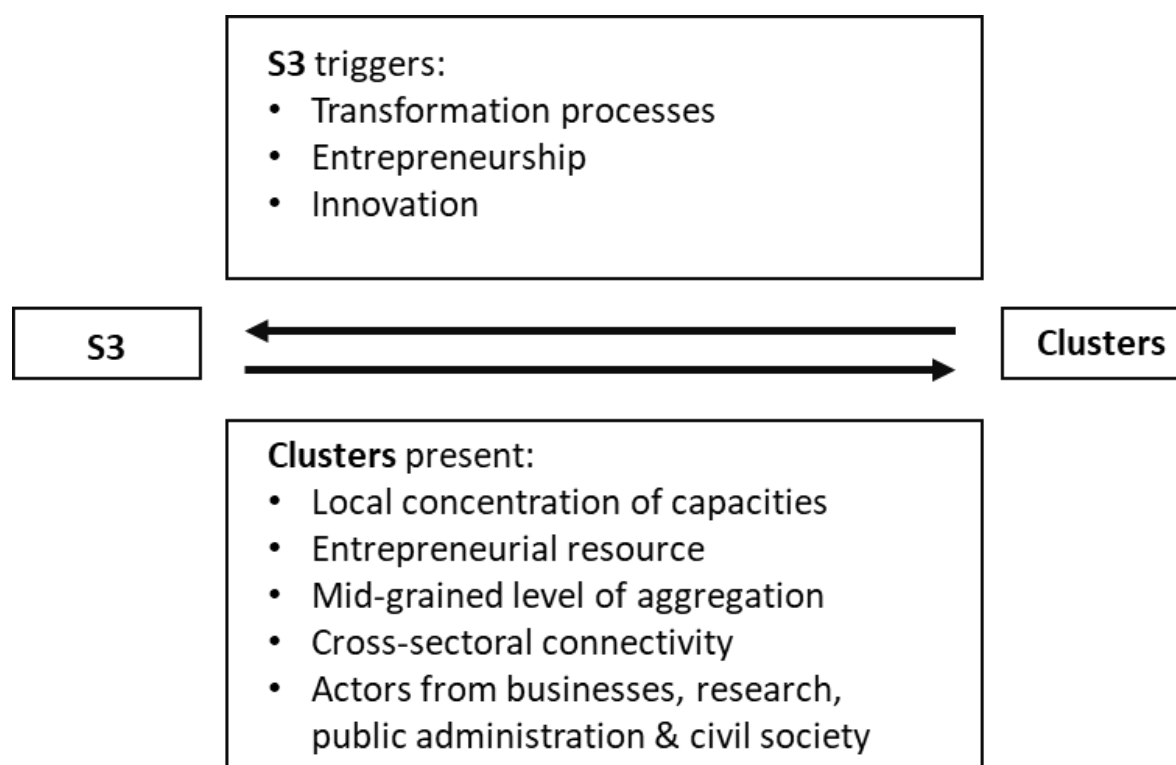
EUROPEAN CLUSTER
COLLABORATION PLATFORM

Strengthening the European economy through collaboration

4. Smart Specialisation in the North-West Region

Smart Specialisation is a strategic approach developed by the European Commission that requires regions to identify and focus on their unique strengths and capabilities to foster innovation-driven economic growth. **Cluster organisations can play an important role in the design and implementation of Smart Specialisation Strategies (S3)** since in both concepts, the promotion of economic growth and competitiveness through regional proximity are key elements of cluster organisations. S3 can help to transform the efforts of individual cluster organisations into a regional agenda, while clusters provide a broad range of actors with specific abilities.⁵⁵ The interplay between clusters and Smart Specialisation is also illustrated in Figure 10. Box 3 at the end of this chapter provides some good practices of cluster involvement in S3 from other European regions and especially in the Entrepreneurial Discovery Process⁵⁶ (EDP). Against this background, this chapter focuses on Smart Specialisation in the North-West Region.

Figure 10: Interaction of clusters and S3



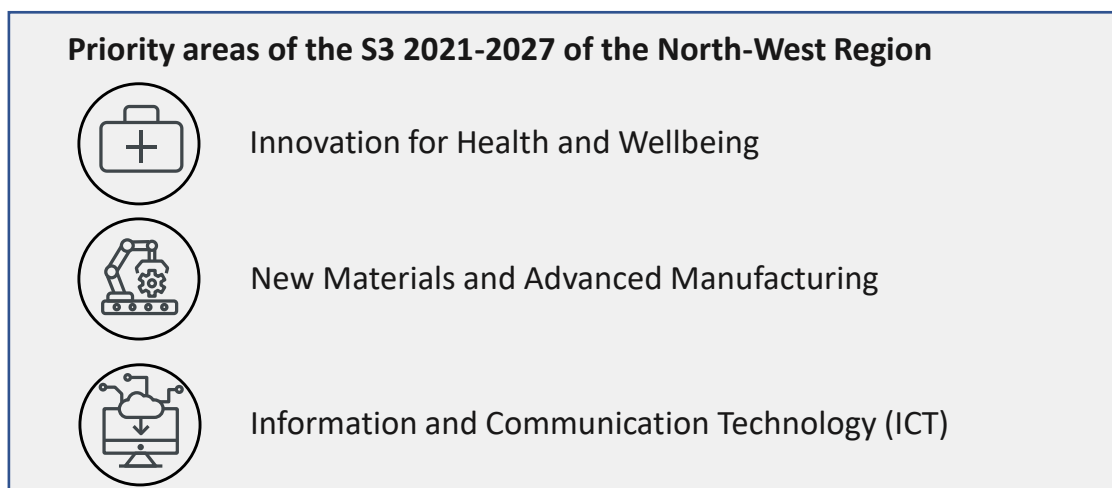
Source: ECCP (2025), own adaptations based on Keller et al. (2019): Implementing S3 with Clusters – An Innovation Model for Transformative Activities.

⁵⁵ See also European Commission (2013): The role of clusters in smart specialisation strategies. Available online: <https://op.europa.eu/en/publication-detail/-/publication/2fe44194-e5a8-42b7-ac14-9c9b8e157de3> (last access 11.06.2025); OECD (2016): OECD Science, Technology and Innovation Outlook 2016 – Cluster Policy and Smart Specialisation. Available online: https://www.oecd-ilibrary.org/docserver/sti_in_outlook-2016-28-en.pdf?expires=1628167848&id=id&accname=guest&checksum=54667669BA762145CD40965A391C05BE (last access 11.06.2025).

⁵⁶ The entrepreneurial discovery is an interactive and inclusive process in which the relevant actors identify new and potential activities and inform the government. The government assesses this information and empowers those actors most capable of realising the potential. See https://ec.europa.eu/regional_policy/policy/communities-and-networks/s3-community-of-practice/entrepreneurial_discovery_en (last access 11.06.2025).

A key starting point for the analysis of the **S3 2021-2027 of the North-West Region** is the **Strategia de Specializare Inteligentă a Regiunii de Dezvoltare Nord-Vest 2021-2027**, developed by the Development Agency of the North-West Region. The S3 2021-2027 of the North-West Region identifies **three priority areas**. These priority areas range from innovation for health and wellbeing to ICT (see Figure 11 for a full overview).

Figure 11: Priority areas of the S3 2021-2027 of the North-West Region



Source: ECCP (2025), own elaboration based on the Strategia de Specializare Inteligentă a Regiunii de Dezvoltare Nord-Vest 2021-2027.

A closer examination of the different priority areas provides a clearer understanding of the objectives pursued by the North-West Region through its Smart Specialisation Strategy:

- **Innovation for Health and Wellbeing:** This priority aims to improve the population's quality of life by supporting innovation in health-related sectors. It focuses on the agri-food industry, promoting smart and sustainable food production, as well as on the development of natural-based cosmetics and dietary supplements. The strategy also advances modernisation in the healthcare sector through medical technologies, digital solutions, and improved services.
- **New Materials and Advanced Manufacturing:** This priority supports the industrial transformation of the region by fostering the adoption of advanced materials and smart production processes. It promotes the development of high-performance composite materials, robotics, automation, additive manufacturing, and digital tools, helping regional industries move toward greater competitiveness and sustainability.
- **Information and Communication Technologies (ICT):** Acting as a cross-cutting enabler, this priority focuses on boosting digital innovation across all sectors. Key areas include artificial intelligence, cybersecurity, the Internet of Things, and digital platforms for public services, health, agriculture, and tourism. It also supports smart city solutions and autonomous systems, facilitating the digital and green transition of the regional economy.

The S3 2021–2027 of the North-West Region of Romania recognises cluster organisations as strategic drivers of innovation, economic transformation, and competitiveness. The strategy highlights clusters as key instruments to implement Smart Specialisation priorities, particularly through their ability to coordinate innovation activities and bridge cooperation between businesses, research institutions, and public authorities. This is reinforced by the region's mature cluster ecosystem, which includes nationally and internationally recognised clusters such as Transilvania IT, AgroTransilvania, and the Transylvanian Furniture Cluster. These clusters play a pivotal role in facilitating knowledge transfer, supporting SMEs in accessing innovation, and promoting internationalisation. Their active participation in national and EU-level platforms (e.g. ECCP, TREC, GIVE) strengthens the region's position in European value chains. The S3 encourages cluster involvement in cross-sectoral and interregional collaboration, positioning them as

engines for developing strategic projects, enhancing digitalisation, and fostering sustainable industrial development.

A concrete example of this strategic approach is North-West Romania's involvement in the S3 Thematic Platform [Traceability and Big Data in the Agri-food Value Chain](#) and the [GO4Cosmetics Partnership](#). These initiatives reflect the region's commitment to leveraging interregional collaboration to advance its Smart Specialisation priorities. Through participation in the Traceability and Big Data platform, the region fosters the development and adoption of digital technologies in the agri-food sector, a key domain under its "Innovation for Health and Wellbeing" pillar. This includes the integration of smart farming solutions, food quality monitoring systems, and traceability tools that enhance food safety and value-added production. In parallel, North-West Romania contributes to the GO4Cosmetics partnership, which aligns with its emphasis on natural-based cosmetics and dietary supplements. This collaboration supports innovation in bio-based ingredients, sustainable production methods, and R&D cooperation across European regions. These partnerships provide opportunities for regional clusters, SMEs, and research institutions to engage in EU-wide knowledge exchange, participate in joint innovation projects, and strengthen their role in transnational value chains. As such, they are instrumental in achieving the strategy's goals of competitiveness, sustainability, and technological modernisation.

Box 3: Good practices of cluster involvement in S3

Good practices of cluster involvement in S3

Walloon Region, Belgium – Coordination cells & Strategic Innovation Initiatives:

In the Walloon Region, cluster organisations are actively involved in the Smart Specialisation Strategy (S3) 2021-2027 through their participation in coordination cells for each of the five priority areas. These coordination cells, which include both regional administration and cluster organisations, are responsible for monitoring the development of their respective priority areas. Furthermore, Strategic Innovation Initiatives, which are cross-sector consortia aiming to achieve S3 objectives through a set of coherent projects covering the entire innovation chain, play a key role in the region's innovation framework. Walloon cluster organisations have supported the emergence and structuring of these initiatives and continue to assist in strategy development and ecosystem building to enhance cross-sector collaboration and innovation.

Czechia – Strategic Integration of Clusters in Czechia's Smart Specialisation

In Czechia, cluster organisations are deeply integrated into the Smart Specialisation Strategy (S3), contributing across a range of priority areas. They are actively involved in areas, such as "Advanced machinery and technologies for globally competitive industry", "Healthcare and advanced medicine", and "Sustainable agriculture and environmental sectors." Clusters are expected to continue aligning with these priority areas in the future. In addition, Czech cluster organisations demonstrate strong competencies in cross-cutting domains such as innovation, internationalisation, and the twin transition.

Slovenia – Strategic Research and Innovation Partnerships and the role of clusters (SRIPs):

In Slovenia, lasting partnerships between different types of stakeholders have been established to implement the S3 through dedicated action plans. Cluster organisations are involved in this process, particularly through the Strategic Research and Innovation Partnerships (SRIPs). Each priority area is implemented through a corresponding SRIP, which represents a long-term partnership between actors such as businesses, research organisations, and the state.

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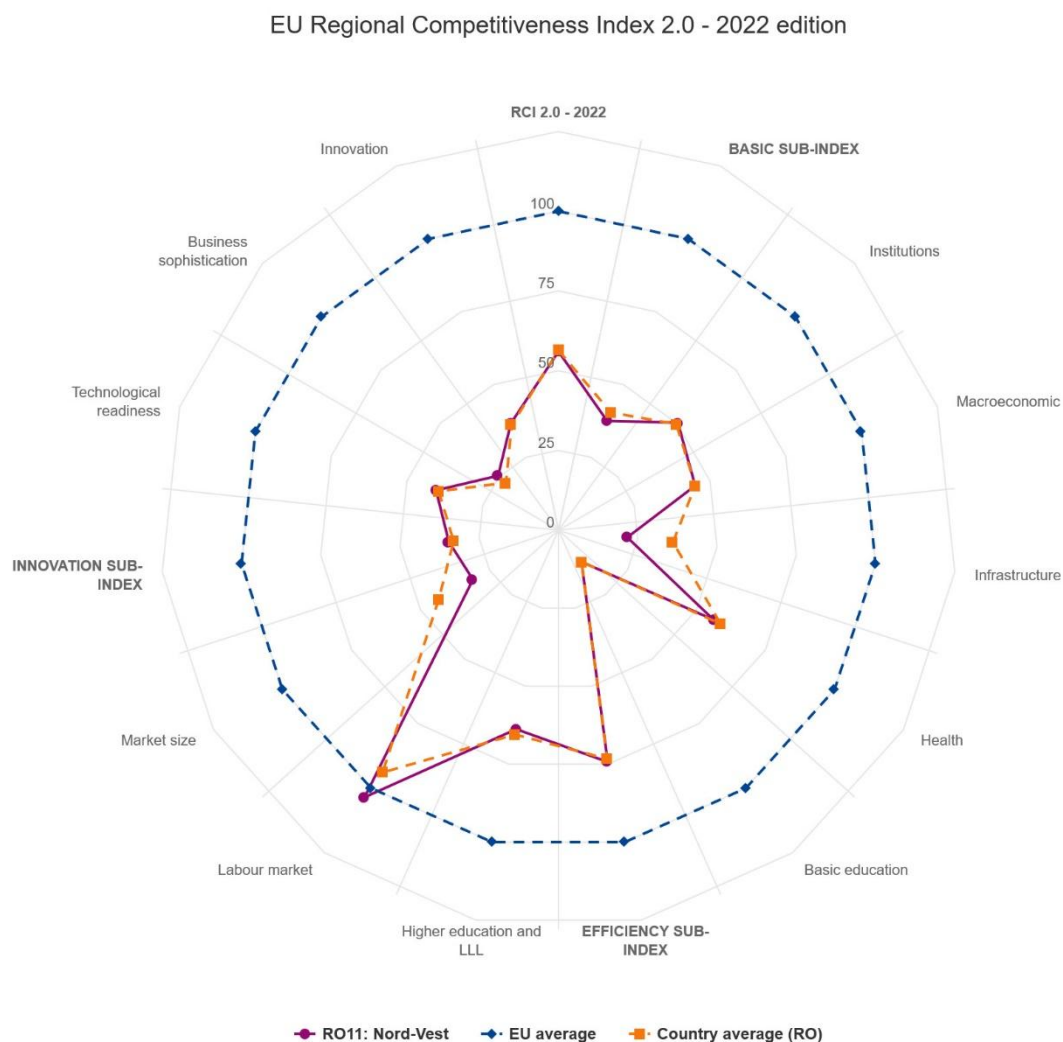
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Annex

Regional Competitiveness Level in the North-West Region

Figure 12: Performance of the North-West Region in the 2022 Regional Competitiveness Index



Source: DG REGIO - DG JRC RCI 2.0 - 2022

Source: European Commission (2022): EU Regional Competitiveness Index 2.0 – 2022 edition.

List of cluster organisations in the North-West Region

Table 1: Overview of cluster organisations in the North-West Region registered on the ECCP and their addressed EU industrial ecosystems

No.	Cluster organisation (English name)	Assigned Industrial Ecosystem	Website
1	3R Green Cluster	Renewable Energy	https://3rgreencluster.ro/
2	AgroTransilvania Cluster	Agri-food	http://www.agrocluster.ro/
3	Cluj IT Cluster	Digital	https://www.clujit.ro/
4	Discover Transylvania's reaches Cluster ⁵⁷	Tourism	
5	Eco-Innovation Cluster for sustainable Environment	Renewable Energy	http://www.clems.ro/
6	FreshBlood HealthTech	Health	https://freshblood.ro/
7	Romanian New Materials Cluster	Energy Intensive Industries	https://rnmc.ro/
8	Transilvania Creative Industries Cluster	Creative & Cultural Industries	http://creativetransilvania.ro/
9	Transilvania IT Cluster	Digital	http://transilvaniait.ro/
10	Transilvania LifeStyle	Creative & Cultural Industries	https://sites.google.com/site/transilvanialifestylecluster
11	Transylvania Energy Cluster	Renewable Energy	http://transylvaniaenergycluster-trec.ro/
12	Transylvanian Furniture Cluster	Energy Intensive Industries	https://transylvanianfurniture.com/

Source: ECCP (2025), based on the Mapping Tool (retrieved on 02.06.2025) and information from the cluster organisation's website.

⁵⁷ Cluster does not seem to be active anymore.