EUROPEAN CLUSTER COLLABORATION PLATFORM

Clusters meet Regions' event in Ajdovščina, Slovenia "AGORADA+ discusses the Knowledge Park as a catalyst for the green and digital transition in the North Adriatic region"

Input paper

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Executive Summary

In light of the Clusters meet Regions event taking place in Ajdovščina, Slovenia, on 10–11 September 2025, this paper provides an overview of regional innovation and collaboration structures in Slovenia, with a particular focus on the region of Western Slovenia. It outlines key characteristics of the region's economic structure, innovation performance, and specialisation patterns, and highlights the role that cluster organisations play in supporting regional development. In line with the focus of the event "The Knowledge Park as a catalyst for green and digital transformation in the North Adriatic region", the paper explores how cluster actors, research organisations, and small and medium-sized enterprises (SMEs) contribute to building a connected innovation ecosystem and advancing the twin transition. By examining existing cooperation frameworks, Smart Specialisation priorities, and participation in European support initiatives, the paper identifies strengths, ongoing efforts, and potential areas for future policy development. These 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 and innovation profile of Slovenia and Western Slovenia

- In 2024, Slovenia's GDP stood at €63.95 billion (€35,000 per capita), slightly below the EU27 average yet placing the country among the strongest economies in the Danube and North Adriatic regions. The region of Western Slovenia accounted for €37.2 billion (58.2% of national GDP) and a GDP per capita of €42,800, well above both the national and EU averages. The region combines high labour productivity, strong industrial and innovation activity, and deep integration into European value chains, making it a hub for foreign investment and technology-driven sectors.
- In 2024, industry employed 23.0% of Western Slovenia's workforce, above the EU average but below Eastern Slovenia (28.5%), while services accounted for 69.2%. The region shows strong specialisation in Construction, Cultural and Creative Industries, and Digital, all surpassing EU levels, and exceeds the EU average in several technology-driven sectors.
- In the 2025 Regional Innovation Scoreboard, Western Slovenia is classified as a "Strong Innovator" (RII of 108.2), above the EU27 average and Eastern Slovenia. Strengths include scientific co-publications, lifelong learning, trademarks, and SME product innovation, while weaknesses remain in non-R&D innovation spending, highly cited publications, and PCT patents.
- The Knowledge Park Ajdovščina – Biotechnopolis is a planned flagship innovation hub in Slovenia integrating education, research, and high-value industries – including biotechnology, aeronautics, green and digital technologies, and hydrogen energy – with facilities such as laboratories, startups incubators, industrial spaces, and public amenities, aimed at fostering sustainable growth, creating quality jobs, attracting international investment, and strengthening Slovenia's role as a European centre for innovation.

Cluster organisations in Slovenia and their importance for regional economic development

- Out of the 21 ECCP-registered cluster organisations in Slovenia, 14 are based in Western Slovenia. The regional cluster landscape is heavily centralised, with 13 out of the 14 cluster organisations in Western Slovenia located in the capital of Ljubljana.

- Cluster support in Slovenia is embedded in the Strategic Research and Innovation Partnerships (SRIPs), the main implementation instrument of Slovenia's Sustainable Smart Specialisation Strategy (S5) 2021–2027, which brings together quintuple-helix actors to foster innovation, strengthen value chains, and advance strategic priorities. They coordinate joint R&D activities, pool resources, enhance human capital, and promote internationalisation, with evaluations confirming their positive impact on cooperation, competitiveness, and integration into European value chains. Three out of the nine SRIPs are currently registered on the ECCP.
- 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 Slovenian clusters in European networks and support initiatives

- Slovenia is engaged in cross-border cooperation and international collaboration, especially considering the involvement of Western Slovenian clusters in different projects. The region´s cluster organisations participated in three ESCP-4i projects and one ESCP-4x project. These four projects involved two ecosystems and regions from nine different countries. Furthermore, Western Slovenian cluster organisations also participated in two Euroclusters, which involved regions from eight different countries. Additionally, one cluster is also involved in one Interregional Innovation Investments (I3) project.
- Clusters from Western Slovenia are also involved in three Interreg projects and have been previously involved in two additional projects. Apart from this, one Western Slovenian cluster is part of Slovenia´s Digital Innovation Hub.

The role of clusters in Slovenia's Smart Specialisation Strategy

- The interaction between Smart Specialisation Strategies (S3) and cluster organisations is a mutually reinforcing relationship, with S3 providing strategic direction and funding frameworks, while clusters mobilise stakeholders, foster collaboration, and feed intelligence into the Entrepreneurial Discovery Process to refine priorities.
- Slovenia's Sustainable Smart Specialisation Strategy (S5) 2021–2027, coordinated by the Ministry of the Economy, Tourism and Sport, is the main innovation policy framework aiming to drive innovation-led growth, competitiveness, and the twin transition through targeted investments and collaboration across nine priority areas.
- In Slovenia's S3, cluster organisations play a key role through the Strategic Research and Innovation Partnerships (SRIPs), which turn strategic priorities into coordinated Research, Development and Innovation (R&D&I) actions. They mobilise SMEs and industry actors, foster networking, and enable participation in EU S3 Thematic Platforms and interregional projects, strengthening Slovenia's integration into European value chains and competitiveness.

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Context: Economic and innovation profile of Slovenia and Western Slovenia

1. Context: Economic and innovation profile of Slovenia and Western Slovenia

The Republic of Slovenia is located in Central Europe, sharing borders with Italy to the west, Austria to the north, Hungary to the northeast, and Croatia to the south and southeast. With a population of approximately 2.1 million[1], it is one of the smaller EU Member States but maintains a high level of trade openness and export orientation. Administratively, Slovenia is divided into two administrative regions (at the NUTS-2 level): Eastern Slovenia and Western Slovenia.

The region of Western Slovenia has a population of around 1.01 million in 2024, representing roughly 48% of the total national population, thus having a slightly smaller population than the region of Eastern Slovenia.[2] Nevertheless, it accounts for a significant share of the country's economic activity and includes several key urban and industrial centres, such as the capital city, Ljubljana. The region benefits from a diversified economic structure, with strengths in manufacturing, ICT, and logistics. The capital city of Ljubljana has a strong focus on the service sector, with the capital region accounting for roughly a third of Slovenia's total GDP.[3] Western Slovenia also hosts some higher education and research institutions that contribute to a relatively strong innovation base compared to the EU average.

The following section provides an economic overview of Slovenia, particularly Western Slovenia, encompassing key aspects, such as its macroeconomic profile and sectoral specialisation, as well as its innovation and regional competitiveness performances.

Macroeconomic profile of Slovenia and Western Slovenia

Although Slovenia is a relatively small European economy, the country has had a strong economic performance during the last two decades, with a recent **GDP of 63.95 billion EUR**. This results in a real **GDP per capita of €35,000**, which lies shortly below the EU 27 average of €38,100, but the country remains one of the strongest economies in the Danube region and the North Adriatic region.[4] Slovenia's economic development since the 1990s has been characterised by consistent growth, driven by structural reforms, strong export performance, and successful integration into the European Union. Although the country experienced short-term economic contractions during the 2008 global financial crisis and the COVID-19 pandemic, it has shown notable resilience and a strong capacity for recovery. Indeed, in the post-pandemic period, the Slovenian economy continues to expand steadily: after growing by 1.6% in 2024, GDP is expected to increase by 2.0% in 2025 and by 2.4% in 2026, according to the European Commission's spring 2025 economic forecast.[5]

Regarding trade, Slovenia's strategic geographic location at the crossroads of central and southeast Europe and its access to the Adriatic Sea, as well as its connectivity with neighbouring European countries, play a pivotal role in shaping its trade capacity. The nation's advantageous position facilitates both imports and exports, thereby influencing its trade balance. Indeed, Slovenia maintains a relatively balanced external trade profile in both goods and services, reflecting its stable position in international markets. A significant share of its **trade** is conducted within the European Union, highlighting the country's strong integration into intra-EU value chains. In particular,

[1] Eurostat (2025): Population on 1 January (last access 30.07.2025).
[2] Eurostat (2025): Population on 1 January by age group, sex and NUTS 3 region (last access 30.07.2025).
[3] Slovenia Statistical Office (2025): Gross domestic product by region, 2023 (18.08.2025)
[4] Eurostat (2025): Gross domestic product (GDP) at current market prices by NUTS 3 region (last access 05.08.2025).
[5] European Commission (2025): Economic forecast for Slovenia. Available online: https://economy-finance.ec.europa.eu/economic-surveillance-eu-economies/slovenia/economic-forecast-slovenia_en (last access 06.08.2025).

Germany, Italy, Austria, and Croatia stand out as key trading partners, underscoring the importance of both regional and EU-wide economic ties, while Switzerland and China represent its main non-EU partners[6]. The country's primary exports include packaged medications and automobiles, which reflect its industrial strengths.[7] Moreover, Slovenia's foreign trade accounts for a substantial share of its GDP (84%), pointing to a high degree of trade openness and global economic integration.[8]

As mentioned previously, the Western Slovenia region comprises **key urban centres such as Ljubljana and Koper** and is the country's most economically advanced area. It concentrates a large share of Slovenia's industrial and innovation activity, and with a GDP of €37.2 billion, it contributes significantly to national GDP (58,2%) and records a GDP per capita of €42,800, above both the national and EU averages.[9] This is further confirmed by high labour productivity, particularly in the statistical region of Central Slovenia[10] (€69,691 per employee).[11] It also benefits from a well-developed infrastructure, a highly educated workforce, and strong connections to European value chains, making it a focal point for foreign direct investment and technology-driven sectors. In comparison, Eastern Slovenia, although covering a larger geographic area and home to a significant share of the population, lags in economic performance. The region contributes less to the national GDP and shows lower productivity and employment rates compared to the western part of the country. Western Slovenia's **gross value added (GVA)** amounts to approximately €33.1 billion, reflecting 58.2% of Slovenia's total GVA and therefore the region's strong economic performance and contribution to national output. [12]

Employment composition and specialisation of Western Slovenia

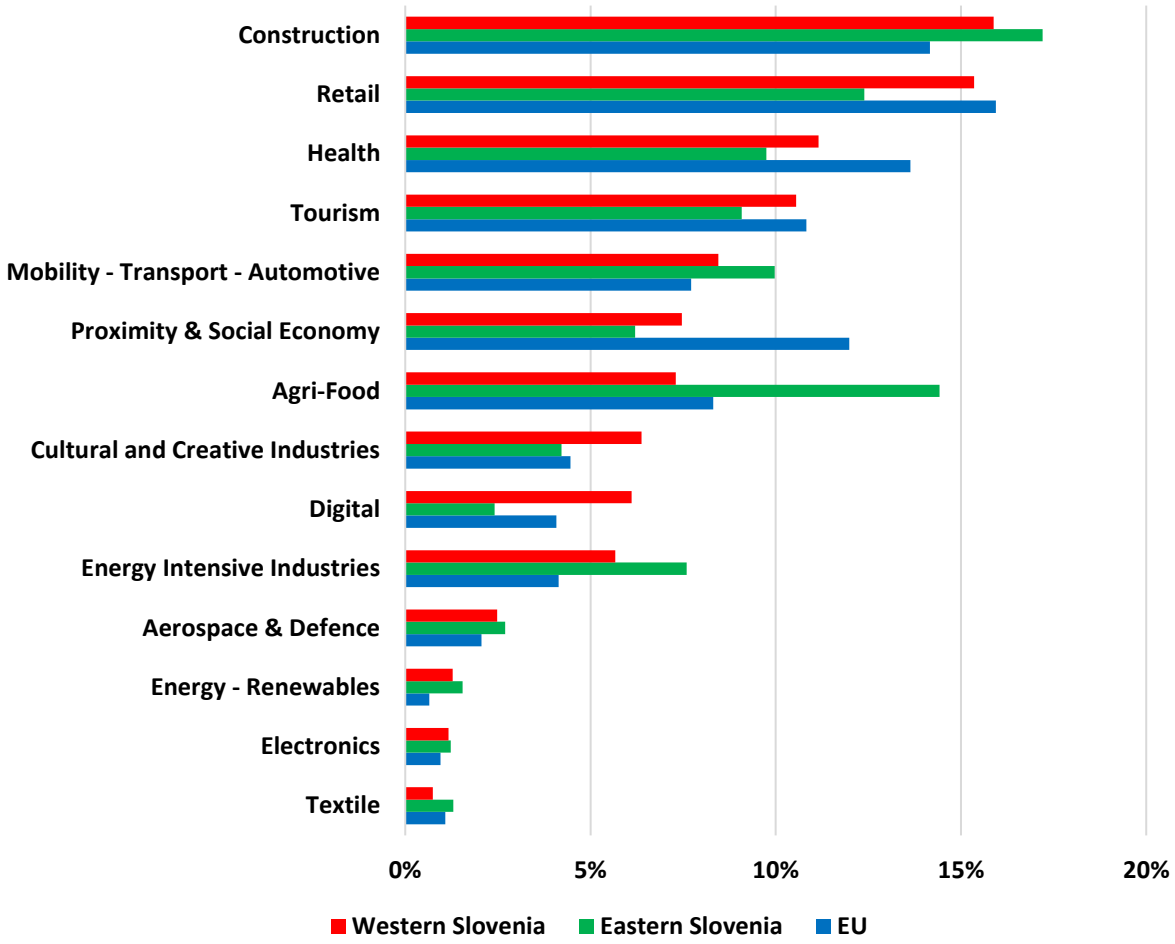
According to the most recent data for 2024 from Eurostat, industry plays a particularly prominent role in the Western Slovenia region's labour market, employing 23.0% of the workforce, significantly higher than the EU average (17.5%), while staying behind Eastern Slovenia (28.5%).[13] In terms of employment in the service sector, Western Slovenia (69.2%) lags behind the EU average, while having a significantly higher share than Eastern Slovenia (60.2%)

In the following, the **employment composition of the 14 industrial ecosystems** identified by the European Commission as part of its 2020 Industrial Strategy will be reviewed. These ecosystems encompass entire value chains, from upstream production to final services. [14] The classification of employment by ecosystem is based on NACE Rev. 2 aggregation, following the European Commission's methodology. The Ecosystem of Construction showcases the largest employment share in Western Slovenia with 15.9% (see Figure 1). This is followed by the Retail (15.4%) and Health (11.2%) ecosystems, although only the employment share of Construction is surpassing the EU-average, while staying behind the share of Eastern Slovenia. The ecosystems of Cultural and Creative Industries, as well as Digital, are showcasing a strong level of specialisation in Western Slovenia by surpassing the EU level and Eastern Slovenia. Although Western Slovenia hosts two key ecosystems, it surpasses the EU average employment shares in sectors such as Mobility-Transport-Automotive, Energy Intensive Industries, Aerospace and Defence, Energy-Renewables, and Electronics—demonstrating the robustness of its regional

[6] Eurostat (2023): Intra and Extra-EU trade by Member State and by product group (last access 06.07.2025).
[7] OEC (2025): Slovenia. https://oec.world/en/profile/country/svn?selector401id=Treemap&selector2428id=Exporter
[8] Slovenia Business (2025): Trade. Available online: https://www.sloveniabusiness.eu/business-environment/trade (last access 06.08.2025).
[9] Eurostat (2025): Gross domestic product (GDP) at current market prices by NUTS 3 region (last access 05.08.2025).
[10] Central Slovenia is one of the four statistical regions (at the NUTS-3 level) within Western Slovenia, along with Upper Carniola, Gorizia, and Coastal–Karst.
[11] Analitika GZS, Regija (2025): Produktivnost dela je porasla v večini regij. July 17, 2025. Available online: https://glasgospodarstva.gzs.si/produktivnost-dela-je-porasla-v-vecini-regij/ (last access 12.08.2025).
[12] Eurostat (2025): Gross value added at basic prices by NUTS3 region (last access 05.08.2025). https://ec.europa.eu/eurostat/databrowser/view/nama_10r_3gva/default/table?lang=en
[13] Eurostat (2025): Employment by sex, age, economic activity and NUTS 2 region (last access 05.08.2025).
[14] See here for more information: https://clustercollaboration.eu/in-focus/industrial-ecosystems (last access 17.05.2024).

industry. However, employment shares in these sectors remain lower than those in Eastern Slovenia, which has an even higher specialisation in industry.

Figure 1: Employment across the EU industrial ecosystems for Western Slovenia, Eastern Slovenia 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 Western Slovenia

To provide an overview of Western Slovenia's performance in key dimensions of regional competitiveness, the following section will discuss the ranking of the Slovenian region in the **Regional Competitiveness Index (RCI) 2022**.[15] The RCI measures the competitiveness of regions across the EU in three dimensions: the Basic Sub-Index, the Efficiency Sub-Index and the Innovation Sub-Index. Figure 11 in the Annex provides a detailed overview of the region's performance in various indicators and dimensions of the RCI. According to this, Western Slovenia performs above the EU average, ranking 69th out of 234 regions assessed in the RCI with a score of 109.6 (EU27 = 100). It also performs better than the other Slovenian region, Eastern Slovenia, which ranks 111th with a score of 99.4 (EU27 = 100).

[15] European Commission (2022): EU Regional Competitiveness Index 2.0 - 2022 edition. https://ec.europa.eu/regional_policy/assets/regional-competitiveness/index.html#/

Looking at the three sub-indices, Western Slovenia performs well in the **Basic Sub-Index** (105.8), scoring above the EU average. This strong result is mainly driven by the region's strengths in basic education and its macroeconomic pillar. However, the region shows deficits in the infrastructure pillar. The **Efficiency Sub-Index** (111.2) also demonstrates strong results, mainly due to excellence in higher education and lifelong learning (LLL), where the region significantly exceeds the EU average. Combined with high scores in basic education, this points to a well-educated population. This performance in higher education and LLL is complemented by a strong labour market. Nevertheless, the region scores poorly in the market size pillar, reflecting the country's small size. Finally, the **Innovation Sub-Index** records the highest score among the three (114.3), driven by exceptional results in the innovation pillar. The innovation performance of Western Slovenia will be discussed in detail in the next paragraph. Overall, the RCI for Western Slovenia reflects strong performance in innovation and education, resulting in an above-EU-average score, despite weaknesses in infrastructure and market size.

Regional innovation performance and landscape of Slovenia

While the RCI provides a broad perspective, the last part of this chapter discusses one of the key drivers of Western Slovenia's Competitiveness - innovation - by examining the Regional Innovation Scoreboard. The **2025 Regional Innovation Scoreboard (RIS)**[16] provides an evidence-based and comparative avenue for assessing its level of innovativeness. The RIS contains data on 23 innovation-related indicators across 12 dimensions for European regions.[17]

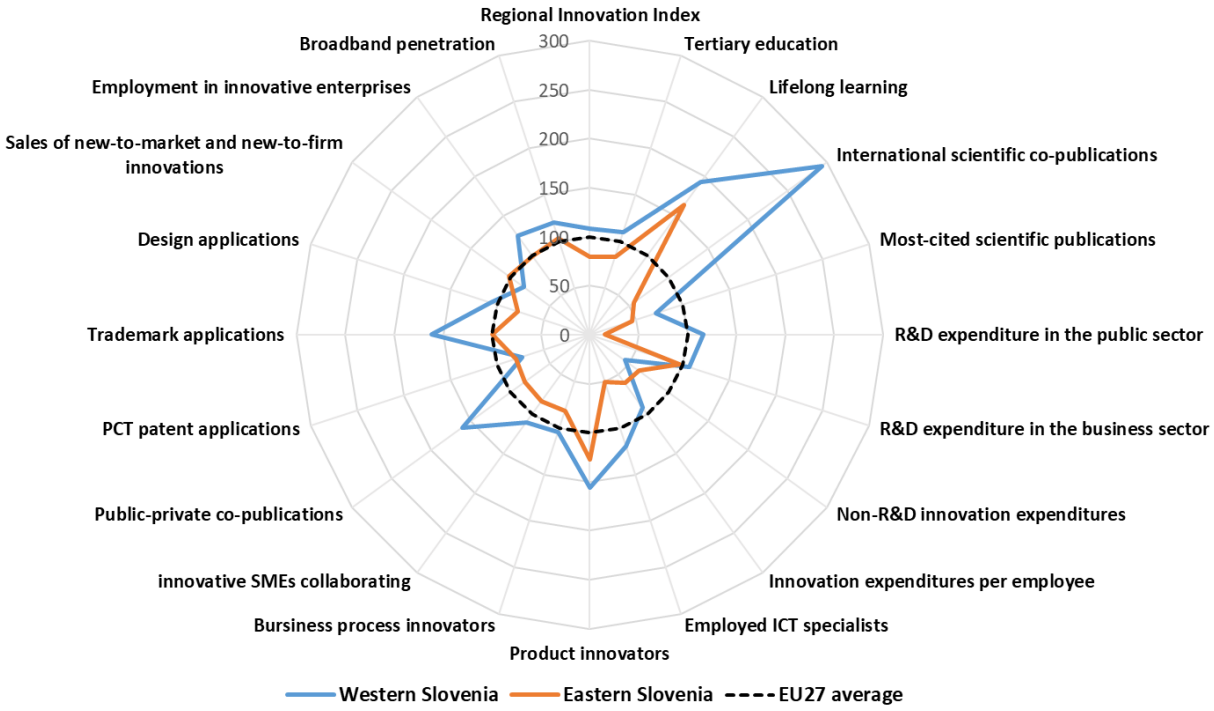
The EU Regional Innovation Index (RII) measures and compares the innovation performance of regions across the EU and is one key indicator of the RIS. According to the index, **Western Slovenia can be classified as a Strong Innovator** (RII: 108.2 with EU=100). By that, the region ranks above eastern Slovenia (79.9) and just slightly below the average score of strong innovators in 2025 (111). When ranked according to the RII, Western Slovenia is placed 80th out of all EU regions. Furthermore, the region has raised its RII by 19 points, using the EU average in 2018 as a baseline. This corresponds to an increase of 18.5%. During the same period, the EU average only increased by 12.6%.

Western Slovenia is excelling in numerous indicators that mark the pillars for its strong innovative performance as can be seen in Figure 2. In the realm of human resources, the region outperforms the EU average in both "population with tertiary educations" (109.9 relative to the EU) and especially in "population involved in lifelong learning" (192.7 relative to the EU), suggesting a well-educated and adaptable workforce. The indicator "international scientific co-publications" marks a key strength of the region and is nearly triple the European average (293.2 relative to the EU), underscoring its robust scientific output and international collaboration. In this pillar, the region experienced great development over the last years despite already being far above the EU-average in 2018. In terms of intellectual property, Western Slovenia excels in "trademark applications" (161.4 relative to the EU). The strengths of small and medium-sized enterprises (SMEs) in the region are highlighted in the indicator "SMEs introducing product innovations" (156.1 relative to the EU) and "SMEs introducing business process innovations" (104.6 relative to the EU), which suggests that SMEs play a pivotal role in the Western Slovenian Innovation landscape. The high innovation performance and high-quality output of the region are further emphasised by the region's strong score in "employment in innovative enterprises" (125 relative to the EU) and "exports of medium and high technology products" (141.2 relative to the EU). In terms of linkages, the region performs strongly in the fields "innovative SMEs collaborating with others" (110.2 relative to the EU) and in "public-private-co-publications" (161.4 relative to the EU), emphasising that the region focuses on

[16] See https://projects.research-and-innovation.ec.europa.eu/en/statistics/performance-indicators/european-innovation-scoreboard/eis#/ris (last access 15.08.2025).
[17] European Commission (2025).

collaboration to foster innovation. **However, the region shows room for improvement** in some areas, such as non-R&D innovation expenditure (44.5 relative to the EU), scientific publications among the top 10% most cited (71.4 relative to the EU), and PCT patent applications (73.2 relative to the EU). Hence, the innovation output needs to be further developed.

Figure 2: Innovation performance of Western Slovenia in the 2025 Regional Innovation Scoreboard



Source: Own elaboration based on the 2025 Regional Innovation Scoreboard. Note: Only a selected number of indicators from the Regional Innovation Scoreboard are displayed.

Western Slovenia's innovation ecosystem is distinguished not only by a high volume of innovations but also by the exceptional concentration of R&D researchers. The country boasts 5,370 researchers per million people, significantly surpassing the EU average of 4,648.[18] The innovation landscape in Slovenia is supported by numerous hubs and centres that focus on promoting collaboration and fostering innovation. The **Knowledge Park in Ajdovščina** stands at the forefront of these initiatives as one of the most ambitious development projects in Slovenia (see Box 1).

Box 1: Knowledge Park Ajdovščina – Biotechnopolis

The Knowledge Park Ajdovščina – Biotechnopolis is a major innovation hub planned in Slovenia, designed to integrate education, research, and high-value industry in one location. Situated north of Ajdovščina, near the local airfield and with fast connections to Ljubljana, Koper, and Italy, the complex will host a university, higher and secondary education facilities, laboratories, and research centres. The park will focus on fields such as biotechnology, aeronautics, information and green technologies, hydrogen energy, and other advanced sectors, while also providing industrial facilities for production, research, development, and maintenance of high-tech products and services.

[18] World Bank (2025): Researcher in R&D (per million people) (last access 15.08.2025).

The park will include startup incubators, shared research infrastructure, restaurants, conference and hotel facilities, sports amenities, a science centre, and an aviation museum. Its objective is to boost the local economy, create high-quality jobs, and support the growth of sustainable, green, and digital industries in line with EU climate neutrality and digital transformation goals. By fostering links between research and industry, it aims to enhance the region's profile as a European hub for innovation and attract international investors and experts.

With its six dedicated zones for aviation, museum and conference activities, education, technology industry, sports, and public infrastructure, and featuring the Ajdovščina Hydrogen Park as a green hydrogen demonstration centre, the project aims to be a flagship European initiative combining science, industry, and education to drive sustainable and high-tech growth in Slovenia and beyond.

Source: ECCP (2025).

Besides the upcoming Knowledge Park, Western Slovenia is home to a variety of additional innovation hubs of which a handful will be reviewed in the following.

- **Digital Innovations Hub (DIH)** Slovenia is the country's national hub supporting digital transformation by helping companies (especially SMEs) access expertise, training, and innovation resources to boost digital skills and competitiveness.[19]
- **Technology Park Ljubljana** is Slovenia's largest innovation hub, connecting over 300 companies and 1,500 employees across 75,000 m² of infrastructure, providing startups and SMEs with entrepreneurial support, mentoring, access to capital, R&D, and a collaborative environment to accelerate commercialisation, with special strengths in digital health, AI, VR/AR, and ICT.[20]
- **EIT Community Hub Slovenia** is a national centre (based at Ljubljana University Incubator) that focuses on linking local innovators, startups, and researchers with European innovation communities. In addition, the hub is offering training, access to resources, international networks, and tailored programs to foster digital and sustainable innovation and connect Slovenia's ecosystem to EU opportunities.[21]

In sum, **Western Slovenia combines strong economic performance and innovation capacity with sectoral specialisation in construction, cultural and creative industries, and digital**. While the region is ranked as a Strong Innovator, challenges remain in infrastructure, market size, and patenting. Building on initiatives such as the Knowledge Park Ajdovščina, the following chapters explore how cluster organisations support competitiveness, cooperation, and the implementation of Slovenia's Smart Specialisation Strategy.

[19] For more information, see https://dihslovenia.si/en/ (last access 15.08.2025).
[20] For more information, see https://www.tp-lj.si/en (last access 15.08.2025).
[21] For more information, see https://eit-ris.eu/slovenia-2/ (last access 15.08.2025).

02

Cluster organisations in Slovenia and their importance for regional economic development

EUROPEAN CLUSTER COLLABORATION PLATFORM

Strengthening the European economy through collaboration

2. Cluster organisations in Slovenia 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 Slovenia, 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 Slovenia and Western Slovenia

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[22]. 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 Slovenia 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 Slovenia. Out of the current total 1,258 registered EU27 cluster organisations on the ECCP, there are **21 registered cluster organisations in Slovenia**, with 14 of these being located in Western Slovenia.[23]

Figure 3: Overview of cluster organisations in Slovenia

Source: ECCP (2025). Own elaboration based on https://reporting.clustercollaboration.eu/all, retrieved on 07.08.2025.

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

[23] The total number of registered cluster organisations on the ECCP refers to the status as of 7 August 2025.

Looking at the geographical distribution of cluster organisations in Western Slovenia, the landscape appears highly centralised. 13 of the 14 ECCP-registered cluster organisations are located in the capital of Ljubljana. The remaining cluster organisation is located in the town of Portorož, in the Coastal–Karst statistical region in the southwest of the country.

Figure 4 shows the information on **organisational, membership, and thematic structure of cluster organisations in Western Slovenia**.

- 11 of the ECCP-registered cluster organisations (92%)[24] in Western Slovenia employ between one and five staff members. This is significantly higher than the EU average of 65% for clusters of similar size. One cluster (8%) is medium-sized and employs between six and ten staff members (EU average = 21%), while none of the ECCP-registered cluster organisations from that region have more than ten employees. These comparisons suggest that clusters in Western Slovenia typically have smaller management teams compared to the EU average.
- In terms of members, five cluster organisations (42%)[25] have up to 50 members (EU average: 36%), while three clusters (25%) comprise between 51 and 100 members (EU average: 27%). One cluster organisation has between 101-200 (8%) members, while three clusters (25%) have between 201-300 members; therefore, 33% of cluster organisations have more than 100 members, which is below the EU average of 37%. When the median values of cluster members are compared, the **Western Slovenian cluster seems to be slightly smaller than the EU average**, with a median of 75 compared to an EU median of 80.
- Collaboration interests among these cluster organisations are primarily oriented towards internationalisation, project partnerships, digitalisation, and resource efficiency and circular economy, which are consistent with broader trends observed across EU cluster networks.

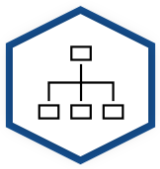
Slovenia has established the **Strategic Research and Innovation Partnerships (SRIP),** led by the Ministry of Cohesion and Regional Development. The SRIPs act as intermediaries that mobilise SMEs, facilitate collaboration between businesses and research institutions, and promote the diffusion of innovation (for more information, see sub-chapter below).

In total, seven of the 21 ECCP-registered cluster organisations are SRIP; three of them are under the current SRIP funding period, namely:

- SRIP ACS - Slovenian Automotive Cluster
- SRIP HRANA - Sustainable Food Production
- SRIPToP – Factories of the future

[24] Of the ECCP-registered cluster organisations in Western Slovenia, 12 provided information on their management size. The values in percentage account only for the 11 cluster organisations that have indicated their management staff.
[25] Of the ECCP-registered cluster organisations located in Western Slovenia, 11 provided information on their member size. The values in percentage account only for the 11 cluster organisations that have indicated their member size.

Figure 4: Overview of organisation, structure, and thematic orientation of ECCP-registered cluster organisations in Western Slovenia



Organisation

- Eleven small-sized cluster organisations with 1-5 employees (EU average: 65%)
- One medium-sized cluster organisations with 6-10 employees (EU average: 21%)

Member structure

- Five cluster organisation rather small with up to 50 members (EU average: 36%)
- Three cluster organisations with 51-100 members (EU average: 27%)
- One cluster organisation has 101-200 (EU average: 22%)
- Three cluster organisations are rather large with 201-300 member (EU average: 6%)

Thematic orientation

- Cluster organisations can be related to the Tourism, Construction, Health, Mobility-Transport-Automotive, Energy Intensive Industries, Creative & Cultural Industries, Agri-Food and Digital industrial ecosystems
- Collaboration is often sought in internationalisation, partnering for projects, digitalisation technology scouting and resource efficiency and circular economy

Source: ECCP (2025).

One should also highlight the role of cluster organisations in the green and digital transition. The following section highlights several regional cluster organisations that exemplify this alignment through their activities and initiatives.

- **ICT Horizontal Network is** an organisational part of the SRIP but operates as a financially independent. It serves as an enabler for digital transformation and provides cross-sectoral support to all SRIPs in Slovenia. The cluster focuses on developing integrated systems and platforms, and supports innovation in fields such as digital transformation, HPC and big data, Internet of Things (IoT) and Cybersecurity. Activities of the cluster include networking, organising events and promoting internationalisation.[26]
- **SRIP Go Digital** cluster is a national platform uniting Slovenia's leading ICT companies, research institutions, and policymakers to drive digital transformation by fostering innovation, collaborative R&D, and international competitiveness in integrated digital solutions across the public and private sectors. Its objective is to support and accelerate the development and commercialisation of innovative digital products/services. Activities include the support of R&D projects, startup acceleration, technology transfer, internationalisation, and integrated innovation across sectors—by prioritising collaboration and alignment with smart specialisation priorities.[27]
- **SRIP for Sustainable Food Production** is Slovenia's national cluster aimed at uniting agriculture companies, cooperatives, research institutions, investors, and other stakeholders to promote networking, cooperation, and joint R&D activities in agriculture, food science, technology, nutrition, and related fields. Its objective is to support the individual growth of its members and the overall

[26] For more information see: https://ikthm.gzs.si/ (last access 15.08.2025).
[27] For more information see: https://sripgodigital.gzs.si/ (last access 15.08.2025).

development of the agri-food sector and Slovenian economy by fostering investment-driven, innovation-oriented activities and by focusing on sustainable operations along the agricultural value chain. Its partners include the Chamber of Commerce and Industry of Slovenia, the Chamber of Agriculture and Forestry of Slovenia and the Cooperative Association of Slovenia. In addition, the three Slovenian Universities and four research institutions from Slovenia are partnering with the SRIP.[28]

Besides the ECCP-registered cluster organisations presented above, it is also worth highlighting the role of the Biopharma Global Connect Cluster (BGC), which, while not yet registered on the ECCP, has emerged as a key actor in Western Slovenia's innovation ecosystem. Based in Ajdovščina and originating from the Centre of Excellence for Biosensors, Instrumentation and Process Control (COBIK), BGC acts as a specialised cluster initiative in biopharma and biotechnology. Its activities complement the existing cluster landscape by providing targeted support for long-cycle, high-risk innovation projects and by strengthening the region's positioning in international value chains. Box 2 highlights the key results and insights from the case study of the Biopharma Global Connect Cluster, illustrating how it contributes to advancing innovation, internationalisation, and ecosystem development.

Box 2: ECCP Cluster Solutions Library – Biopharma Global Connect Cluster

Biopharma Global Connect Cluster (BGC) – Building Resilience in Long-Cycle Biopharma Innovation

Background and Features: Establishing a specialised cluster for biotechnology and biopharma

Launched in 2021 as a spin-off from COBIK, the Centre of Excellence for Biosensors, Instrumentation and Process Control, BGC was created to take on cluster-oriented tasks and extend support beyond research. It brings together more than 30 domestic and 50–60 international partners, including strategic links with BioCubaFarma. Anchored in the town of Ajdovščina in the Northern Primorska Region, BGC operates at the interface of a cluster, incubator, and innovation platform, guiding biotechnology projects in biopharma, food, environment, and agriculture from early idea to market. Its service model relies on public funding and chargeable services rather than membership fees, with activities coordinated through different working groups.

Service Portfolio: Providing integrated support across the innovation cycle

BGC provides tailored one-on-one support along the entire innovation cycle: identifying funding opportunities, developing proposals, managing R&D projects, navigating regulatory requirements, and offering access to modern laboratory infrastructure. Its activities are structured around four functional working groups focusing on regulatory aspects, internationalisation, competence development, and incubation. Unlike many traditional clusters, BGC does not charge membership fees but sustains its activities through public funding and chargeable services, making its support particularly relevant for startups and scale-ups. Additionally, BGC is strongly involved in the planned Biotechnopolis in Ajdovščina, where it will operate a specialised biotechnology incubator in biopharma, environment, agriculture, and food.

Impact: Embedding biopharma in national strategy and European innovation networks

BGC and COBIK have contributed significantly to implementing Slovenia's Smart Specialisation Strategy in Health – Medicine, where biopharma has been established as a strategic pillar. As part of this, the cluster initiated major national projects such as SmartGene.si (advancing gene therapy and plasmid DNA production) and BioPharm.si (developing continuous biotechnological processes). These efforts strengthened Slovenia's

[28] For more information see: https://www.gzs.si/srip-hrana/ (last access 15.08.2025).

translational research capabilities, increased biopharma manufacturing efficiency, and positioned the country more firmly within European health innovation networks.

Lessons Learned and Transferability: Building trust and resilience in long-cycle innovation

The experience of COBIK and the Biopharma Global Connect Cluster (BGC) shows that clusters in long-cycle and high-risk sectors such as biopharma need integrated models that bring together incubation, R&D services, regulatory advice, and internationalisation under one roof. This approach reduces reliance on fragmented programmes, ensures continuity, and secures knowledge transfer across projects. The case also underlines the importance of perception: in Slovenia, where past cluster initiatives created scepticism, building trust requires measurable results and visible impact. Transferable lessons include the necessity of financing models adapted to long development cycles, the effectiveness of demand-oriented cluster models that connect science and business, and the importance of a strong evidence-based narrative to demonstrate value and rebuild trust among policymakers and stakeholders.

Source: ECCP (2025). Note: the full case study can be found in the ECCP Cluster Solutions Library.

Cluster Support Framework in Slovenia

Cluster support and development in Slovenia is embedded within the **Strategic Research and Innovation Partnerships (SRIPs)**, which serve as the main implementation instrument of the Slovenia's Sustainable Smart Specialisation Strategy (S5) 2021–2027 (for more information see Chapter 4). SRIPs were first established in 2016 under the previous Slovenian Smart Specialisation Strategy (S3) as a key instrument to foster cooperation across sectors and value chains, initially based on the quadruple helix model involving the business community, research organisations, state and municipal authorities, and civil society. In the current S5 (2021–2027), the concept has been expanded to the **quintuple helix by systematically integrating sustainability and environmental stakeholders, further strengthening their role as long-term, mission-oriented partnerships**. Compared to traditional cluster models, SRIPs encompass a wider thematic and sectoral scope, covering entire value chains and related industries, and act as platforms for innovation and cooperation, integrating a diverse set of stakeholders to advance research, innovation, and economic development in strategic areas of national importance.[29]

The **aim of the SRIPs is to foster innovation and economic development in niche areas of the Slovenian economy as defined in the Smart Specialisation Strategy**. They seek to promote collaboration among a wide range of stakeholders from different sectors and disciplines, pool investment and knowledge to create a comprehensive and high-performing innovation ecosystem, and support Slovenian stakeholders in entering global markets and improving the country's position in priority S5 areas. Their work is built on coordinating joint research and development activities, sharing capacities, enhancing human resources, facilitating the exchange of knowledge and expertise, strengthening networking opportunities, and providing collective representation of Slovenian innovation actors at the international level.[30]

SRIPs are embedded within the nine priority areas of the Slovenia's Sustainable Smart Specialisation Strategy (S5) 2021-2027, ensuring that their activities are fully aligned with national strategic objectives for innovation and economic development.[31] Each priority area has its own SRIP, which serves as a coordinating platform for stakeholders, bringing together actors along the value chain to address shared challenges, develop joint R&D projects, and foster the commercialisation of innovations.

[29] ECCP (2024): Country factsheet Slovenia. Available online: https://www.clustercollaboration.eu/in-focus/policy-acceleration/country-factsheets-on-cluster-policies-and-programmes (last access 15.08.2025).
[30] ibid.
[31] For a more detailed overview, see Chapter 4.

1. Smart Cities and Communities
2. Smart Buildings and Homes, including the wood value chain
3. Networks for the Transition to a Circular Economy
4. Sustainable Food Production
5. Sustainable Tourism
6. Factories of the Future
7. Health – Medicine
8. Mobility
9. Development of Materials as End Products

In October 2023, Slovenia launched the call for the selection of operations **"Support to Strategic Research and Innovation Partnerships (SRIPs) 2023–2026"**. The call targeted all ten S5 priority areas and received ten applications; nine were approved for co-financing. The total funding amounts to €7.41 million, financed jointly by the European Regional Development Fund (ERDF) and national contributions. Of this, €4.40 million is provided through ERDF and €3.01 million through Slovenian co-financing. The funding is allocated between cohesion regions via a pro-rata mechanism: €3.19 million for the Eastern Cohesion Region and €4.23 million for the Western Cohesion Region. This funding is dedicated to strengthening R&D and innovation cooperation, supporting collaborative projects, and enhancing the competitiveness of participating organisations.[32]

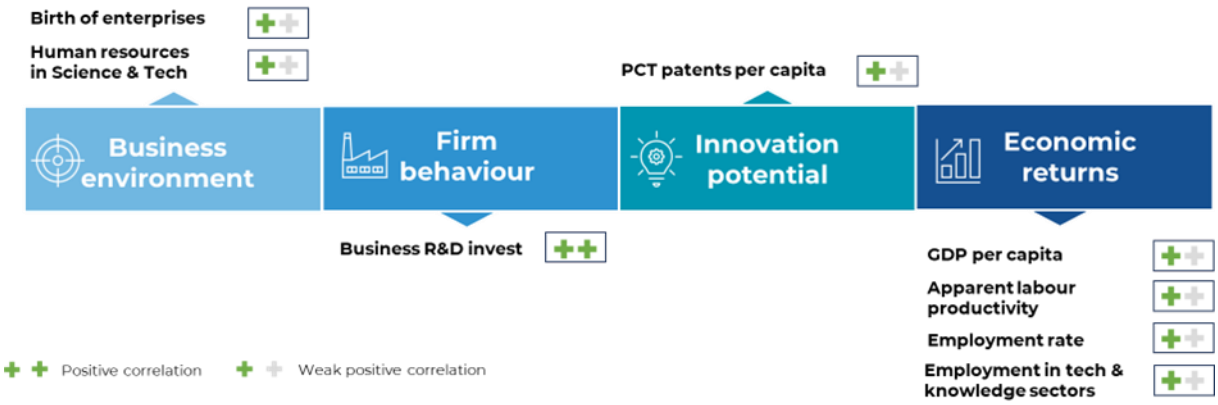
SRIPs are **subject to regular monitoring and periodic evaluation**. The most recent independent evaluation, conducted in 2022, assessed SRIP activities in the period 2017–2021 and concluded that they have significantly improved integration and cooperation among stakeholders, particularly on cross-cutting themes, thereby supporting the effective implementation of the Slovenian Smart Specialisation Strategy (S5) 2021-2027. They have **contributed to the creation of complex value chains, enhanced the competitiveness of Slovenian companies, and identified areas where pooling resources can lead to faster and more effective solutions**. The evaluation also found that SRIPs have enabled higher-quality cooperation between companies and research institutions, facilitated access to international markets, and generated measurable results such as new products, process improvements, joint R&D projects, and increased investments in innovation.[33] As mentioned in the national S4 implementation report, drawing on the findings of previous evaluations and self-assessments by SRIPs, membership has steadily increased since their establishment, with growth even during the pandemic period. Several SRIPs have met or exceeded the strategic targets set out in their action plans, particularly in export growth, international positioning, and the development of new products and services. The report also underlines the role of SRIPs in **strengthening human resources through training and mentoring, increasing participation in EU-funded initiatives**, such as the Vanguard Initiative and EIT, and promoting a shift towards open, cross-sectoral collaboration.[34]

[32] Government Office for Development and European Cohesion Policy (2025).
[33] Bučar et al. (2022).
[34] Government Office for Development and European Cohesion Policy (2023).

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 cluster organisations and multiple indicators of **economic returns**, **innovation potential**, **firm behaviour**, and **business environment**. This is shown in Figure 5.

Figure 5: Relationship of cluster organisations 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 cluster organisations 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 cluster organisations 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 cluster organisations 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 cluster organisations may increasingly support the development of sustainable technologies, although this relationship is still emerging.

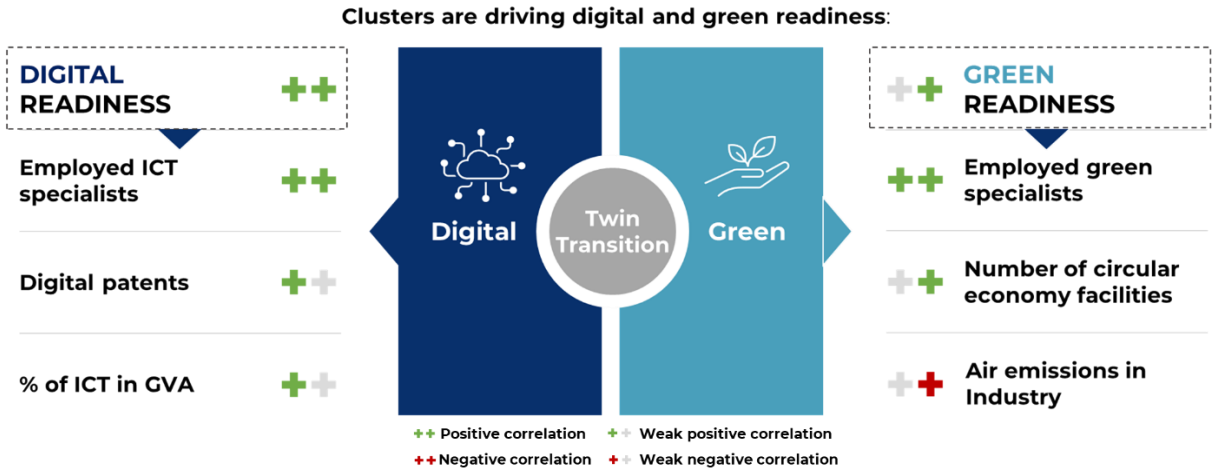
Concerning **economic returns**, the presence of cluster organisations is positively associated with key performance indicators such as GDP per capita, employment rate, labour productivity, and employment in knowledge-intensive sectors. These macro-level outcomes underscore the broader economic benefits of strong

cluster ecosystems, which are able to leverage regional assets, support structural transformation, and contribute to long-term growth.

These correlations imply that cluster organisations not only support economic growth but also enhance resilience and adaptability through innovation and entrepreneurship. Moreover, the Cluster Panorama highlights the influence of cluster organisations 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 cluster organisations tend to be better prepared for adopting environmentally sustainable practices. This implies that cluster organisations 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 cluster organisations are often located in more industrialised regions, where emissions are naturally higher due to economic activity. This underlines the importance of involving cluster organisations in decarbonisation strategies, given their influence over industrial ecosystems. Rather than being seen as part of the problem, cluster organisations 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 cluster organisations 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 cluster organisations 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 3.

Box 3: 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.[35] 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**.[36] 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.[37] Finally, technology transfer is nothing that is confined to the region but **cross-border cooperation and investment linkages** are crucial[38] – 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.[39]

Source: ECCP (2025).

[35] Ding (2024).
[36] 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 15.08.2025).
[37] ECCP (2024).
[38] Crescenzi & Ganau (2025).
[39] The I3 instrument supports collaboration projects between participants from different EU regions and countries for close-to-market innovation, scale-up and commercialization. For more information, see https://eismea.ec.europa.eu/programmes/interregional-innovation-investments-i3-instrument_en (last access 15.08.2025).

03

Cross-border cooperation and the involvement of Slovenian clusters in European networks and support initiatives

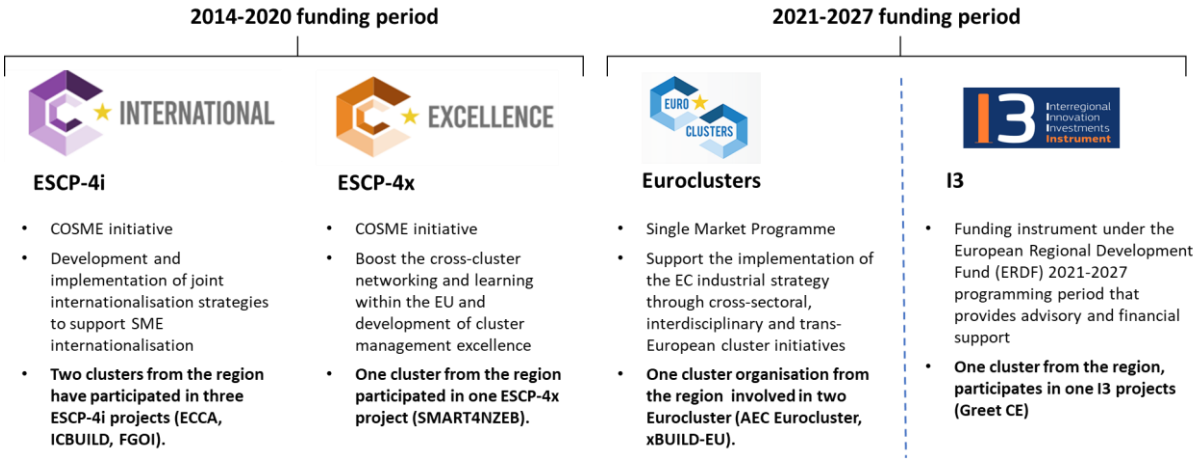
EUROPEAN CLUSTER COLLABORATION PLATFORM

Strengthening the European economy through collaboration

3. Cross-border cooperation and the involvement of Slovenian cluster organisations 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 cluster organisations to support sustainable growth and resilience-building of their SME members[40]. To gain an overview of the existing cross-border cooperation of cluster organisations in Western Slovenia, a closer look will be taken in this chapter at their involvement in relevant European support initiatives (see Figure 7).

Figure 7: EU support initiatives involving cluster organisations from Western Slovenia



Source: ECCP (2025).

Involvement of cluster organisations from Western Slovenia in the European Strategic Cluster Partnerships (ESCP)

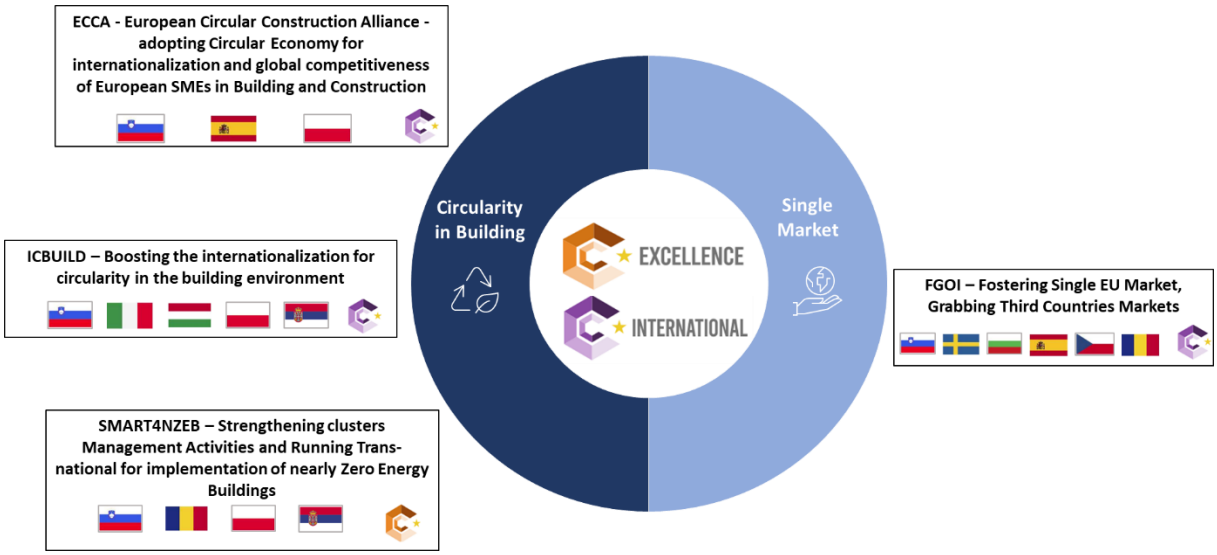
The European Strategic Cluster Partnership (ESCP) initiative, funded under the EU Programme for the Competitiveness of Enterprises and Small and Medium-sized Enterprises (COSME), is a relevant EU support initiative to increase cross-border cooperation of EU cluster organisations and other intermediary organisations. The ESCP initiative established partnerships of European cluster organisations 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)[41] and cluster excellence (ESCP for

[40] Prognos et al. (2021).
[41] For more information on the ESCP-4i, see: https://www.clustercollaboration.eu/eu-cluster-partnerships/escp-4i (last access 12.08.2025).

Excellence)[42], out of which the ESCP for Going International was still running throughout 2024[43] and the ESCP for Excellence[44] already ended in December 2023.[45]

As shown in Figure 8**, two cluster organisations from Western Slovenia participated in three ESCP-4i projects and one ESCP-4x project** (see Figure 8). Two of the ESCP-4i projects, **ECCA** and **ICBUILD**, focused on circularity in construction and on boosting the internationalisation of the circular economy in the building sector. In both cases, the Construction Cluster of Slovenia acted as coordinator. The third ESCP-4i project, **FGOI**, aimed to foster cross-regional cluster cooperation in furniture and related industries within the EU and with partners from the USA, Canada, South Africa and Egypt. The Wood Industry Cluster Slovenia participated in this project as a partner. The ESCP-4x project, **SMART4NZEB,** which ended in 2023, focused on nearly-zero energy buildings. In this initiative, the Construction Cluster of Slovenia was involved as a partner.

Figure 8: Participation of Western Slovenian cluster organisations in ESCP-4i and ESCP-4x



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

Involvement of cluster organisations from Western Slovenia in the Eurocluster initiative

For the 2021-2027 funding period, the European Commission has launched the implementation of the EU Industrial Strategy. In this contet, so-called Euroclusters[46] are funded under the Single Market Programme. The Eurocluster initiative aims at supporting cross-sectoral, cross-regional European industry cluster organisations cooperating with other economic stakeholders such as companies or business organisations. The following cases belong to the first Euroclusters call for proposals, published in 2021, and both projects started in 2022. The **Construction Cluster of Slovenia** participated in two Eurocluster projects:

[42] For more information on the ESCP-4x, see: https://www.clustercollaboration.eu/eu-cluster-partnerships/escp-4x (last access 12.08.2025).
[43] For more information, see: https://clustercollaboration.eu/eu-cluster-partnerships/escp-4i/fourth-generation (last access 12.08.2025).
[44] https://clustercollaboration.eu/eu-cluster-partnerships/escp-4x (last access 12.08.2025).
[45] For more information on the European Cluster Partnerships, see: https://clustercollaboration.eu/eu-cluster-partnerships (last access 12.08.2025).
[46] For more information on the Eurocluster initiative, see: https://www.clustercollaboration.eu/euroclusters (last access 12.08.2025).

- **AEC Eurocluster[47]:** The **Architecture, Engineering and Construction Eurocluster for Future Built Environment** aimed at contributing to the resilient, digital, and low-carbon economic recovery of the AEC industries (architecture, engineering, and construction) after the COVID-19 pandemic. The focus group were SMEs, with five cluster organisations being involved in the project (from Slovenia, Spain and Italy). The project also had the objective of promoting continuity plans that prepared businesses for future challenges, as well as cluster-to-cluster learning, where cluster managers enhanced their skills on problem identification and risk-minimised product orientation processes. During this process, SMEs applied for and received funding, which they used to integrate technologies from other sectors, enhancing their digital performance and reducing vulnerabilities. During the project implementation 66 companies and business support organisations overall benefited from the joint forces of the five cluster organisations involved in the partnership. To summarise, AEC Eurocluster drove forward cross-cluster cooperation and promoted ECO-innovative and smart products for SMEs in construction and related industries. The project was completed in February 2025.
- **xBUILD-EU[48]:** The purpose of this Eurocluster (**Cross-fertilization of industrial ecosystems in textile manufacturing and construction leveraging digital and advanced technologies to build up green and digital resilience in Europe)**, was to build a strategic partnership of collaborating and participating cluster organisations, which focuses on cross-sectoral cooperation and mutual exchange of knowledge and experience. In total, four cluster organisations from three countries (Spain, Portugal and Slovenia) participated in this Eurocluster. The project supported the launch of a new industrial strategy for Europe with a focus on synergies and cross-sectoral aspects between the textile and construction sectors, using advanced technologies and mainly targeting SMEs. This project was completed in August 2025.

Involvement of Western Slovenian cluster organisations in the Interregional Innovation Investments (I3) initiative

The Interregional Innovation Investments (I3) Instrument is a funding initiative under the ERDF for the 2021–2027 programming period. It provides financial and advisory support through the European Innovation Council and 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]

Even though there are numerous I3 projects in Western Slovenia with a wide range of participants, only one cluster from the region participates in one I3 project.

The **Construction Cluster of Slovenia** participates in **Greet CE**, Green Transition in Central Europe, which supports innovation in construction, digital energy, farming and renewable gases in Central Europe. This project's main goal is thus to push innovation potential forward and facilitate SME participation in I3 calls, as well as to increase investment in innovation, improving policies, networking and training. Furthermore, this I3 project pursues: 1) the promotion of investment in the bioeconomy by European programmes and the private sector, especially SMEs, 2) facilitated interaction in EU value chains, interregional and cross-sectoral partnerships in the

[47] The profile of this Eurocluster on the ECCP can be accessed via the following link: https://profile.clustercollaboration.eu/profile/cluster-partnership-initiative/7325860f-becd-4918-bd40-a7ad4c120a2d (last access 12.08.2025).
[48] The profile of this EUrocluster on the ECCP can be accessed via the following link: https://profile.clustercollaboration.eu/profile/cluster-partnership-initiative/19174802-9dc2-43b7-aee0-e998c7067bfd (last access 12.08.2025).
[49] For more information, see: https://eismea.ec.europa.eu/programmes/interregional-innovation-investments-i3-instrument_en (last access 12.08.2025).

bioeconomy, and 3) the improvement of interactive training and education opportunities, including exchange of best practices.

Further Involvement of Western Slovenian cluster organisations in European networks and partnerships

Interreg 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. In Western Slovenia, one cluster, namely the **Wood Industry Cluster Slovenia,** participates in a wide range of **Interreg** programmes. The Interreg programmes in which this organisation participates include the following:

- **Interreg Italy-Slovenia**[51] is a relevant cross-border programme between both countries, which aims at enhancing cooperation and collaboration with the objective of improving the quality of life for residents through sustainable, innovative and inclusive growth. This programme focuses on fostering R&I, promoting climate change adaptation and environmental protection, and enhancing cultural heritage and social inclusion. Relevant sectors include advanced technologies development, joint climate resilience strategies and supporting sustainable tourism initiatives. **WoodInnovative**[52] is a project in this programme in which the Slovenian **Wood Industry Cluster Slovenia** is involved. The project aims at addressing climate challenges through the valorisation of disaster-damaged wood in the Alpine-Adriatic region. The objectives under this project are to: 1) analyse the forest-wood supply chain, map the state of forests and identify the impacts of climate change and bark beetles, 2) carry out pilot projects for the innovative use of bark beetle-affected wood, test its properties, improve its quality and create prototypes of urban furniture, and 3) organise training on sustainable practices, create a model forest for demonstrations and promote collaboration among stakeholders.
- **Interreg IPA Adriatic-Ionian**[53] invests in regional innovation systems, cultural and natural heritage protection, environmental resilience, sustainable transport and capacity building. It bridges together regions from ten partner states[54] from the Adriatic and Ionian regions, acting as a policy driver and European integration force. The project **FULAR** (Shaping new paths towards furniture circularity) aims at tackling the challenges faced by a region whose economy relies on a forest-based activity: the different uses of local wood, post-production waste and consumer waste management. It also considers the difficulties faced by SMEs concerning a greener and more sustainable approach to this economic sector.[55]

Interreg Danube Region[56] supports transnational cooperation across 14 countries in the Danube region. This programme supports transnational cooperation across 14 countries in the Danube region, and focuses on

[50] For more information, see: https://www.interregeurope.eu/ (last access 12.08.2025).
[51] For more information on Interreg Italy-Slovenia see: https://interreg.eu/programmes/italy-slovenia/ (last access 12.08.2025).
[52] For more information on WoodInnovate see: https://www.ita-slo.eu/en/woodinnovate (12.08.2025).
[53] For more information on Interreg IPA Adriatic-Ionian see: https://interreg.eu/programmes/ipa-adriatic-ionian/ (last access 12.08.2025).
[54] These include Albania, Bosnia and Herzegovina, Croatia, Greece, Italy, Montenegro, North Macedonia, San Marino, Serbia and Slovenia.
[55] For more information on FULAR see: https://keep.eu/projects/29970/Shaping-new-paths-towards-F-EN/ (last access 12.08.2025).
[56] for more information on Interreg Danube Region see: https://interreg.eu/programmes/danube/ (last access 12.08.2025).

reducing socio-economic disparities and fostering innovation, climate resilience and efficient public administration. Key Priorities include innovation, boosting technology transfer, enhancing skills for industrial transition, promoting renewable energy, preserving biodiversity and addressing climate-related risks. The project under this programme, in which the Slovenian **Wood Industry Cluster Slovenia** participates, is **DRWO 4.0**[57] (Danube region Wood Industry Transformation Model towards Industry 4.0). This project focuses on maintaining wealth and employment in rural areas and contributing to the low-carbon bio-economy in the region.

In addition to Interreg projects, the Wood Industry Cluster Slovenia is also part of the **Slovenian Digital Innovation Hub (DIH Slovenia)**. The DIH Slovenia enables digital transformation, raises awareness and provides services for the growth of digital competences, exchange of digital experiences and examples of good practice at local, regional and international levels. Furthermore, the DIH Slovenia also collaborates with the public sector, providing access to data and promoting entrepreneurship.[58]

[57] For more information on DRWO 4.0 see: https://interreg-danube.eu/projects/drwo40 (last access 12.08.2025).
[58] For more information on the DIH Slovenia see: https://dihslovenia.si/en/about-us (last access 12.08.2025).

04

The role of clusters in Slovenia's Smart Specialisation Strategy

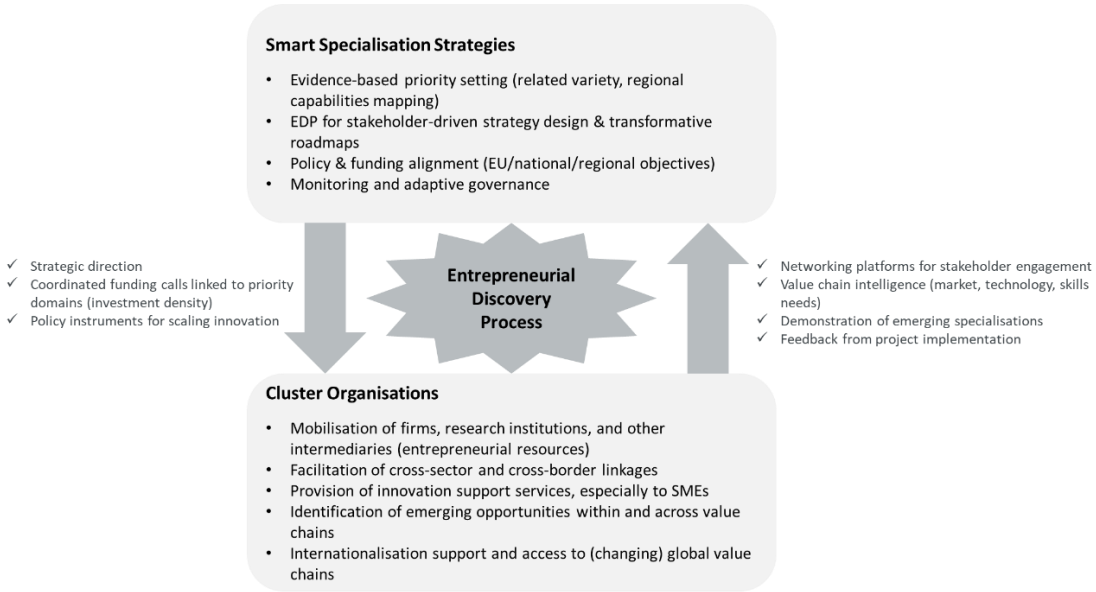
EUROPEAN CLUSTER COLLABORATION PLATFORM

Strengthening the European economy through collaboration

4. The role of cluster organisations in Slovenia's Smart Specialisation Strategy

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. The concept of clusters and Smart Specialisation Strategies (S3) are closely related and in close interaction, as the promotion of economic growth and competitiveness through regional proximity are key elements in both concepts.[59] The interplay between S3 and cluster organisations can be understood as a **mutually reinforcing relationship** in which each side plays a distinct but complementary role in driving regional innovation, as shown in Figure 9. This includes evidence-based priority setting, informed by analyses of related variety and regional capabilities and the Entrepreneurial Discovery Process (EDP) as a participatory mechanism for designing transformative roadmaps. S3 also ensures policy and funding alignment across EU, national, and regional levels, and embeds monitoring and adaptive governance to adjust priorities over time.

Figure 9: Interaction of cluster organisations and Smart Specialisation



Source: Prognos (2025).

Cluster organisations, on the other hand, operate as the operational arm of this framework. They mobilise firms, research institutions, and other intermediaries to bring entrepreneurial resources into play; facilitate cross-sector and cross-border linkages; and provide targeted innovation support services, particularly to SMEs. Clusters identify emerging opportunities within and across value chains, while also helping their members to internationalise and access changing global value chains.

The **Entrepreneurial Discovery Process** sits at the centre of this interaction, acting as a bridge between strategy and implementation. It enables knowledge exchange and joint priority setting by connecting the top-down strategic direction of S3 with the bottom-up market and technology intelligence gathered by cluster organisations. 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

[59] European Commission (2013); European Commission (2016); Keller et al. (2019).

this information and empowers those actors most capable of realising the potential.[60] In practice, S3 offers strategic direction, coordinated funding calls linked to priority domains, and policy instruments for scaling innovation. In return, **cluster organisations feed back insights from project implementation, demonstrate emerging specialisations, and provide value chain intelligence** – covering market trends, technological developments, and skill needs, which help refine S3 priorities.

By combining the strategic orientation of S3 with the implementation capacity of cluster organisations, this interplay ensures that **innovation policies are both targeted to regional strengths and responsive to evolving opportunities**. Box 4 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 Process.

Against this background, this chapter focuses on Slovenia's Smart Specialisation Strategy and the contributions of cluster organisations in aligning with and advancing its priorities. A key starting point for the analysis of the Slovenian S3 is the **Sustainable Smart Specialisation Strategy (S5) 2021–2027**, which operates at the national level and serves as the **country's core innovation policy framework**. It was developed by the Ministry of the Economy, Tourism and Sport, in cooperation with other national authorities and stakeholders from research, business, and civil society. The S5 2021-2027 of Slovenia identifies nine priority areas (see Figure 10) aimed at fostering innovation-led economic development and accelerating the twin transition.

Figure 10: Priority areas of Slovenia's Sustainable Smart Specialisation Strategy

Source: ECCP (2025), own elaboration based on Slovenia's Sustainable Smart Specialisation Strategy 2021-2027.

A closer examination of the different priority areas provides a clearer understanding of the objectives pursued by the Republic of Slovenia through its Sustainable Smart Specialisation Strategy:

- **Smart Cities and Communities**: This area focuses on the development of integrated smart solutions to improve urban infrastructure, services, and governance. Emphasis is placed on sustainable mobility, energy efficiency, and digital innovation in public services.
- **Smart Buildings and Homes**: The goal is to support sustainable construction practices, including energy-efficient technologies, digitalised building management systems, and the integration of renewable energy sources.

[60] See https://ec.europa.eu/regional_policy/policy/communities-and-networks/s3-community-of-practice/entrepreneurial_discovery_en (last access 15.08.2025).

- **Networks for the Transition to a Circular Economy**: This priority encourages the creation of circular value chains and promotes sustainable resource use. Activities focus on eco-design, waste reduction, and closed-loop production systems.
- **Sustainable Food Production**: This area supports innovation in agriculture and the food industry to ensure sustainable, safe, and high-quality food. It includes actions to promote digitalisation, traceability, and resource-efficient production.
- **Sustainable Tourism**: The objective is to enhance the competitiveness of tourism through digital transformation, improved service quality, and sustainable resource management.
- **Mobility**: The strategy promotes innovation in transport systems, low-emission vehicles, and smart logistics. It supports the shift to sustainable and user-friendly mobility models.
- **Factories of the Future**: This area strengthens advanced manufacturing capabilities through digitalisation, automation, and the use of new materials. It aims to position Slovenian industry as a leader in smart production.
- **Health – Medicine**: This priority focuses on innovation in healthcare services, biomedical technologies, and the development of personalised medicine.
- **Development of Materials as End Products**: The goal is to increase the added value of the Slovenian economy through advanced materials with applications in various sectors, from construction to electronics.

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 already mentioned Strategic Research and Innovation Partnerships (SRIPs)**, which play a central role in translating the S3 priorities into coordinated actions. Indeed, these SRIPs function as long-term, mission-oriented partnerships that bring together businesses, cluster organisations, research and academic institutions, civil society actors, and the public sector. 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, and is responsible for identifying strategic challenges, developing action plans, coordinating joint Research, Development and Innovation (R&D&I) activities. This way, it can also ensure the alignment of innovation efforts with Slovenia's broader economic and societal goals. Through this model, Slovenia's S3 fosters cross-sectoral cooperation, entrepreneurial discovery processes (EDP), and systemic innovation, reinforcing the integration of research and business activities.

Through the SRIP, **clusters act as intermediaries that mobilise SMEs and industry actors, promote networking, and ensure the diffusion of knowledge across the innovation ecosystem**. Their participation is essential in aligning regional strengths with market opportunities and emerging technologies. Moreover, the SRIPs contribute to thematic and international cooperation by facilitating engagement in EU-level initiatives and S3 Thematic Platforms, enabling Slovenian actors to participate in interregional value chains and joint investment projects.

A concrete example of this strategic approach is the **SRIP Factories of the Future**, which brings together manufacturing companies, technology providers, and research centres to develop smart production solutions, such as advanced robotics, automation, and industrial digitalisation. Similarly, the **SRIP for the Circular Economy** supports the development of circular business models and innovation projects in resource management, while the SRIP for Sustainable Food Production focuses on innovation in agricultural technologies and value chains. Through these initiatives, SRIPs not only translate Slovenia's S3 priorities into action but also generate tangible industrial, environmental, and economic impacts across multiple strategic areas.

Slovenia is also actively engaged in many **European S3 Thematic Platforms and Partnerships**, using its SRIPs and cluster organisations to participate in joint initiatives, co-develop interregional projects, and

enhance the international positioning of its innovation ecosystem. Under the **Agri-food platform**, Slovenia contributes to partnerships such as **Food Packaging and Plant-Based Food Innovation**, focusing on sustainable and health-oriented food systems. Within the **Energy platform**, it is involved in the **Sustainable Buildings** partnership, supporting energy-efficient construction and renovation practices. Through the **Industrial Modernisation platform**, Slovenia participates in key initiatives like **Hydrogen Valleys**, aimed at developing green hydrogen value chains, and **Medical Technologies**, which fosters innovation in health-related devices and diagnostics. These engagements strengthen Slovenia's integration into European value chains and facilitate knowledge exchange and cross-border collaboration in strategic areas.

Box 4: 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.

Tuscany, Italy – Foresight & Roadmapping

In Tuscany, clusters were key actors involved in the EDP which built on a 5-step model for strategic planning based on foresight and roadmapping. In this process, the 13 regional Innovation Poles play a key role as they are tasked to organise open workshops in which scientific and technological roadmaps were developed based on foresight exercises on the regional strengths and weaknesses.

Source: ECCP (2025).

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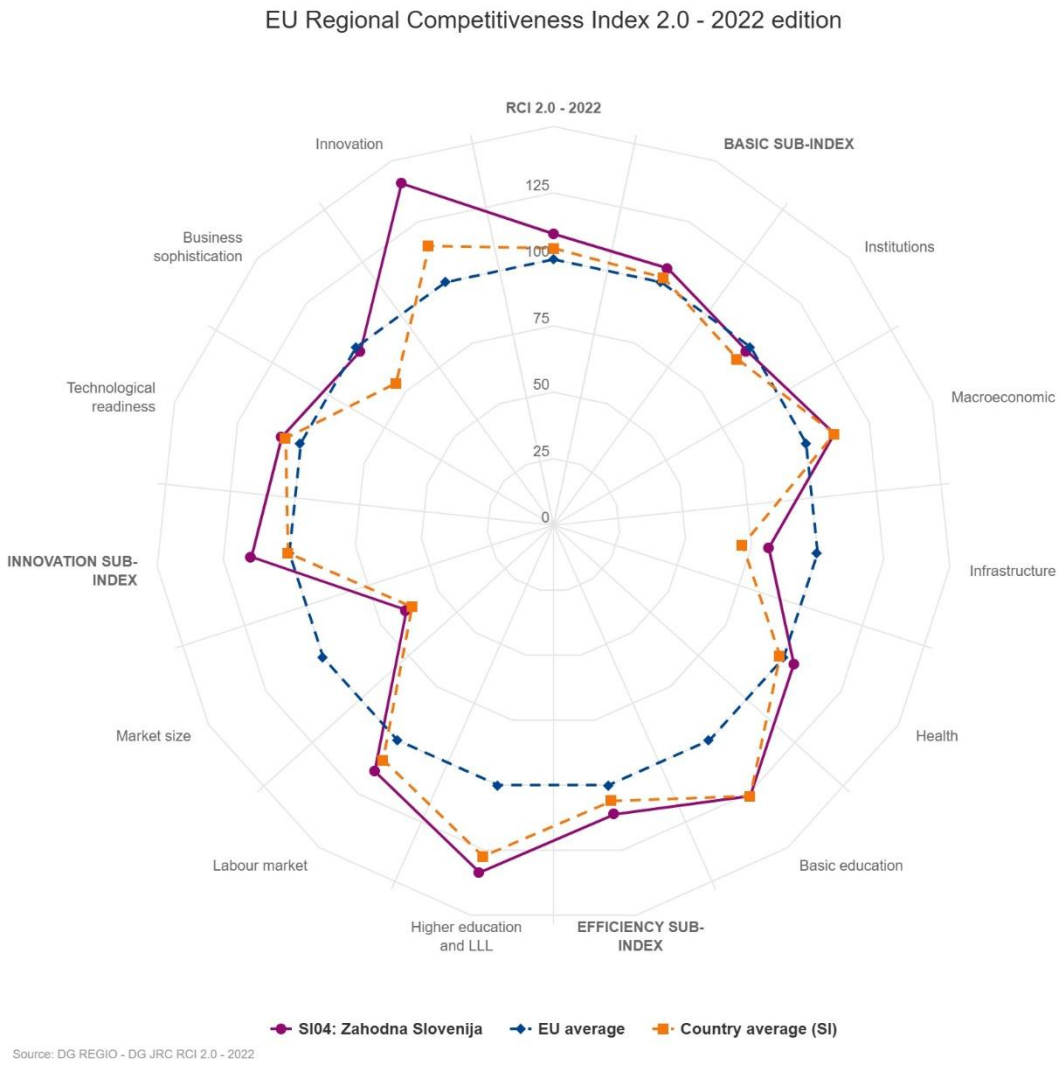
Annex

Figure 11: Performance of Western Slovenia in the 2022 Regional Competitiveness Index



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

Table 1: Overview of cluster organisations in Western Slovenia registered on the ECCP and their addressed EU industrial ecosystems

No.	Cluster organisation (English name)	Assigned Industrial Ecosystem	Website
1	AE-ROBO-NET	Energy-Intensive Industries	http://www.ae-robo.net
2	CONSTRUCTION CLUSTER OF SLOVENIA	Construction	http://www.sgg.si
3	SRIP ACS Automotive cluster of Slovenia	Mobility-Transport-Automotive	http://www.acs-giz.si
4	HealthDay	Health	http://www.healthday.si
5	ICT Technology Network Institute[61]	Digital	-
6	SRIP ICT Innovation network	Digital	https://ikthm.gzs.si/
7	Poligon Creative Centre / Poligon Institute	Creative & Cultural Industries	http://www.poligon.si
8	Poly4EmI hosted by Anteja ECG d.o.o.[62]	Energy Intensive Industries	-
9	Slovenian innovation hub,European Economic Interest Grouping, SIH EEIG	Health	https://sis-egiz.eu/
10	SRIP GoDigital	Digital	https://sripgodigital.gzs.si/
11	SRIP HRANA - Strategic Research and Innovation Partnership for Sustainable Food Production	Agri-Food	https://www.gzs.si/srip-hrana/
12	SRIPToP – Factories of the future	Digital	http://www.ctop.ijs.si
13	Turisticno gostinska zbornica Slovenije/Tourism and Hospitality Chamber of Slovenia	Tourism	www.tgzs.si
14	Wood Industry Cluster Slovenia	Construction	http://www.lesarski-grozd.si/en/

Source: ECCP (2025) based on the Mapping Tool (retrieved on 07.08.2025) and information from the cluster organisation's website.

[61] Cluster seems to be inactive.
[62] Cluster seems to be inactive.