



EUROPEAN CLUSTER
COLLABORATION PLATFORM

Country factsheet

Slovakia

An initiative of the European Union





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01

Introduction and economic policy context



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1. Introduction and economic policy context



This document presents an overview of the cluster policy in Slovakia. Given the importance to contextualise the cluster policies (and related) analysed in the factsheets, a comprehensive outlook of the country in socioeconomic terms can be consulted in the [European Semester Country Report for Slovakia](#).

The European Semester is an instrument introduced to coordinate the EU Member States economic policies and address the economic challenges faced by the EU. Its goals are “to ensure sound public finances, to prevent excessive macroeconomic imbalances in the EU, to support structural reforms to create more jobs and growth, and to boost investment”. Thus, it focuses on the following areas: business environment; financial and fiscal stability; green economy; public administration; labour market and skills; and social protection and cohesion. Chapter 4.2 of this factsheet provides an overview on how Slovakia’s cluster policy could help to tackle the economic policy challenges identified in the European Semester country recommendations.

The COVID-19 pandemic has caused an unprecedented economic shock to the European and global economy. In response, policymakers at EU and national level have acted decisively and at short notice to make available very significant financial resources, notably through the Recovery and Resilience Facility, to tackle the threat of a prolonged downturn. [National recovery and resilience plans](#) have been drafted in each Member State¹ to ensure a recovery that addresses the challenges identified in the European Semester. The measures of Slovak’s Recovery and Resilience Plan are built on three pillars: innovative economy, modern administration and healthy country, whereby clusters are mentioned in the National recovery and resilience plan. The Union of Slovak Clusters which is an active member of the European Cluster Collaboration Platform (ECCP) participated in the creation of the Covid-19 Industrial Clusters Response Portal² and clusters have been included in the National recovery and resilience plan of Slovakia³. In addition to the COVID-19 pandemic, ongoing Russian military aggression on Ukraine has also taken its toll on EU companies and industrial ecosystems, highlighting the significance of policy efforts in supporting SMEs and clusters.

The [ERDF Partnership Agreement 2021-2027](#) in Slovakia refers to clusters. Within the thematic objective ‘A smarter Europe’, specifically ‘Strengthening the sustainable growth and competitiveness of SMEs and the creation of jobs in SMEs, including productive investments’, the main goal of the measure is the development of the innovation ecosystem, by supporting the creation and development of the cluster ecosystem and platforms supporting the increase of the competitiveness level of enterprises.

¹ The National Recovery and Resilience Plan of Slovakia has been approved by the European Commission on 21 June 2021. The text of the Plan (in Slovak) can be found here:

https://www.planobnovy.sk/files/dokumenty/kompletny-plan_obnovy.pdf.

² Únia klastrov Slovenska, ECCP vytvorila portál s cieľom pomôcť prekonať pandémie koronavírusu COVID-19 aj v spolupráci s klastrami – Covid-19 Industrial Clusters Response Portal. Available at: <http://uksk.sk/blog/2020/04/08/eccp-vytvorila-portal-s-cielom-pomocť-prekonať-pandemiú-koronavírusu-covid-19-aj-v-spolupráci-s-klastrami-covid-19-industrial-clusters-response-portal/>.

³ ECCP, Open for business: European economy, the Recovery Plan and how clusters can help. Available at: <https://clustercollaboration.eu/news/open-business-european-economy-recovery-plan-and-how-clusters-can-help>.

The ERDF [Operational Programme Slovakia](#) mentions that support of cluster organisations will contribute to increasing the competitiveness of SMEs in domestic as well as foreign markets. It will also contribute to the support for the penetration of SMEs into new innovative markets

In what follows, a succinct overview of the cluster policy in Slovakia will be provided. The structure of this factsheet generally encompasses:

- 1) an overview of the industrial ecosystems and cluster landscape in Slovakia,
- 2) an overview of the broad policies which provide policy interventions for the development of clusters in Slovakia,
- 3) an assessment of the state of play of the Slovak cluster policy and its role in broader economic policy challenges mentioned in the European Semester Reports.

02

Industrial ecosystems and cluster landscape



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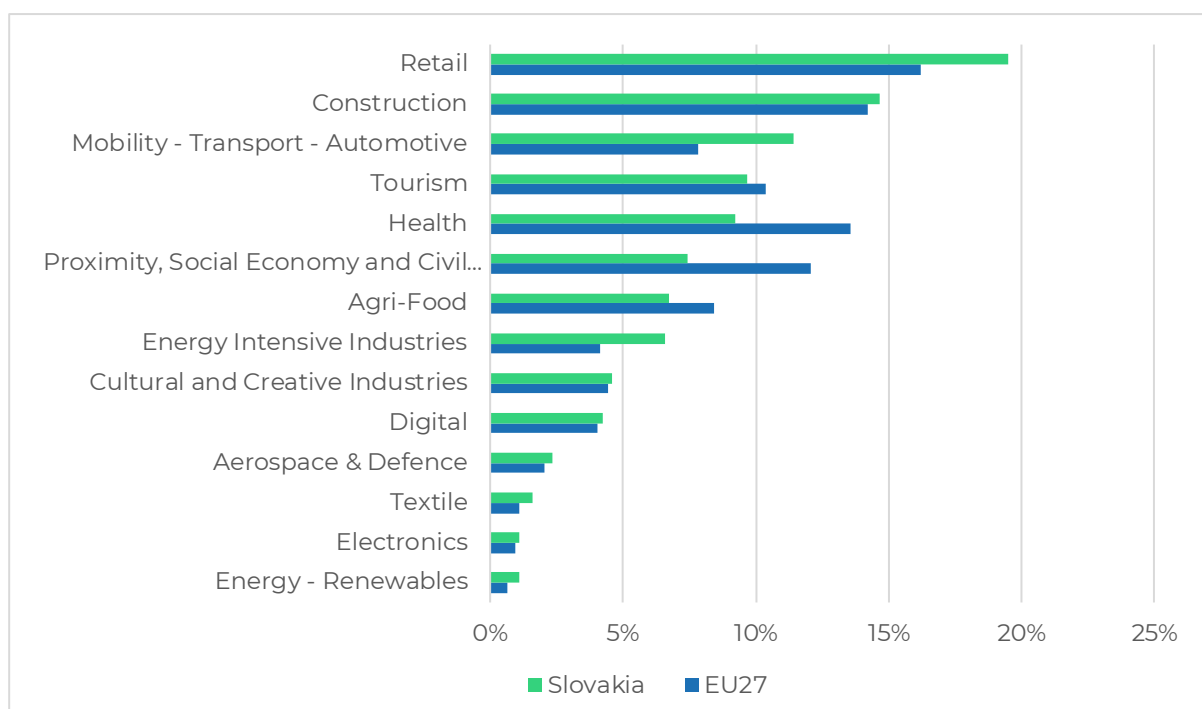
2. Industrial ecosystems and cluster landscape

2.1 Employment in the 14 industrial ecosystems

As part of its Industrial Strategy (March 2020), the European Commission has identified 14 industrial ecosystems that encompass all players operating in a value chain⁴. The classification of the 14 industrial ecosystems have been calculated by aggregating NACE 2-digit activities, following the methodology established in the European Commission. This entails that the data provided below can differ from other publications by the European Commission that do not consider the industrial ecosystem classification.

In the following figure, the employment share of Slovakia and the EU27 in each industrial ecosystem is shown relative to the number of employed persons in the 14 industrial ecosystems. The ecosystems are ordered, from top to bottom, according to the amount of employment in the country. When the bar for the country is higher than that of the EU27, it indicates that the country is more specialised in that ecosystem. For Slovakia, the three main ecosystems by employment are “Retail”, “Construction” and “Mobility – Transport – Automotive”. In these three sectors and also in “Energy Intensive Industries” and “Digital”, Slovakia has an employment share above the EU27 Member States, which outlines the relative strengths of the country in those ecosystems.

Figure 1: Employment across the ecosystems



Source: ECCP (2023), own elaboration based on data from Eurostat.

⁴ see here for more information <https://clustercollaboration.eu/in-focus/industrial-ecosystems> (last access 09.01.2024).

2.2 Regional agglomerations

Economic activity is not equally distributed across regions in the EU but tends to agglomerate in certain places. In this context, an Agglomeration is defined as the concentration of a certain industry, sector or ecosystem in a certain geographical area. The following section provides an analysis of, first, the sectoral agglomerations and, second, the ecosystem agglomerations in the regions. Agglomerations are operationalised through the employment-based Location Quotients (LQ), measuring the relative specialisation of one region compared to the EU level, as well as the employment size.

If the LQ for a given activity-region combination is above 1.5, it is considered an agglomeration, and if the activity accounts for at least 1 % of total employment in the region, it is considered a regionally relevant agglomeration. The following tables show the total number of regionally relevant agglomerations in each region in the country and identifies the top five most specialised of these agglomerations. The first table focuses on the 88 NACE 2-digit activities or sectors, totalling 77 in the country, while the second table is based on the 14 ecosystems, which total 9 in the country.

Table 1: Number of regionally relevant sectoral agglomerations and Top 5 agglomerations by region (NACE)

Region	# of agglo.	Agglo. 1	Agglo. 2	Agglo. 3	Agglo. 4	Agglo. 5
SK01: Bratislava	10	C29 - Manuf. of motor vehicles & trailers	N82 - Business support activities	M73 - Advertising & market research	L68 - Real estate	J61 - Telecommunications
SK02: West Slovakia	8	C27 - Manuf. of electrical equipment	C22 - Manuf. of rubber & plastic products	C29 - Manuf. of motor vehicles & trailers	C25 - Manuf. of fabricated metal products	C28 - Manuf. of machinery and equipment
SK03: Central Slovakia	8	C16 - Manuf. of wood products	C24 - Manuf. of basic metals	C29 - Manuf. of motor vehicles & trailers	C27 - Manuf. of electrical equipment	C25 - Manuf. of fabricated metal products
SK04: East Slovakia	9	C24 - Manuf. of basic metals	C14 - Manufacture of wearing apparel	C16 - Manuf. of wood products	C25 - Manuf. of fabricated metal products	C23 - Manufacture of other non-metallic mineral products

Source: ECCP (2023), own elaboration based on data from Eurostat.

As mentioned at the beginning of this Chapter, the NACE 2-digit activities have been aggregated to the 14 EU industrial ecosystems following the methodology established by the European Commission. Table 2 provides an overview of the regional distribution of industrial ecosystem agglomerations. Overall, there are fewer numbers of ecosystem agglomerations compared to the regionally relevant sectoral agglomerations by NACE sectors. This more concentrated agglomeration can at least partially be linked to the methodology of measurement of the 14 industrial ecosystems.

The country's employment strength in the industrial ecosystem "Mobility-Transport-Automotive" (see Figure 1) is reflected in the Top 5 regionally relevant sectoral agglomerations of a number of different regions. This includes, for instance, the sector manufacturing of motor vehicles & trailers (C29) which is a regionally relevant sectoral agglomeration in all regions of Slovakia. For the capital region of Bratislava (SK01) this is also a regionally relevant ecosystem agglomeration. The capital region of Bratislava (SK01) is also a relevant region for digitalisation activities as supported by telecommunications (J61) as a regionally relevant sectoral agglomeration and "Digital" as a regionally relevant ecosystem agglomeration for that region. Moreover, many Slovak regions have regionally relevant agglomerations in sectors such as manufacturing of rubber and plastic products (C22),

manufacturing of basic metals (C24) and manufacturing of fabricated metal products (C25) which is also reflected in their regionally relevant ecosystem agglomerations (“Energy-intensive industries”).

Table 2: Regionally relevant ecosystem agglomerations by region

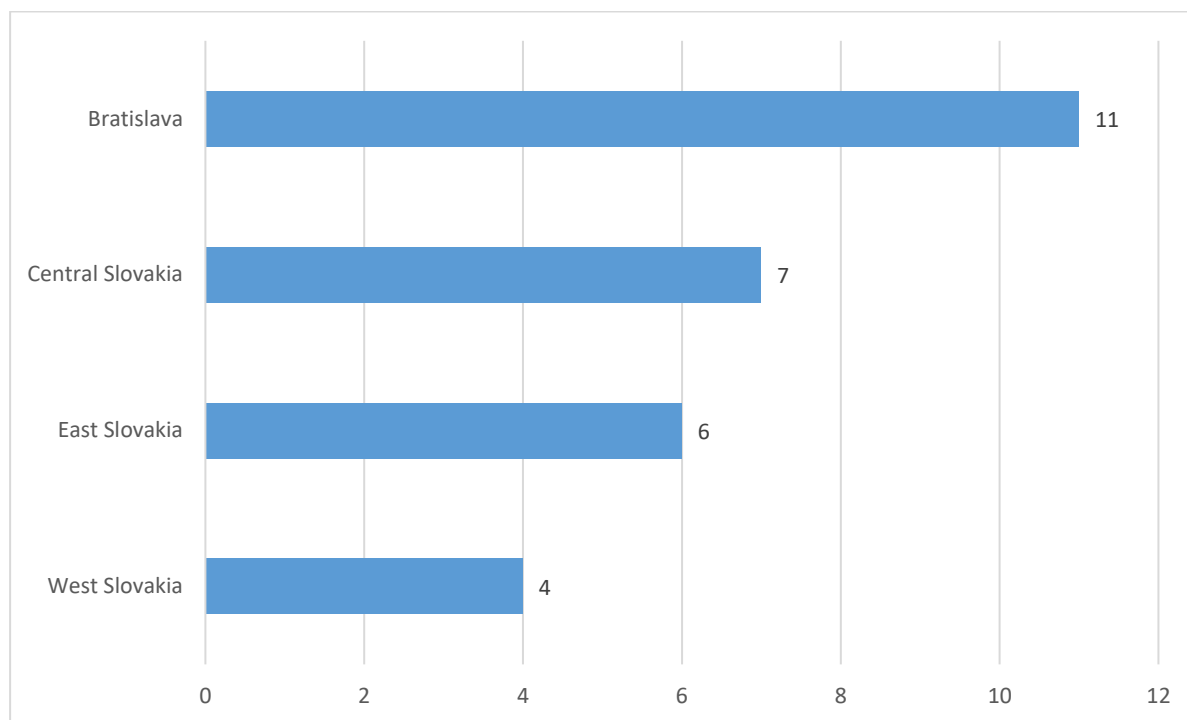
Region	Number of ecosystem agglo.	Agglo. 1	Agglo. 2	Agglo. 3	Agglo. 4	Agglo. 5
SK01: Bratislava	2	Mobility-Transport-Automotive	Digital	-	-	
SK02: West Slovakia	5	Energy-renewables	Energy-intensive Industries	Textile	Electronics	Mobility - Transport - Automotive
SK03: Central Slovakia	2	Energy-intensive industries	Electronics	-	-	
SK04: East Slovakia	2	Textile	Energy-intensive industries	-	-	

Source: ECCP (2023), own elaboration based on data from Eurostat.

2.3 Cluster organisations & interregional cooperation

There are 28 cluster organisations registered on the ECCP in the country. The majority of these cluster organisations are located in the capital region of Bratislava (11 cluster organisations). In Central Slovakia there are 7 cluster organisations, in East Slovakia 6 and in West Slovakia there are 4 cluster organisations with profiles on the ECCP. The following figure shows the presence of cluster organisations in the different regions.

Figure 2: Cluster organisations profiled on the ECCP



Source: ECCP (2023). Note: the data for the analysis was extracted on 21/12/2023

SMEs (77%, EU: 83%) followed by large enterprises (14%, EU: 9%) and research organisations (9%, EU: 7%) constitute the majority of member organisations of Slovak cluster organisations with profiles on the ECCP. From a thematic perspective, these Slovak cluster organisations are operating in the industrial ecosystems as below. Since not all cluster organisations on the ECCP provided this information, the number of cluster organisations with an allocated industrial ecosystem is lower than the overall number of cluster organisations in the country. The following list also underlines that the Slovak strengths in terms of employment (e.g., in “Retail”, “Construction”, “Mobility – Transport - Automotive”) that was outlined before is also largely reflected in the national cluster organisations registered in the ECCP.

- Digital (9 cluster organisations)
- Electronics (1 cluster organisation)
- Proximity and social economy (2 cluster organisations)
- Textile (1 cluster organisation)
- Creative & Cultural Industries (4 cluster organisations)
- Construction (1 cluster organisation)
- Renewable Energy (4 cluster organisations)
- Agri-food (4 cluster organisations)
- Mobility-Transport-Automotive (3 cluster organisations)
- Energy-Intensive Industries (1 cluster organisation)

Cross-regional / international cooperation

In the 2014-2020 funding period⁵, the European Cluster Partnerships and the INNOSUP-1 initiative have been launched by the European Commission to encourage clusters from Europe to intensify collaboration across regions and sectors. Slovak cluster organisations have been involved in three consortia of the European Strategic Cluster Partnerships, out of which two partnerships were focused on internationalisation (ESCP-4i) and 1 partnership was on cluster management excellence (ESCP-4x). Consortia partners came from 8 different EU member states (ES, FR, CZ, DE, DK, PT, IT, BE).

In the 2021-2027 funding period, the Single Market Programme supports clusters as part of the Joint Cluster Initiatives (Euroclusters) for Europe's recovery. From Slovakia, two clusters are part of two Euroclusters with partners from seven countries (AT, IT, ES, RO, BG, PT, GR). These Euroclusters are AEC Eurocluster and xBUILD-EU. Collectively, they cover three industrial ecosystems, with the "Textile" and "Digital industries" ecosystems (xBUILD-EU) and "Construction" (both Euroclusters with Slovak participation).⁶

⁵ Many of the programmes of the 2014-2020 funding period have been terminated by December 2023. However, the collaborative projects that were funded may continue to operate

⁶ <https://clustercollaboration.eu/euroclusters> (last accessed on 31.03.2023).

03

National cluster policy, programmes and initiatives



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3. National cluster policy, programmes and initiatives


In this section we provide an overview of the existing cluster policies in Slovakia. The breakdown is presented in the form of a table, with the first column showcasing information on the aspects which constitute the policy (beginning with 'Policy Objectives', following with 'Policy Focus', etc.). The second and third column represent the cases of broad policies in Slovakia which focus also on cluster creation and development.

Within the table the text presented in bold (black) depicts standardised categories across country factsheets (56 in total for 2023), which is applied for the comparative purposes. This is followed by a complementary descriptive text to provide more insights about the cluster policy in Slovakia.




Table 3: Overview of Slovak cluster policy

Policy type:	Broad policy	Broad policy
Policy name:	SK RIS3 2021-2027	Programme Slovakia
POLICY OBJECTIVES 	Strengthening cooperation between companies or industry and RTDI actors Increasing competitiveness and boosting scale up of SMEs Supporting internationalisation activities Enhancing the visibility of clusters Fostering R&D activities, technology development and implementation Fostering innovation and strengthening innovation ecosystems Supporting cluster excellence and professionalisation of cluster management Supporting the consolidation of existing cluster organisations Supporting the creation of new cluster organisations Promoting entrepreneurship, start-ups and spin-offs	Strengthening cooperation between companies or industry and RTDI actors Increasing competitiveness and boosting scale up of SMEs Supporting internationalisation activities Fostering R&D activities, technology development and implementation Fostering innovation and strengthening innovation ecosystems Supporting the creation of new cluster organisations Promoting entrepreneurship, start-ups and spin-offs Promoting resilience and sustainable economy and other solidarity-based initiatives Promoting employment and upgrading skills and competences




Policy type:	Broad policy	Broad policy
Policy name:	SK RIS3 2021-2027	Programme Slovakia
	Promoting resilience and sustainable economy and other solidarity-based initiatives Promoting employment and upgrading skills and competences Strengthening the network of cluster organisations/cross-clustering	
	SK RIS3 2021-2027 is focused on priority areas and transformation goals of defined domains - Innovative industry for 21st century, Mobility for 21st century, Digital transformation of Slovakia, Healthy population, Healthy food and environment.	Programme Slovakia envisages support for clusters through at least one measure under specific objective 1.1 ("Development and expansion of research and innovation capacities and use of advanced technologies"), 1.2 ("Exploiting the benefits of digitization for citizens, businesses, research organizations and public administrations") and 1.3 ("Strengthening the sustainable growth and competitiveness of SMEs and the creation of jobs in SMEs)". Significantly, innovation clusters are set to receive support of at least EUR 8.5 million. The support builds on that channelled through the 2014-2020 Operational Programme for Research and Innovation, later merged into Operational Programme "Integrated infrastructure".
POLICY FOCUS 	Cross-sectoral strategy	Cross-sectoral strategy
	Focus on 5 main domains: <ul style="list-style-type: none"> • Innovative industry for 21st century • Mobility for 21st century • Digital transformation of Slovakia • Healthy population • Healthy food and environment 	Focus on 5 policy objectives: <ul style="list-style-type: none"> • More competitive and smarter Europe • Greener, low-carbon transitioning towards a net zero carbon economy • More connected Europe by enhancing mobility • More social and inclusive Europe • Europe closer to citizens



Policy type:		Broad policy	Broad policy
Policy name:		SK RIS3 2021-2027	Programme Slovakia
 RESPONSIBLE AUTHORITIES	In charge of drafting In charge of implementation Provides funding Oversees the implementation		In charge of drafting In charge of implementation Provides funding Oversees the implementation
	<p>The responsible authority for SK RIS3 2021-2027 is the Ministry of Investments, Regional Development and Informatization of the Slovak Republic. For the implementation, the responsible body is the Slovak Government Council for Science, Technology and Innovations.</p>		<p>The responsible authority for Programme Slovakia is the Ministry of Investments, Regional Development and Informatization of the Slovak Republic (in charge of drafting; oversees the implementation). In addition, bodies in charge of the implementation of Programme are both the Ministry of Economy and the Ministry of Education, Science, Research and Sport.</p>
 BENEFICIARIES	SMEs Cluster organisations Research organisations Academic institutions Start-ups Business associations Large firms NGOs Technology centres		SMEs Cluster organisations Research organisations Academic institutions Start-ups Business associations Large firms NGOs Technology centres
INSTRUMENTS 	Financial	Funding collaboration initiatives Support to R&D projects, SMEs becoming cluster members, etc.	Funding collaboration initiatives Support to R&D projects, SMEs becoming cluster members, etc.



Policy type:		Broad policy	Broad policy
Policy name:		SK RIS3 2021-2027	Programme Slovakia
			Financing networking events Innovation: voucher, support to hire PhDs, cooperation with R&I actors
	Technical assistance	Infrastructure: coworking spaces, offices, incubation and accelerator spaces, research centres, technology parks etc. Support for hard skill development: knowledge transfer, intellectual property, entrepreneurship, export advice, market intelligence Support for soft skills development: coaching, management training, upskilling/reskilling Support for networking and partnership building (at national and/or international level)	Support for hard skill development: knowledge transfer, intellectual property, entrepreneurship, export advice, market intelligence Support for soft skills development: coaching, management training, upskilling/reskilling Support for networking and partnership building (at national and/or international level) Marketing activities: advertising, communication, events, fairs
	Explanation	The set of selected measures is focused on the support of research and innovation activities of clusters	Financial instruments will be provided in the form of start-up capital financing, guarantee schemes for the support of small and medium-sized enterprises, as well as portfolio guarantee schemes in the initial stages of business.
HISTORY 	Period	Limited period	Limited period
	Ending year (for policies with limited period)	2027	2027



Policy type:		Broad policy	Broad policy
Policy name:		SK RIS3 2021-2027	Programme Slovakia
	Starting year	2021	2021
	Explanation	The strategy has been updated for the period 2021-2027	The programme has been approved in November 2022 and the activities will be implemented till 2030.
BUDGET 	Overall	N/A	12 594 000 000 EUR
	Annual	N/A	N/A
	Source of funding	Programme Slovakia (ERDF, Cohesion fund, ESF+, JTF)	ERDF, Cohesion fund, ESF+, JTF
POLICY EVALUATION 	Availability	Monitoring & ex-post evaluation	Ex-ante
	Results	N/A	N/A
POLICY ALIGNMENT WITH THE EU PRIORITIES 		Green Economy Digitalisation Resilience	Green Economy Digitalisation Resilience

Source: ECCP (2023).

04

State of play of cluster policy and its role in broader economic policy challenges



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4. State of play of cluster policy and its role in broader economic policy challenges

4.1 The state of cluster policy

This section presents an overview on the state of play of cluster policy in Slovakia in the form of a qualitative assessment across four categories of analysis – policy scope, continuity of cluster policies, evidence of performance, and the range of cluster support instruments. Please refer to the **Annex** for the detailed overview of the categories. The table below presents an overview of the **state of play of Slovak cluster policy** for 2023.

Table 4: State of play

Slovakia	State of play
POLICY SCOPE	Absence of cluster policy
	Broad policy
	Sectoral policy
	National and/or regional cluster policy
CONTINUITY	No cluster policy available
	Cluster policy established recently
	Cluster policy established between over 2 and 10 years
	Cluster policy established over 10 years ago
EVIDENCE OF PERFORMANCE	No evaluation and / or monitoring available
	Existence of evaluations of past policies
	Existence of monitoring or an ongoing / interim evaluation
	Existence of monitoring and ex-ante or ongoing / interim evaluation
CLUSTER SUPPORT INSTRUMENTS	No instruments for cluster development
	Financial support for cluster development in the broader and / or sectoral policy
	Financial or technical support for cluster development in dedicated cluster policy
	Financial and technical support for cluster development in dedicated cluster policy

Source: ECCP (2023).

The text below provides a **qualitative description** of the state of play of the cluster policy in Slovakia.

Policy scope

In Slovakia, there are broad policies addressing objectives in the area of cooperation and networking. Such broad policies are enshrined in the Research & Innovation Strategy for Smart Specialisation of Slovakia, which supports development and creation of cluster organisations, strengthens cooperation between SMEs, industry and RTDI actors and promotes internationalisation activities and networking, and in Programme Slovakia (supporting creation and development of clusters, cooperation between



SMEs and RTDI organisations, internationalisation activities, promoting entrepreneurship and employment, etc.). However, both these policies are not specific to clusters – thus justifying the classification of the existing policies as “broad policies.” Moreover, a national cluster policy is currently under preparation and adheres to the requirements outlined in RIS3 2021-2027. It is centred around transitioning from extensive to intensive development of cluster ecosystem (referred to as moving towards excellence).

Continuity

The main goal of the Innovation Policy of the Slovak Republic for the years 2008 to 2010 was the elaboration of individual measures of the Innovation Strategy of the Slovak Republic for the years 2007 to 2013 for specific measures and tasks. The fulfilment of the set tasks aimed at creating favourable conditions for the creation and implementation of support mechanisms for the establishment and development of regional innovation structures, innovative enterprises, partnerships and cooperation between enterprises and universities in the field of research, development and innovation as well as the gradual implementation of long-term conceptual plans of the Government of the Slovak Republic in the area of support for innovative activities. Part of this policy was improving the innovative environment and supporting the development of clusters through which the conditions for cooperation are to be created following the development potential in the regions.

The Scheme to support industrial cluster organisations (de minimis scheme) within the competence of the Ministry of Economy, was implemented in two parts: Scheme DM - 18/2014 and DM scheme - 13/2017 in the period between January 2015 and December 2020. In addition, the Scheme DM – 6/2022 was launched for period 2022-2023. The first call within DM – 6/2022 was open from 22.07.2022-26.08.2022, whereby the minimum amount of subsidy was 10 000 EUR and maximum amount 55 000 EUR. The financial resources allocated for given call for year 2022 were in the amount of 250 000 EUR.

The first call designed to support clusters funded by the European Structural and Investment Funds was launched in February 2020 under the Operational Programme Integrated Infrastructure. More specifically, two calls were launched, one for the Bratislava region and one for the rest of Slovakia. According to the calls, cluster organisations that were designated as interest associations of legal entities and, contextually, held at least a bronze certificate for evaluation granted according to the methodology of the European Secretariat for Cluster Analysis (ESCA) could be supported. The aim of the calls was to support clusters organisations to fulfil the tasks set for itself in the *Strategy for the development of the cluster organisation*; the Strategy was prepared by each cluster along with an action plan, which then had to be implemented leveraging the ESIF grants. The call required that, by the end of the project, the ESCA evaluation had to register an improvement in a minimum of five criteria, which were preselected by the cluster organisation within the Strategy and action plan. The support could also be used to implement the recommendations resulting from the process of certification (or recertification) carried out according to the methodology of the European Secretariat for Cluster Analysis (ESCA), which emphasised streamlining of the development of the cluster organisation, supporting its innovative potential, mutual cooperation with other cluster organisations, promoting awareness of its mission and activities and supporting its internationalization. The allocated budget was 2 700 000 EUR (for all of Slovakia except Bratislava) and 2 300 000 EUR (for the Bratislava region).

Recently, the visibility of clusters has increased and the regional development policies consider clusters as partners for collaboration, transfer of know-how and innovation activities. A new call from ERDF (Operational Programme Slovakia) aimed at clusters is planned for March / April 2024, with an approximate budget of EUR 4 million. A total of EUR 8,5 million is allocated to support clusters during the entire programming period.

In March 2023, the Strategy for research, development and innovation 2030 was approved by the government. There are three goals of the strategy: 1) Move Slovakia from 24th to 14th place in the European innovation ranking – through investing in a quality system. Alongside the necessary



increase in resources for research, development, and innovation, Slovakia must alter the system of their redistribution and utilisation. The main objectives of this area therefore address more efficient coordination, clarifying competencies, and streamlining processes. Subsequently, it will be possible to establish appropriate funding for research, development, and innovation from various sources, contingent on the implementation of necessary reforms. 2) Increase the share of private sector investments in science, research and innovation from 0.5% to 1.2% of GDP – through the enrichment of the sector with high-quality and strategically important talent from both Slovakia and abroad. The primary objectives in these three areas address the development of local talent, attraction and retention of existing talent, and talent from abroad, as well as the targeted improvement of quality of life and work in Slovak cities where the majority of resources for research and innovation are concentrated. 3) Increase trust and collaboration across the research and innovation ecosystem. Slovakia is a small, highly industrialized country with insufficient concentration of talent and resources to address everything. Therefore, a robust mechanism that ultimately helps identify specific and clear directions for Slovakia has to be established. To summarize, the aim of the strategy is to support local and regional initiatives that demonstrate the ability to cooperate, physically and programmatically connect and gradually achieve results and financial sustainability.

Evidence of performance

SK RIS3 2021-2027 includes system of continuous monitoring of the strategy implementation and regular evaluation at the level of strategic objectives, individual measures and transformation maps. The main goal is to identify potential risks of the implementation and to ensure their mitigation through various corrective measures. Analytical tools will be used to assess effects and impacts of selected monitored indicators of the research and innovation ecosystem.

Programme Slovakia includes the system of strategic monitoring of fulfilment of action plans, the indicators and intervention logic as well as the analysis of systematically collected data and information in order to assess the overall implementation of the operational programme.

In 2022, the National Clusters Evaluation was introduced, based on which clusters are divided into 3 groups based on their maturity level: intermediate, advanced and developed.

In addition, within the new national project financed from ESIF (OP Slovakia) called *“Increasing the innovative performance of Slovak economy 2”* implemented by Slovak Innovation and Energy Agency, there are two main activities, one of them is “Development of networking of innovation ecosystem actors”, which includes the cluster performance assessment, networking support and provision of strategic advice for clusters and their members based on the INNO-VERSE tool, and also the development of the “Cluster Excellence Centre” platform (non-financial support - advisory services).

Cluster support instruments

Among Slovakia's broad policies support instruments are also instruments for creation and further development of clusters, e.g. support for cooperation and collaboration activities, support to R&D projects, development of innovations, etc.





4.2 Cluster policy's potential impact on challenges identified in the European Semester Report

Cluster policy can provide important support to broader economic policy efforts. This section shows how Slovak clusters (can) play a role in addressing the challenges identified in the European Semester Report for the country. To this end, the European Semester 2023 country report for Slovakia⁷ has been analysed across policy areas relevant to cluster policy. The results point to a series of issues where cluster policy could play an important role in tackling the country's economic challenges.

The table below also outlines how Slovak cluster organisations are already contributing to the challenges outlined in the European Semester Reports in the absence of a dedicated cluster policy. Developing a dedicated cluster policy could further strengthen and focus the activities of Slovak cluster organisations towards broader economic policy challenges.

Table 5: Contribution of Slovak clusters to the challenges identified in the European semester report

Policy area	Challenges	Cluster activity
INNOVATION 	<ul style="list-style-type: none"> • Provide sustainable sources of public R&D funding. • Consolidate research resources. • Promote private R&D investments. • Improve national policies to attract and retain talent. 	<p>The programme for the European Union funds investment emphasises the importance of a strong innovation ecosystem. The programme also encourages cooperation between companies, research organisations and public authorities to strengthen the innovation ecosystem. To this end, the programme provides support to innovation clusters.</p> <p>Clusters can indeed play an important role in facilitating the transfer of technology.⁸ In that regard, the various Slovak cluster organisations are strongly focusing on facilitating R&D projects. This is showcased, for instance, by the project "Made in Danube", which sought to improve framework conditions for innovation across the regions, enhance SME competitiveness in the field of bioeconomy in the Danube Region and improve the collaboration between research organisations and companies.⁹</p> <p>Moreover, the literature points out that the presence of clusters is positively linked to higher investments for research and development both in the public and especially the private sector.¹⁰</p>
SKILLS 	<ul style="list-style-type: none"> • Green skills needed for the green transition should be promoted more 	<p>Regarding skill development, the programme for the European Union funds investment aims to improve skills and competences, in which clusters have the potential to offer a significant contribution. Research underlines the role of clusters in developing the skills of the workforce and attracting skilled workers to a</p>


⁷ https://economy-finance.ec.europa.eu/document/download/58422f15-5311-486d-9956-2a0be07df8e7_en?filename=SK_SWD_2023_625_en.pdf (last accessed 10.05.2024)

⁸ Fioravanti, V.; Stocker, F.; Macau, F. (2023).

⁹ See http://uksk.sk/en/projects/madeindanube/?noredirect=en_US for more details

¹⁰ ECCP (2022).



Policy area	Challenges	Cluster activity
		<p>region.¹¹ For instance, one can point out the activities of the Union of Slovak Clusters, which participated in the Finance4SocialChange project, designed to enable the creation of a business environment that helps social entrepreneurs create more viable and scaling social companies in the Danube Region by facilitating an improved policy learning between policymakers and government agencies, social enterprises (start-up and scale-up SEs), financial intermediaries, social enterprise catalysts, academia and the public to deliver innovative policy designs enabling new capital for scaling positive impact on society in the Danube region.¹²</p> <p>More generally, as cluster organisations act as intermediaries between companies and research and educational institutions, they can also be seen as part of the training and educational infrastructure in the innovation ecosystem.¹³</p>
<p>GREEN TRANSITION</p> 	<ul style="list-style-type: none"> • Stronger protection for biodiversity • Making progress towards a circular economy, particularly in the industry. • Stepping up energy efficiency measures, particularly in the industrial sector 	<p>In order to support the green transition of the country, the programme for the European Union funds investment 2021-2027 aims to support the technology transfer between companies, research centres and universities with a focus on low-carbon resilience of the economy and climate change and adaptation. As facilitators of technology transfer, clusters are assigned an important role in supporting the green transition. Clusters in Slovakia are addressing the recommendations mentioned by the European Semester Report. For instance, the Slovak bio-economy cluster is participating in the CEE2ACT project, that seeks to empower Central and Eastern European countries to develop circular bioeconomy strategies¹⁴.</p> <p>Studies also show that clusters can play a vital role in the green transition of the economy¹⁵ and it can be underlined that cluster organisations have a positive influence on the green transition, not least because they facilitate exchange between different actors, disseminate relevant knowledge and practices and deepen environmental awareness among stakeholders.¹⁶</p>

¹¹ Hsu, M.-S et al. (2014).

¹² See <https://uksk.sk/en/projects/> for more details


¹³ European Expert Group on Clusters (2020).

¹⁴ See <https://www.cce2act.eu/> for more details

¹⁵ Lis, A. & Mackiewicz, M. (2023); ECCP (2021).

¹⁶ Hatch et al. (2017).



Policy area	Challenges	Cluster activity
 DIGITAL TRANSITION	<ul style="list-style-type: none"> • Lack of digitalisation among smaller firms • Need for targeted skill development, research and investment in infrastructure 	<p>The Slovak smart city cluster is participating in the Smart V4 project, which seeks to connect relevant partners in the given area of SMART strategies, prepare procedures for classification of SMART strategies in V4 countries into one complex database portal and enable the international cooperation of V4 partners to unify SMART strategies to Green Deal/SDG rules.¹⁷</p> <p>In general, studies have shown the positive impact of clusters promoting practices of digitalisation among SMEs for the development of Internet of Things (IoT) ecosystems where clusters provide support across four domains: organisational and market services; technical services facilitating knowledge sharing, creation, and spillover; application services oriented towards the development of application software; and further ancillary services.¹⁸ In general, actors organised in clusters then tend to show a higher digital maturity than those outside.¹⁹</p>

Source: ECCP (2023).

¹⁷ See <https://smartcluster.sk/en/projects/> for more details

¹⁸ European Commission (2019).

¹⁹ Ławicka (2022).

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Annex

Table 6: Analytical framework for the state of cluster policy

Criterion	Description	Categorical variables
Policy scope	assessment whether the country has a dedicated cluster policy, or cluster creation and/or development is targeted through broader policies, e.g. foreign trade policies, labour and social policies or specific sectoral policies, e.g. industrial policy tourism policies, agriculture policies	absence of cluster policy existence of broader policies existence of specific sectoral policies existence of targeted cluster policies
Continuity of cluster policies	assessment of the duration and experience of the country in carrying out cluster policies. This criterion assesses only existence of targeted cluster policies and not broader policies or sectoral policies	absence of policies supporting cluster development cluster policy established recently (within the last 2 years) cluster policy established between over 2 and 10 years cluster policy established over 10 years ago
Evidence of performance	assessment whether there are evaluations of past and ongoing policies and a monitoring system in place. The existence of monitoring and evaluation mechanisms determines the degree of policy development in the country	no evaluation and / or monitoring available existence of evaluations of past policies, e.g. ex-ante existence of monitoring or an ongoing / interim evaluation existence of monitoring and ex-ante or ongoing / interim evaluation
Cluster Support Instruments	assessment whether the policies provide any instruments to support the policy implementation, being these financial and/or technical support	no instruments for cluster development financial support for cluster development in the broader and / or sectoral policy financial or technical support for cluster development in dedicated cluster policy financial and technical support for cluster development in dedicated cluster policy

Source: ECCP (2023).