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ACCELERATE GDT will reinvent national and regional cluster policies to support the twin green and digital transitions and SMEs competitiveness.



An interregional cooperation project  
improving **SME competitiveness** policies

# CLUSTER ECOSYSTEM ANALYSIS

A CASE STUDY ANALYSIS OF THE CLUSTERING ECOSYSTEM

METROPOLITAN CITY OF TURIN | PIEDMONT | ITALY

## Italian Partner

Project Partner: Città metropolitana di Torino



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## INTRODUCTION

ACCELERATE GDT brings together 7 European partners to accelerate the twin green and digital transitions by aligning supports into regional and national cluster policies, which will in turn raise SME competitiveness, build regional resilience, increase shared value, and boost recovery across Europe. The project runs from 1<sup>st</sup> March 2023 to the 31<sup>st</sup> of May 2027.

Clusters are a central feature in the European Commissions' competitiveness and Smart Specialisation strategies (DG Research, 2019). The European Expert Group on clusters found that clusters have a pivotal role in accelerating the twin green and digital transition (GDT), building resilience, and boosting recovery. During the Covid-19 pandemic, clusters demonstrated the capacity to drive change and make European value chains more resilient. Clusters can reach European firms quickly, especially SMEs and improve their innovation potential, technological uptake, skills and internationalisation.

The EU Green Deal's aim is a clean, circular, and climate neutral economy for European industry and society. Clusters can accelerate this transition towards a green economy, by identifying and supporting their members' access to green technologies, innovation, business solutions, dedicated funding and markets, and thus facilitate the green transition.

Digital solutions and the data-based economy are transforming industry and society, and the COVID-19 crisis has further accelerated this need. The EC (2021, p.14) suggests that the "digital transition requires the uptake of solutions by virtually all businesses. The transformation generates new competitive fields as it brings in new opportunities and new ways to create value." Laggards who do not develop digital components in their business model are certain to fall behind in competitiveness and growth.

### 1.1 ACCELERATE GDT PROJECT PARTNERS



## 1.2 ITALY

**Capital:** Roma

**Size:** 302.073 sq km (41,6% hills; 35,2% mountains; 23,2% lowlands)

**Population:** 58.997.201 (2023, Istat)

**National GDP:** € 1.946.479 (2022, Istat)

**GDP per capita:** € 32.983,50 (2022, Istat)

**% of Unemployment:** 7,8% (10/2023, Istat)

**Monthly average gross wage:** € 2.250 (2023, Istat)

Italy is a parliamentary democratic Republic composed by 20 regions (regionalised unitary state), located in south-eastern Europe. It has a population of around 59 million inhabitants, making it the third most populous state in the European Union. Delimited by the Alpine arc, Italy borders with France, Switzerland, Austria and Slovenia to the north; the Italian peninsula extends into the Mediterranean Sea. It is a founding member of the European Union, NATO, the Council of Europe, and the OECD; it is a member of the UN and the Schengen Convention. Italy is the eighth largest economy in the world (according to the IMF) and third in the European Union. It is a country with a high standard of living: the human development index is very high (0.895 in 2021), and life expectancy is 82.9 years (2021 data).

Like all advanced economies, Italy is also strongly oriented towards the service sector, which in 2017 accounted for three quarters of value added (compared to just over 50% in 1970); however, the share of industry remains high when compared to other major European countries, at around 23% of GDP. The productive fabric of the economy is predominantly made up of small and medium-sized enterprises: the larger ones are largely run by the founding families and, in some cases, by foreign groups. The public company model, an enterprise with widespread capital managed by management, is not very widespread.

The Country witnessed a growth in the market for advanced manufacturing technologies, despite the hurdles presented by the pandemic, as well as economic and political challenges such as the conflict in Ukraine and inflationary pressures. The ongoing advanced manufacturing incentive plan of the Italian government, referred to as "Piano Transizione 4.0," is anticipated to sustain this positive trend in the market. This comprehensive plan offers a substantial €13.4 billion in tax credits, encouraging investments in capital goods, intangible goods, research and development, innovation, and training<sup>1</sup>.

Italy, the second largest manufacturing country in Europe according to the Trade Performance Index<sup>2</sup>, excels in various industries such as: machinery, fashion, food, automotive and pharmaceuticals. It is one of the most automated countries in the world: machinery is Italy's top export industry, accounting for a sizeable 18% of international trade and making it the fifth largest machinery exporter in the world. The fashion industry (textile, clothing, footwear) represents 10% of the Italian manufacturing, producing an added value of 24.2 billion euros.

Italy is among the first 10 global exporters in the agri-food sector (first industry/sector of the country) with an added value per hectare higher than the other EU countries. The food industry is

<sup>1</sup> <https://www.trade.gov/country-commercial-guides/italy-advanced-manufacturing>

<sup>2</sup> The index consists of 22 quantitative indicators on a country's general profile, on a country's position and on the decomposition of the country's change in world market share. For a complete description of the TPI see International Trade Centre (2007).

one of the undisputed leading sectors of the Italian economy. The automotive sector is one of Italy's major industries and employs 278.000 people. Data (February 2021) showed that in 2020, the automotive sector's turnover was €106.1 billion, which was 11% of Italy's manufacturing turnover and 6.2% of Italy's GDP. Italy ranks among the first countries with the highest percentage of industrial robots used in the automotive industry (9% of companies compared to a 7% European average). The pharmaceutical industry in Italy is a strategic asset of the economy, with €34.4 billion in production. Italy is a leader in Europe together with Germany and France in pharmaceutical exports, which increased above the EU average in the last ten years.

Italy ranks third globally in terms of its level of specialization in Space technologies, as measured by the number of patents related to space industries compared to the total number of patents. This places Italy behind Russia and France, but ahead of Spain and Israel. In terms of absolute values, Italy holds the fifth position with a rate of 4.1%, following the USA, France, Japan, and China.

In terms of balance of payments, Italy's goods exports encountered a significant boost in 2022, surpassing the performance of other major euro area countries. This notable growth was observed amidst a backdrop of expanding global trade and a gradual easing of supply-side congestion. Moreover, the services sector managed to recover its pre-pandemic level, thanks to the contribution of tourism revenues. In parallel, imports also witnessed a sustained increase, driven by the demand generated by gross fixed capital formation and exports.

According to European Innovation Scoreboard 2023<sup>3</sup>, Italy is a Moderate Innovator with performance at 90.3% of the EU average. Performance is above the average of the Moderate Innovators. Performance is increasing at a rate higher than that of the EU (8.5%-points). The country's performance gap to the EU is reducing.

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<sup>3</sup> [https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard\\_en](https://research-and-innovation.ec.europa.eu/statistics/performance-indicators/european-innovation-scoreboard_en)

### 1.3 THE METROPOLITAN CITY OF TURIN AND PIEDMONT REGION

The Metropolitan City of Turin is the Italian Partner in the ACCELERATE GDT consortium.

The Metropolitan City of Turin is a wide area territorial public authority (NUTS3), established by National Law n. 56/2014, which replaces, as of 1st January 2015, the former Province of Turin. It is located in north-western Italy, on the border with south-eastern France, within the Piedmont Region (ITC1). According to National Law n. 56/2014, the new strategic mission of metropolitan cities is to be the *engine of development* for the entire economic and productive ecosystem of the territory. It has the role and the mission of promoting better policies and measures to create virtuous cooperative mechanisms between key stakeholders, in order to make the local innovative ecosystems sustainable, responsive and resilient to the existing challenges and gaps.

	<b>Metropolitan City of Turin</b>	<b>Piedmont Region</b>
<b>Number of municipalities</b>	312	1.180
<b>Land area (sq. km)</b>	6.826,9	25.386,7
<b>Resident population (Istat 2023)</b>	2.198.237	4.240.736
<b>GDP per capita (Istat 2020)</b>	30.800 €	29.500 €
<b>% of Unemployment (Istat 2021)</b>	8,6 %	8%



**Figure 1 - The territory of the Metropolitan City of Turin as compared to that of Piedmont**

Piedmont region is located in the north-western part of Italy and its capital city is Torino. The region holds a significant historical importance as the birthplace of Italian industry.

The 19th century marked the beginning of Piedmont's industrial journey, primarily focused on textiles. As time progressed into the 20th century, the region expanded its industrial prowess to include the automotive and aerospace sectors. However, in recent times, Piedmont has shifted its focus towards the IT and services industry. Despite these advancements, the region faces several economic challenges. One such challenge is the significant decline of manufacturing jobs, which decreased by 16% between 2004 and 2018.

In 2022, Piedmont has 4,240,700 inhabitants. Compared to the previous year, it loses 15,600 residents. The decrease is due to a heavy negative natural balance (deaths are more than double the number of births) only partially offset by the positive migration balance. The foreign component of the population has been stable in recent years (9.8% in 2022). More than a quarter of Piedmontese residents in Piedmont are 65 years of age or older (26%). Of particular note is the growth of the over-80s (9% of the population), an age bracket more fragile and in need of services, especially health services.

In 2022, employment increased (about 18,000 more), the employment rate rose to 65 per cent and the activity rate returned to 2019 levels (77 per cent). However, these indicators have to be interpreted taking into account the shrinking population. The phenomena that are characterising the labour market, not only in Piedmont, are ageing (9% of employed people over 60) and the progressive contraction of the population of working age (-3% labour force compared to 2019).

The path that appears viable to compensate for the need for new employees consists in better employment of the 'discouraged' and other inactive people of working age.

According to the OECD, to overcome these obstacles, it is imperative for Piedmont to diversify its economy beyond its traditional strengths in core industrial activities. This is particularly crucial due to the prevalence of small- and medium-sized enterprises and entrepreneurs involved in low-value added activities, coupled with the scarcity of high innovation firms.



## CHAPTER II: LANDSCAPE AND BACKGROUND OF CLUSTERS IN PIEDMONT REGION

### 2.1 ORIGIN OF INNOVATION CLUSTERS AND INDUSTRIAL POLICIES IN ITALY AND PIEDMONT REGION

The Italian industrial innovation policy choices of recent years, especially during the period of the economic and financial crisis of 2008, were the result of an internationally oriented search for a policy instrument that would be adequate to deal with the recession. The policy instrument in use up to that time, i.e. industrial districts, were also experiencing a period of crisis, since – according to Dardanello – it was deemed responsible for creating competitiveness without development.

The economic policy instrument deemed capable of steering the economy towards innovation was identified in the innovation poles, which first appeared on the European industrial scene in the 1980s in France. Since the 1990s, researchers have underlined the game changing importance of innovation clusters and cluster organizations in economic and innovation advancement. Numerous studies have affirmed that innovation clusters generate advantages for their affiliated enterprises, i.e. easier and affordable access to means of production, distribution channels, human resources, or knowledge and innovation. Additionally, innovation clusters can reinforce a country's or region's international competitiveness by establishing stronger external connections and better integration into global value chains. To effectively deliver these benefits, cluster management organizations require the appropriate competencies, adequate visibility, and the trust of local and regional innovation stakeholders.

Innovation poles or clusters are defined as groupings of independent enterprises (innovative start-ups, small and medium-sized enterprises, large enterprises and research organisations, including public ones, etc.) that are active in a particular sector or area. Membership of clusters is intended to help stimulate innovative activity by encouraging intensive interaction, the joint use of facilities and the exchange of knowledge and experience between companies and organisations. Innovation clusters aim to contribute to technology transfer, networking and the dissemination of information between participating players. Their function is to support competitiveness, in particular by linking small and medium-sized enterprises with large enterprises and research organisations, for knowledge sharing and convergence on common trajectories and lines for innovative products and/or processes and services. Cluster organisation refers to an entity that supports the strengthening of collaboration, networking and learning in innovation clusters and provides innovation support by offering or channelling specialised and customised business support services to stimulate innovation activities.

The policy to support the promotion of scientific and technological research had already been initiated by the Piedmont Region since the 2000s, but it had not achieved positive results. In 2009, through the funds of the 2007-2013 European Regional Development Fund (ERDF) Regional Operational Programme (ROP), Piedmont was the first Italian region to formally establish on its territory 12 Innovation Clusters in as many technological domains. The establishment of the innovation poles was the result of the involvement of institutions of all levels, through a multi-level governance framework.

Axis I “Transnational Productive Innovation” of the 2007-2013 ERDF ROP was aimed at “strengthening the competitiveness of the regional system by increasing its capacity to produce research and innovation, to absorb and transfer new technologies, including with reference to



frontier issues, to innovations in the environmental field and the development of the information society” and had the operational objective of “promoting innovation through the strengthening of technological knowledge processes, the dissemination and implementation of investments of an innovative nature by fostering cooperation between universities, research centres and businesses” (Piedmont’s 2007-13 ERDF ROP). The ERDF contribution to the overall ROP was €426,119,322.00.

Regional innovation clusters were indeed created with two main objectives: to be knowledge intermediaries able to foster the creation of local networks, the strengthening of social capital and the dissemination of specific training opportunities; secondly, to be providers and suppliers of services, thus providing consultancy for the protection of intellectual property, the opening up of foreign markets, and the sharing of otherwise inaccessible technological infrastructures.

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This policy lies first and foremost within the framework of EU programming of the European Regional Development Fund (ERDF), which back in 2006, had seen the European Commission approve Communication 2006/C 323/01, outlining new guidelines in the area of state aid to research, innovation and development, which would be fundamental to the implementation of the Lisbon strategy of 2007. Through this communication, the Commission also elaborated the aforementioned definition of clusters.

The overall objective pursued by the 2007-13 ERDF Piedmont ROP was to develop the regional system’s adaptive capacities to the sudden changes induced by the interdependence of economic systems, through the enhancement of innovation capacities of the ecosystem.

Since the early days of the establishment of regional innovation clusters, there has been an increase in the percentage share of innovative companies ranging from 31.5% to 35.5%, in the period from 2010 to 2012, before rising to 45.5% in the following three-year period. The same cannot be said for the percentage share of expenditure for research and development, which in 2012 was around 1.26% of GDP, well below the 3% goal set by the European Union.

Regions in industrial transition, such as Piedmont, could and should benefit from clusters structures and the development of a regional innovation ecosystem in their innovation governance, in order to prepare local industries for current megatrends, such as the twin transitions and the growing complexity and interdependence of research and development (R&D) activities.

## 2.2 ANALYSIS OF PIEDMONT CLUSTER ORGANISATIONS

In 2009, through the aforementioned funds of Piedmont's 2007-13 ERDF ROP, Piedmont was the first Italian region to activate 12 Innovation Clusters in as many technological domains.

The measures required for the initial establishment of regional innovation clusters were envisaged under Axis I of the 2007/2013 ERDF ROP, in line with the operational objective of "Promoting innovation through the strengthening of technological knowledge processes, dissemination and implementation of investments of an innovative nature by fostering cooperation between universities, research centres and enterprises".

Preparatory to the establishment of the regional innovation clusters were the following resolutions of the Regional Government (so called *Delibere di Giunta Regionale*, or D.G.R.):

- D.G.R. no. 25-8735 of 5 May 2008, subsequently integrated by D.G.R. no. 11-9281 of 28 July 2008, with which the Regional Council identified the technological domains in which clusters would then have to operate and the areas on which each would insist and DGR no. 37-9622 of 15/9/2008 which amended and integrated the technological-operational domains falling under the competence of the Clusters.
- DGR no. 12-9282 of 28 July 2008 by which the Regional executive body defined the general contents of the measure of the R.O.P. for the establishment, expansion and operation of the Innovation Clusters.

Then, by means of Executive Determination no. 230 of 17/09/08, the call for proposals for the establishment of Innovation Clusters was launched. According to the provisions of the regional call for proposals, the managing entities of the Innovation Clusters are legal entities that have (or that will establish) an operational office in the territory of the technological-operational domain for which they apply.

In April 2008, the Region officially recognized 12 clusters on its territory. Right from the start, the established clusters were rather heterogeneous, as the ecosystem consisted of cluster organisations with an established network of contacts and visibility, which derived from pre-existing structures such as technology parks, but also of rather weak structures deriving from a more recent aggregation.

Aggregation to a cluster was initially free and open to any firm as long as it was of interest, but in order to avoid bankruptcies and to dis-incentivise and penalize opportunistic aggregations of inefficient firms or those not in line with the required innovative trajectories, an annual fee was established in order for a company to join the cluster. The annual fee was not regulated and it was left to the discretion of the individual cluster organisation. Each enterprise could aggregate simultaneously to a maximum number of three clusters.

Once the cluster was established, it was entrusted to a single managing entity, whose task was to coordinate and organize relations among the entities that participated in the cluster, and between them and the Region, acting as a catalyst for the research proposals received from the subjects involved. Managing entities also had the task of fostering access to high value-added services and making research, innovation and technology transfer infrastructure available to companies.

The management of the cluster's activities was set up according to the market trends. For their operation, the Region made a range of aids and services available to both managers and aggregated

enterprises. Cluster managers were allocated aid both in the area of investment for the creation and implementation of the cluster, as well as for their animation. The enterprises, on the other hand, received services related to: patents and other industrial property rights; innovation advisory services; innovation support services; aid for technical feasibility studies preliminary to industrial research and experimental development activities; aid for the creation and development of new innovative enterprises; aid for the temporary secondment of highly qualified personnel from research organizations or from a large enterprise.

Aggregate enterprises were distributed funding through four annual calls called "Annual Innovation Cluster Programs." These types of programs were intended to co-finance: projects of industrial research and experimental development; product and process innovation projects; innovation projects through user interaction, as well as on other calls or calls intended to support the acquisition of services for research and innovation.

The ROP funding contributed to the implementation of 355 research, development and innovation projects and 193 research and innovation services, involving a total of 1,744 beneficiaries (gross number, where each beneficiary is counted as many times as there were applications for funding). The enterprises aggregated to Piedmont clusters amounted to 1,427 and were mainly SMEs, which accounted for nearly 80 percent of the total.

Project-based calls were reserved for enterprises aggregated to the clusters. The managing entity selected the projects to be accepted. The selection of the project proposals was divided into two phases: the first consisted of the evaluation of the submitted application and the mandatory accompanying documentation, based on the criteria approved by the ROP monitoring committee; the second phase consisted of the verification and technical analysis of the selected projects and of an eventual negotiation.

In the context of Piedmont's 2014-2020 ERDF ROP, the need to keep on supporting Innovation Clusters through the tools developed in the course of the 2007-2013 programming period was highlighted, with the aim of strengthening their capacity to act as coordinators of the various institutional, research and production players in the Piedmont ecosystem.

Clusters were indeed recognised by the Region as having a key role in the regional entrepreneurial ecosystem as promoting agents of industrial renewal and transformation, through the strengthening and creation of value chains and the development of new business models.

DGR no. 11-2591 of 14 December 2015 sanctioned the continuation of the regional policy of support for Innovation Clusters, though said policy was subjected to a path of revision, in order to make it more functional to the implementation of the new S3, that identified areas of specialisation, trajectories and Key Enabling Technologies.

In the context of said revision process aimed at further strengthening the Clusters System, the Region reclassified the clusters into seven thematic areas. Their aims, in said areas, were to promote innovation, technology transfer, knowledge and skills sharing, by acting as a bridge among enterprises and public and private research players.

The 7 thematic areas identified by the Regional administration were: (1) Agrifood, (2) ICT, (3) Life Sciences, (4) Advanced manufacturing (Smart products and manufacturing), (5) Green Chemistry and advanced Materials, (6) Energy and clean technologies, (7) Textiles.

Subsequently, with *Determinazione Dirigenziale* (D.D.) of 29 December 2015, no. 1011, the Region launched a call for proposals aimed at selecting and supporting development programmes conceived by Innovation Clusters in a selection of technological areas. The proposing subjects were asked to:

- strengthen and broaden the scope of action of their respective Cluster;
- precisely identify the thematic scope of the Cluster and their respective specialisations;
- carry out an integrated and synergic action within the regional innovation system to guarantee that each cluster's range of action has actual regional extension;
- achieve sufficient critical mass;
- re-orientate the projects developed by the clusters' members so that they achieve greater dimension and higher levels of technological maturity.

The selection of the Clusters' managing entities was based on the quality of the proposed programmes (Table 1).

Thematic area	Innovation Cluster	Management organisation	Headquarter of management organisation
Agrifood		M.I.A.C. Scpa	Cuneo
ICT		Fondazione Torino Wireless	Torino
Life Sciences		Bioindustry Park Silvano Fumero Spa	Colleretto Giacosa
Smart products and Manufacturing		Centro Servizi Industrie Srl	Torino
Green Chemistry and Advanced Materials		ATS tra: Pst Spa Consorzio Proplast Consorzio Ibis	Rivalta Scrivia - Novara
Energy and Clean Technologies		ATS tra: Environment Park Spa Consorzio U.ni.Ver.	Torino - Vercelli
Textile		Città Studi Spa	Biella

**Table 1** - Innovation Clusters and related thematic areas - 2014-2020 ERDF ROP (Source: IRES- Istituto di Ricerche Economiche Sociali del Piemonte, 10 numeri sui Poli di Innovazione in Piemonte, "Note brevi sul Piemonte" - no. 2/2020.)

Piedmont's 2014 2020 ERDF ROP (Action I. 1.b.1.2), among the several measures set, strengthened the 'Innovation Clusters' system through:

- a measure targeting Regional Innovation Clusters<sup>4</sup>, identifying as recipients the Clusters' managing entities through funding of their Three-year Development Programmes;
- a measure targeting both cluster member enterprises and enterprises not yet members of any cluster.

<sup>4</sup> The same clusters received further support from the ROP during 2020 through a specific initiative concerning activities carried out by the clusters, particularly focused on helping the enterprises in facing the changes at play in the economic context, also due to the COVID-19 pandemic.

More specifically, the clusters' managing entities were financed by the Region through a contribution partially covering the costs incurred for the activities detailed in their Strategic Research Agendas, elaborated on the basis of a preliminary survey of innovation and technology transfer needs administered by the above-mentioned Clusters to their member companies.

The financial endowment had been programmatically established in a total of 5,000,000 euro under Axis I, Research, technological development and innovation – Action I.1.b.1.2 (Support for collaborative R&D activities for the development of new sustainable technologies, new products and services) of the 2014-2020 ROP ". Upon completion of the evaluation process for the 'pre-proposals', an additional €500,000 was allocated as a premium reserve. Following the D.D. 20/12/2018, no. 26-8179, the financial allocation was raised from €5,000,000.00 to €5,650,000.00 to cover the expenses incurred by the Innovation Clusters until 31/03/2019.

The Region also granted Innovation Clusters some funds reserved for the clusters' members, aimed at allowing them to carry out feasibility studies, industrial research and experimental development projects, innovation projects and to obtain qualified services for innovation.

During the last programming period, a total of around 1,200 companies were members of Piedmont's Innovation Clusters. By paying an annual fee, companies had the chance to take advantage of the services made available: acquisition of patents and protection of intellectual rights, marketing and promotion actions for internationalisation, managerial training, participation in regional and international calls for tenders, and support in writing proposals in response to calls for tenders. Over the years, some companies have not renewed their membership. As of 2020, the largest Cluster, with 127 members, was the MESAP cluster dedicated to advanced manufacturing.

Clusters	Companies	University/Public Research Centres	Total
Agrifood	180	3	183
Biopmed	93	2	95
C-green	154	4	158
Clever	165	6	171
ICT-Torino Wireless	244	19	263
MESAP	271	8	279
Po.In.Tex.	87	2	89
<b>Totale</b>	<b>1.194</b>	<b>44</b>	<b>1.238</b>

**TABLE 2 - MEMBERS OF THE 7 REGIONAL INNOVATION CLUSTERS (SOURCE: IRES- ISTITUTO DI RICERCHE ECONOMICO SOCIALI DEL PIEMONTE, 10 NUMERI SUI POLI DI INNOVAZIONE IN PIEMONTE, "NOTE BREVI SUL PIEMONTE" - NO. 2/2020)**

In line with the investment priorities of Axis I 'Research, Technological Development and Innovation' of the 2014-2020 ROP ERDF, two Lines of Intervention were envisaged to support industrial research and experimental development projects. The first (Line A), with a financial endowment of 35 million euro, was intended for enterprises already associated to innovation cluster, whereas the second (Line B), with a financial endowment of 15 million euro, was aimed at enterprises not yet associated to any cluster but committing to adhere to one of them in case of acceptance of their project.

The measure supported - through the issuing of calls for tenders addressed to Cluster member companies - the granting of a subsidy in the form of a contribution to expenses up to 60% of the total cost of the financed projects.

As of 2020, 284 enterprises have benefited from the financing of the 2014/2020 cycle. In particular, 215 enterprises under Line A and 69 enterprises under Line B. Most of the enterprises operated in the manufacturing sector, although there was a significant share of service companies, particularly in

professional and scientific activities, software and IT consulting, architecture and engineering firms. About two thirds of the companies associated with the clusters were located in the metropolitan area of Turin (almost 63%), while the residue were located in the other provinces.

Area	Percentage
Manufacturing activities	52,8
information and communication services	21,6
Professional, scientific and technical activities	18,1
Energy, water, etc	2,1
Construction	1,4
Health and social welfare	1,4
Wholesale and retail trade	1,1
Other sectors	1,2
Total	100

**TABLE 3- ECONOMIC SECTORS OF BENEFICIARIES (PERCENTAGE, 2019) (SOURCE: IRES- ISTITUTO DI RICERCHE ECONOMICO SOCIALI DEL PIEMONTE, 10 NUMERI SUI POLI DI INNOVAZIONE IN PIEMONTE, "NOTE BREVI SUL PIEMONTE" - NO. 2/2020)**

Over 50 agreements were concluded with training agencies during the last programming period: relevant to notice, the cooperation agreements with the Istituti Tecnici Superiori (ITS) for the training of specialised technicians in strategic technological areas for economic development and regional competitiveness.

Piedmont's innovation poles have activated 200 collaborations with research organisations including initiatives such as the activation of joint research laboratories and the realisation of research theses in companies. As for the international context, the clusters most frequently cooperated with the following countries: France, Spain, Portugal, UK, Poland, Romania, Germany and Belgium.

At the end of last programming period, the Social Economic Research Institute of Piedmont (IRES Piemonte) conducted a counterfactual study to understand whether or not participation in innovation clusters had an effect on the economic performance of companies. The analysis sample was made up of corporations adhering to the measure in the 2007-2013 programming cycle. A positive effect on turnover was estimated at 6.2 per cent on average in the three years following membership. The effect was calculated as a comparison between the performance observed at participating companies (experimental group) and that observed at non-member companies similar in terms of sector of economic activity and budget structure located in Piedmont (control group). The study also found positive indications of participation in terms of total factor productivity (TFP) and number of employees.

The most important results can be included in three categories. The type of incentive offered (Line A, line B), within a policy framework such as that of the "Innovation Clusters", should ideally lead to the following results:

- a stable increase in the propensity of enterprises to innovate their production processes and products and to undertake research activities for this purpose;
- additionality of funded projects, in the thematic areas intersected by S3;
- better interaction between large and small enterprises and between them and the public research system (network), facilitated by the work of the Innovation Clusters.



The same categories of results can also be attributed to the enterprises associated with the 'Innovation Clusters' by virtue of the objectives of the policy instrument. The results of surveys related to a stable increase in the propensity to innovate revealed that:

- a large proportion of companies, in order to introduce new innovations in their products or processes, resort to research and development (41% of respondents), to a greater extent than to the acquisition of machinery or other options, although this figure was partially contradicted by their reduced propensity to resort to training activities (14%), which would suggest that the change was perhaps still unrelated to the need for investment in human resources;
- research and development is at the centre of companies' competitiveness: it is this area that has been the most highly regarded for the employment of on average more qualified and/or specialised skills, even before investments in the area of technical and production services. This aspect appeared inseparable and was reinforced by the very type of skills that are deemed to be possessed by the personnel so placed: according to the survey, problem solving was considered the main skill that should be possessed by qualified staff, in addition to the specialised skills related to the profession;
- in general, there was comparable performance between the various clusters in terms of the number of product and process innovations introduced and of the percentage of turnover for R&D expenditure (with ICT and Biomed members mobilising higher percentage shares of turnover), but the Mesap Cluster associated companies were the ones that translated innovative activities into a more solid patenting capacity.

According to research, the decision by enterprises to undertake research activities in order to innovate came both from the expansion of new knowledge acquired within the Cluster and from the possibility of benefiting from a subsidy. According to data, one interviewed claimed that Line A was more likely to have had an accelerating effect on investments that had, in any case, already been planned by the companies, while for the others the presence of the facilities is decisive.

The results confirmed the prominent role of Clusters in putting together different innovation actors. In fact, the majority of companies stated that they collaborated with actors with whom they were already in contact, but even in this the role of the Cluster was not marginal as it contributed to the facilitation of those relationships that had previously been established. The main motivation to be associated to Clusters or to remain associated confirmed to be their role in "signalling new calls for proposals" and "supporting in writing new calls for proposals".

In view of the 2021-2027 ERDF Programming cycle, in 2021 the Region launched in 2021 a renewed Cluster policy in support of research and innovation, characterised, with respect to the past, by a systemic model of action and able to promote and implement actions, programmes, research and innovation projects characterised by a strong cross-sectoral nature according to the following three main trajectories:

- digital transformation;
- ecological transition;
- wellbeing of people and the community.

This was done in coherence with the new S3 and with the addresses of the 21/27 ERDF RP.

With this in mind, the Piedmont Cluster System was launched on 25 October 2022 with the aim of enhancing the sectorial skills acquired since 2009 by the seven clusters, by putting them into a system and by going beyond individual vertical specialisations, making exchange and contamination its strong asset.



The revised cluster policy of the Piedmont Region and the creation of the *Sistema Poli Piemonte* put the OECD policy recommendation into practice: the OECD had indeed suggested to Piedmont's policy makers that, in order to foster the regional innovation ecosystem, they needed to continue using clusters as a driver of regional development, by strengthening the collaboration among the seven cluster management organisations and by promoting clusters as strategic intelligence hubs for the regional territory.

Sistema Poli Piemonte is the new organisational model launched in 2022 to enhance the sectorial skills acquired since 2009 by the 7 regional Clusters, to amplify knowledge and opportunities for companies and SMEs and for the whole territory.

The new governance model transformed the innovation ecosystem from a synergy model to a systematic one, to contribute to the sustainability and decarbonisation objectives and to seize the opportunities that these processes entail in terms of technological responses and competitive advantages.

Sistema Poli Piemonte has 4 main aims:

- to increase the impact of regional R&I policies;
- to foster technology transfer for a smarter region;
- to accelerate the growth of the Piedmontese production ecosystem in synergy with stakeholders;
- to identify a common methodology aiming to systematise data and expertise to create more targeted and effective actions.

Sistema Poli Piemonte is participated by 7 regional Innovation Clusters, managed by 10 organisations as follow:

Cluster	Area	Managing organisations
<b>CLEVER</b>	Energy and Cleantech	Environment Park & Un.I.Ver.
<b>CGREEN</b>	Green Chemistry and Advanced Materials	Proplast, Science and Technology Park in Valle Scrivia & IBIS Consortium
<b>MESAP</b>	Smart products and manufacturing	Centro Servizi Industrie
<b>PO.IN.TEX</b>	Textile	Città Studi
<b>AGRIFOOD</b>	Agri-food	M.I.A.C.
<b>BIOPMED</b>	Life science and health	Bioindustry Park Silvano and Fumero
<b>ICT</b>	ICT	Piemonte Innova Foundation

**TABLE 4 : INNOVATION CLUSTERS AND MANAGING ORGANISATIONS (SISTEMA POLI INNOVAZIONE PIEMONTE, APPENDIX, STRUMENTO DI SCOPERTA IMPRENDITORIALE, AMBITI, TRAIETTORIE E CAMPI DI APPLICAZIONE, 2023)**

## 2.3 INDUSTRIAL STRUCTURE AND NEW SMART SPECIALISATION STRATEGY OF THE PIEDMONT REGION

Despite its strong innovation clusters, Piedmont faces important policy challenges to economic development, including low labour productivity and human capital.

Piedmont has an economic structure characterised by a high weight of the industrial system composed mainly of SMEs. The crisis of 2008 had a considerable impact on the unemployment rate, which rose from 6.8% in 2009 to 10.6% in 2013 (Unioncamere Piemonte 2014), also affecting the economic performance of the companies, causing a drop in turnover.

The COVID-19 pandemic, with its differentiated impact on regional and local economies, has heightened the need for inclusive, sustainable and resilient economies. It has also accelerated the need for an innovative industrial transition in Piedmont – one that could tackle short and long term challenges presented by the transition but also leverage on opportunities.

Compared to the benchmark regions, Piedmont suffers from an overt productivity deficit (understood here as productivity of the labour component). According to analyses carried out (Ires, 2020), the Region's sectoral specialisation does not significantly influence this trend, while the low 'internal' productivity of some sectors is a critical factor. The dynamics of productivity in the manufacturing sector since 2000, net of the 2008 fall, is positive; the negative performance is therefore concentrated exclusively in services, with a divergent trend from the benchmark since 2008.

In Piedmont, GDP growth in 2022 was around 3.4%, well above expectations at the beginning of the year, returning to a level close to that of 2019, before the outbreak of the pandemic. Piedmont continues to be in the group of regions driving national exports with a share close to 10% of the total. The pandemic, the Russia-Ukraine war and Brexit have not interrupted the growth in exports (+18.5% in value at current prices, +6.5% in constant values).

In 2022, compared to the previous year, employment in Piedmont grew by 18,000, but this number is not yet sufficient to recover the 2019 level. The boost to growth came from the tertiary sector and especially from construction. Compared to 2021, industry in the narrow sense however, lost 4.4% of its workforce.

By 2021, about 70 per cent of the companies had recovered from the losses incurred during the pandemic crisis. This positive trend was not generalised, as some important sectors of regional system were suffering, including textiles, means of transport and tourism (accommodation and catering). However, more recent surveys indicate a positive trend for all sectors and in particular for those suffering in 2021.

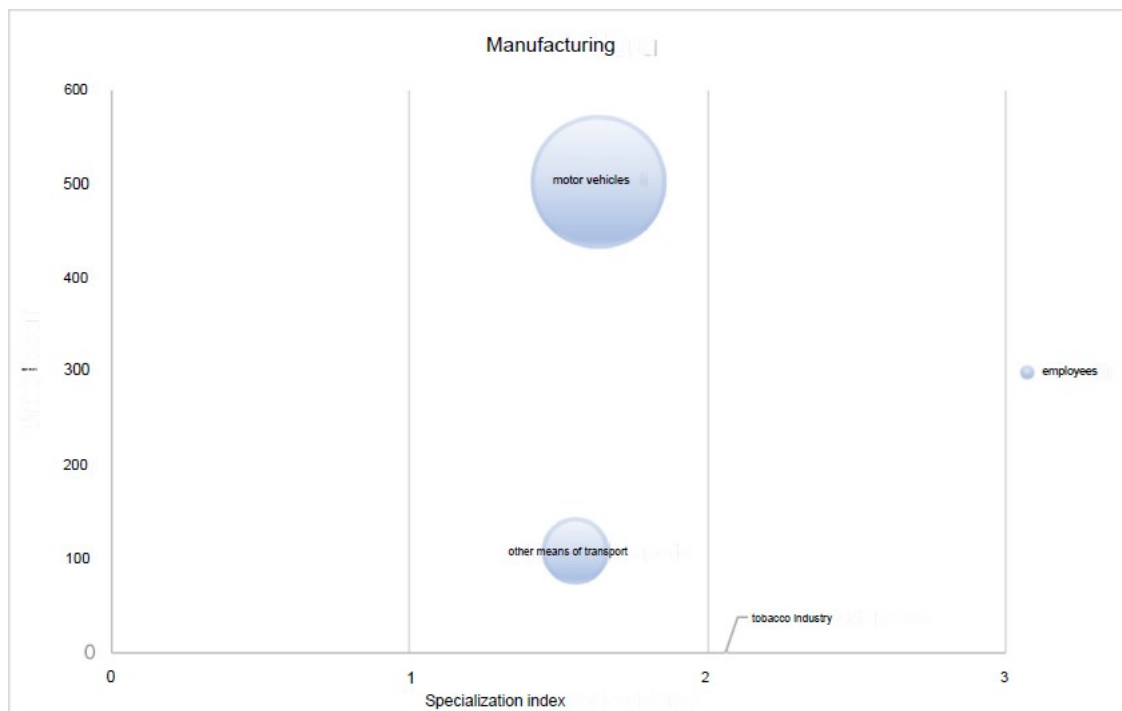
The number of employees over 60 has tripled in the course of a decade; among the self-employed, a fifth is close to leaving the labour market. The ageing of the labour force will pose a challenge in the near future, both for companies and for the PA, problems of management turnover and difficulties in finding staff. In addition, the issue of turnover of the entrepreneurial class will be crucial.

In Piedmont, the automotive sector, despite the downsizing it has undergone over time, still has a significant impact on the overall manufacturing sector and is facing a complex transition towards electrification of powertrains and digitisation of vehicles and infrastructures. These transformations do not only concern the technological capabilities of manufacturers; they require a coherent regulatory framework and the development of an entire ecosystem capable of supporting the

dissemination of innovations (e.g. production and recycling of batteries, recharging networks) and ensure the sustainability of the supply chain.

In the Metropolitan City of Turin, service-related activities are more widespread, employing 51.8% of the total workforce. As for the industrial sector, on the other hand, there is a certain degree of specialisation<sup>5</sup> in the production of motor vehicles (index of 1.93). The automotive sector continues to be an important field in Turin's economy in which, considering manufacturers, component manufacturers and related companies, more than 85,000 people are employed, 27,000 of whom in the city of Turin alone.

Even when considering the two main sub-sectors separately - the production of motor vehicles and the production of other means of transport - there is a high index of specialisation in the Metropolitan City of Turin (1.63 and 1.56). A further specialisation in 2020 is the tobacco industry (index 2.06) with 28 employees in one enterprise.



**FIGURE 2 – HIGH INDEX SPECIALISATION SECTORS IN THE METROPOLITAN CITY OF TURIN (SOURCE: IRES PIEMONTE ON ASIA IMPRESE 2020 DATA)**

According to the EU Regional Innovation Scoreboard of 2023, Piedmont Region is considered a “moderate innovator+” among EU Regions. It is also considered a region in industrial transition. OECD analysis (2021) showed the need for a revised approach in regional cluster policies to foster innovation and to avoid economic decline in Piedmont: it recommended to Regional policy makers to strengthen the cooperation among the 7 cluster management organisations and to promote clusters as strategic intelligence hubs for the territory, to create a proper integrated regional innovation ecosystem.

<sup>5</sup> The specialisation index is calculated as the ratio of employees in the area considered (Metropolitan City or Homogenous Zone) per ATECO code (ISTAT classification of Economic Activity) to the total number of employees in the sector in Piedmont. Only those with an index greater than 1.5 are considered specialisations in this context.

Piedmont's new Smart Specialisation Strategy (S3) aims at defining the basic lines of action that the Region intends to take with regard to its research and innovation policy for the next seven years. The main objective is to identify the specialisations best suited to Piedmont's innovation potential, encouraging stakeholders to share a common vision of the policy actions to be undertaken and channelling investments and the use of structural funds in the best possible way, with the ultimate aim of improving innovation processes.

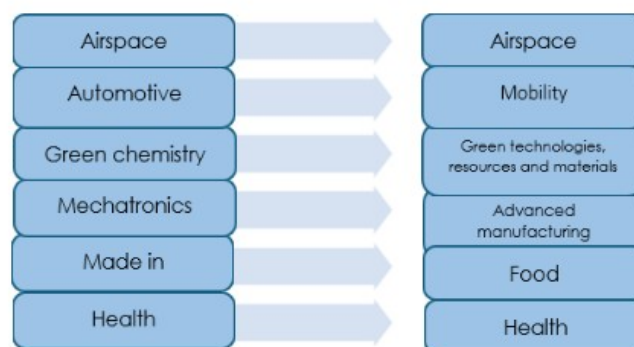
The S3 was introduced in the 2014-2020 programming period in order to identify the priorities and areas of specialisation on which to focus Structural Fund investments in research and innovation. This approach has been confirmed also in the following programming cycle (2021-2027), of which S3 constitutes the implementing tool for the fulfilment of the Enabling Condition "Good Governance of the National or Regional Smart Specialisation Strategy" for the following Specific Objectives (SO) of Strategic Objective 1("A more competitive and smarter Europe"):

1. SO I: Develop and strengthen research and innovation capacities and the introduction of advanced technologies;
2. SO IV: Developing skills for smart specialisation, industrial transition and entrepreneurship.

The regulatory framing of S3 as an Enabling Condition intrinsically defines its importance, since its non-fulfilment means that expenditure on related operations is not reimbursed by the European Commission.

The new S3 2021-2027 was outlined on the already traced path of the previous Strategy. However, ex-post evaluations and partnership discussions on its implementation revealed a number of avenues for improvement, on the basis of which the new Strategy was constructed.

The most important of these is the evolution from specialisation areas to Priority Innovation Systems. Whereas in the previous programming period the areas of specialisation were defined mainly on a sectoral basis and the focus was on the good produced, in the current S3 the Priority Innovation Systems are defined on the basis of the utility to which the system itself relates or the utility it is intended to produce. The main purpose of this change is to favour diversification towards complementary and related sectors and - at the same time – to focus on the impact generated by innovation. By way of example, mobility rather than means of transport, health rather than the pharmaceutical or biomedical industry, the evolution of manufacturing rather than the machine tool industry (mechatronics). The idea is to bring the end user or beneficiary of the innovation (company, citizen, consumer, public institution, community, etc.) to the centre, by conceiving them as possible protagonist of innovation itself.



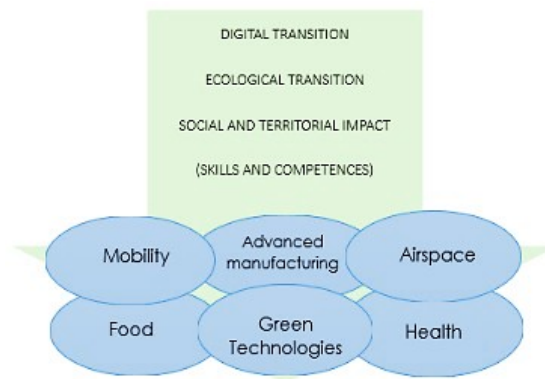
**FIGURE 3 - TRANSITION FROM AREAS OF EXPERTISE TO PRIORITY INNOVATION SYSTEMS (SOURCE: PIEDMONT REGION, LA STRATEGIA DI SPECIALIZZAZIONE INTELLIGENTE DEL PIEMONTE, 2021)**

The Priority Systems that replaced the Specialisation Areas of the S3 2014-2020, besides aiming at enhancing the inter-dependencies and interrelations between all the actors involved in the creation of the utilities to which they refer, also intends to reward or incentivise the transversality of projects, in the light of the spin-offs generated on multiple spheres of activity.

Priority systems are guided in their evolution by the three cross-sectoral components of innovation (formerly 'development trajectories'):

1. **Digital Transition:** supporting the digital innovation demand and capacity of enterprises, also through collaborations with research centres, technology transfer agencies, digital service providers. Its aim is to foster technological growth and product and process innovation in the area's industrial and service systems.
2. **Ecological transition:** encouraging the innovation and green conversion of existing production systems , by combining sustainability objectives with a vision of industrial competitiveness in high value-added sectors.
3. **Social and territorial impact:** this is a new component, which makes the spill-over effect that innovation determines on citizens and territorial communities explicit.

The three components are sided by a fourth horizontal component 4) **skills and competences** for innovation, as a qualitative criterion for guiding or rewarding interventions. The three main cross-sectoral components of innovation are binding; this implies that the research and innovation projects to be supported must fall within at least one of the three components.

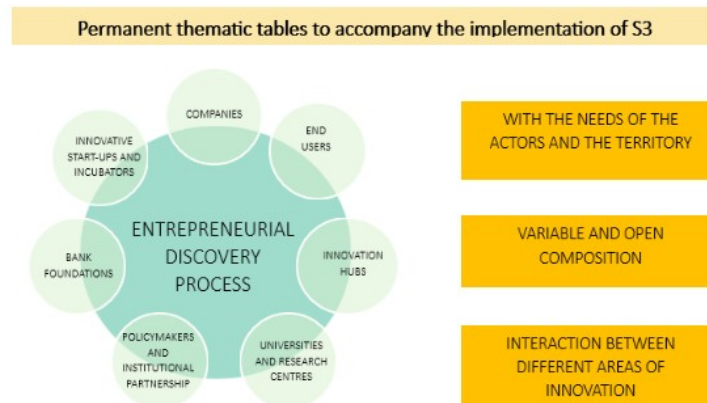


**FIGURE 4 - INTERSECTION BETWEEN SPI AND CTI (SOURCE: PIEDMONT REGION, LA STRATEGIA DI SPECIALIZZAZIONE INTELLIGENTE DEL PIEMONTE, 2021)**

The process of entrepreneurial discovery implies that policies are not set with a direct, centralised and "top-down" logic, but are shaped through new needs emerging from the territory of reference.

This process constitutes a central element for the implementation of the new Strategy, and it could be characterised by frequent modifications, starting from the initial identification of the main characteristics of the regional innovation ecosystem and the subsequent definition of the S3, up to and including the evolutions that may occur throughout the programming period. This will make it possible to adapt policies to the actual transformations occurring in the territory. For this reason, permanent Thematic Tables have been set up.

The main way in which this involvement in the process will be implemented will be through the so-called Thematic Tables. The tables will have a structure with a variable composition, which responds to a logic of flexibility and openness, and will be the places for dialogue and partnership comparisons between enterprises, research centres and the academic world, local communities, professions and Public Administration, with particular attention to the subjects that make up the so-called Quadruple Helix (economic world, research, public administration and end users). The trajectories and priorities identified in the technical dialogue of the Thematic Tables will be transferred to the regional policy dimension and then fed into the funding schemes with which S3 will be implemented.



**FIGURE 5 - ENTREPRENEURIAL DISCOVERY PROCESS**

The Tables are organised on the basis of the Priority Systems of Innovation and will have the task of both producing knowledge and gathering feedback, as well as investigating specific topics, gathering information, making proposals for initiatives and promoting the involvement of stakeholders and good practice bearers in the S3 development process. The outcomes of these collaborative processes will take the form of indications on potential new trajectories within the Priority Systems, as a basis for the activation of actions and initiatives that are more consistent with emerging trajectories. A further central element of the mission entrusted to the Tables is that of highlighting cross-sectoral innovation trajectories between Priority Systems, in order to bring out new opportunities and specialisations resulting from the contamination between different sectors.

## 2.4 DEMOGRAPHIC STRUCTURE OF ITALIAN AND REGIONAL CLUSTERS

For the purposes of drawing out a map of clusters operating in Italy, the cluster mapping tool developed by the European Cluster Collaboration Platform<sup>6</sup> and freely available for consultation through its website<sup>7</sup> was used. The mapping tool enables users to visualise data on cluster organisations and other types of cluster actors<sup>8</sup> that are profiled on the European Cluster Collaboration Platform. The tool was used to identify cluster organisations active in the country.

According to the definition offered by the Smart Guide to Cluster Policy<sup>9</sup> published in 2016 by the EC's European Observatory on Clusters and Industrial Change, cluster organisations are the legal entities that support the strengthening of collaboration, networking and learning in innovation clusters and act as innovation support providers by providing or channelling specialised and customised business support services to stimulate innovation activities, especially in SMEs. They are usually the actors that facilitate strategic partnering across clusters.

88 cluster organisations appear to be active in Italy in January 2024 (and affiliated to the ECCP), as shown in the image below (Figure 6).

In Figure 6, results are grouped based on the number of active cluster organisations: a green dot shows in areas registering less than 10 active cluster organisations, whereas yellow dots signal the presence in the area of a number of cluster organisations ranging from 10 to a hundred. The largest share of Italian cluster organisations profiled by the ECCP operate in the north-west of the country and, more precisely, in Piedmont, Lombardy and Emilia-Romagna.

This is confirmed by the Country Factsheet on cluster policies and programmes that the ECCP drafted in 2022 for each of the 27 EU countries, including Italy<sup>10</sup>, and for a selection of non-European countries. According to Italy's Country Factsheet, the regions hosting the largest number of cluster organisations are indeed Piedmont, Lombardy and Emilia-Romagna, whereas Liguria (in the southern part of Italy's north-west), the Autonomous Province of Trento (in the north-east of Italy) and Marche (in central-eastern Italy) are the regions registering the lowest number of cluster organisations. Figure 7 illustrates the distribution of cluster organisations in 15 of Italy's regions (all those registering at least 1 cluster organisation).

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6 The European Cluster Collaboration Platform acts as an online hub for cluster stakeholders (cluster organisations, policymakers and other related stakeholders from cluster ecosystems) and as the reference one-stop-shop for stakeholders in third countries aiming to set up partnerships with European counterparts. In 2020, the European Observatory for Clusters and Industrial Change (established under the initiative of the "Clusters, Social Economy and Entrepreneurship" unit of the European Commission's Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs) merged with the European Cluster Collaboration Platform. The Platform's ultimate goals are to strengthen the competitiveness and sustainability of Europe's economy and industry, particularly SMEs, improving their performance in terms of productivity, innovation, internationalisation and resource efficiency through collaboration.

7 <https://reporting.clustercollaboration.eu/all#>

8 The types of cluster actors mapped by the ECCP are the following: clusters organisations; cluster organisation members; EUROCLUSTERS, European Cluster Partnerships & Initiatives; National Associations of Clusters; Meta-Clusters & Cluster Networks; Policy or Public Institutions; Research Efficiency Support Providers; Training Providers; Other Innovation Actors.

9 [https://clustercollaboration.eu/sites/default/files/news\\_attachment/smart\\_guide\\_to\\_cluster\\_policy.pdf](https://clustercollaboration.eu/sites/default/files/news_attachment/smart_guide_to_cluster_policy.pdf)

10 [https://clustercollaboration.eu/sites/default/files/2023-06/ECCPfactsheet\\_Italy\\_2022\\_final.pdf](https://clustercollaboration.eu/sites/default/files/2023-06/ECCPfactsheet_Italy_2022_final.pdf)



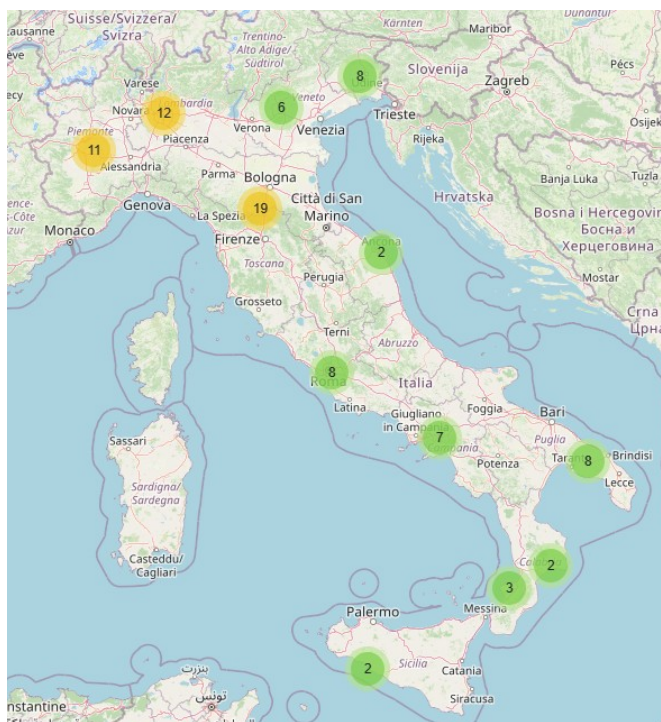


FIGURE 6 - ITALIAN CLUSTER ORGANISATIONS (SOURCE: ECCP MAPPING TOOL)

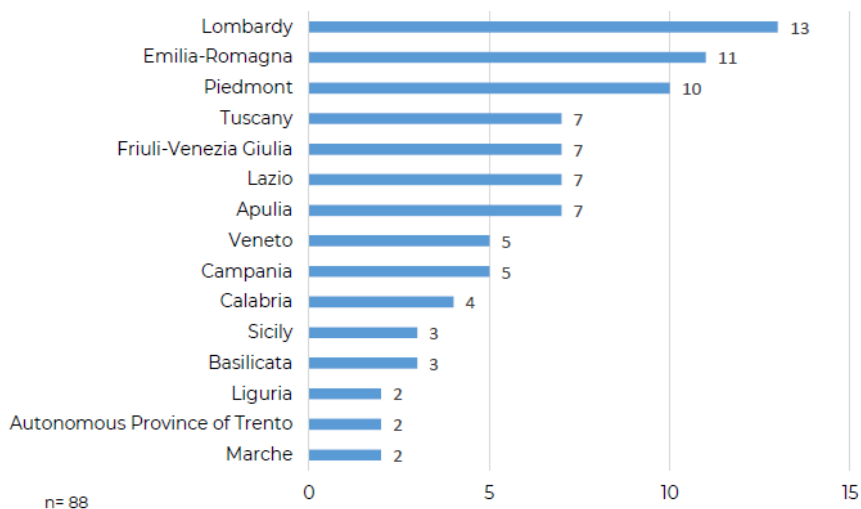
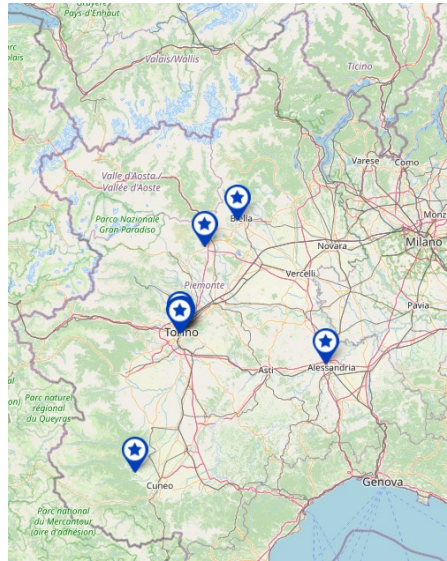


FIGURE 7 - CLUSTER ORGANISATIONS DISTRIBUTION AMONG ITALY'S REGIONS (SOURCE: ECCP 2022 COUNTRY FACTSHEET ON ITALY)

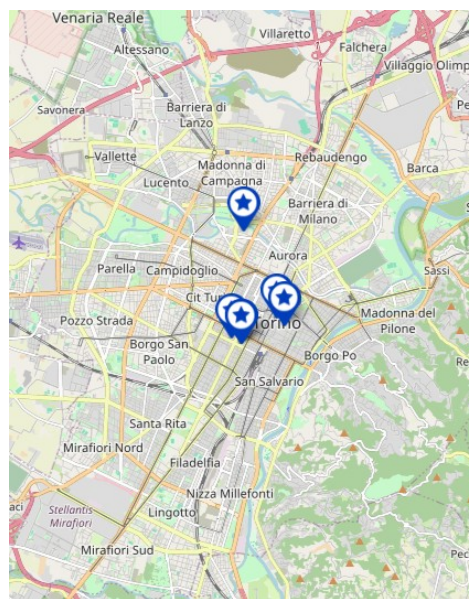
Mapped cluster organisations operate in the following industrial ecosystems (2022 ECCP Country Factsheet on Italy): digital; health; constructions; mobility-transport-automotive; creative and cultural industries; agri-food; aerospace and defence; renewable energy; proximity and social economy; textiles; energy-intensive industries; tourism.

SMEs (87%, EU: 84%) followed by large enterprises (7%, EU: 9%) and research organisations (7%, EU: 7%) constitute the majority of their member organisations.

Piedmont hosts 10 cluster organisations profiled by the ECCP (Figure 8), 6 out of which are based in Turin (Figure 9).



**FIGURE 8 - THE 10 CLUSTER ORGANISATIONS OPERATING IN PIEDMONT (SOURCE: ECCP MAPPING TOOL)**



**FIGURE 9 - A DETAIL OF THE 6 ORGANISATIONS BASED IN TURIN (SOURCE: ECCP MAPPING TOOL)**

These are:

- the 7 regional innovation clusters (*Poli d'innovazione regionali*) which received financial support from Piedmont's 2014-2020 European Regional Development Fund Regional Operational Programme (ERDF ROP) in the course of the 2014-2020 European Cohesion Policy cycle and that are now part of *Sistema Poli Piemonte* (see the chapter "Analysis of Piedmont's cluster organisations"):
  - **AgriFood** regional innovation cluster, managed by M.I.A.C. and operating in the Province of Cuneo (Piedmont's South-Western Province);
  - **BioPmed** regional innovation cluster on life sciences and health, managed by Bioindustry Park Silvano Fumero and located in Ivrea (North of Turin);

- **CLEVER** regional innovation cluster on clean-tech and energy, managed by Environment Park & Un.I.Ver. and located in Turin;
- **CGREEN** regional innovation cluster on green chemistry and advanced materials, managed by Proplast, the Science and Technology Park of Valle Scrivia and the IBIS Consortium and operating in the Province of Alessandria (in the South-East of Piedmont)<sup>11</sup>;
- **MESAP** regional innovation cluster on smart products and manufacturing, managed by Centro Servizi Industrie and based in Turin;
- **PO.IN.TEX** regional innovation cluster on textiles, managed by Città Studi S.p.A and operating in the Province of Biella, in Piedmont's North-East;
- the **ICT** regional innovation cluster managed by Piemonte Innova Foundation and located in Turin<sup>12</sup>;
- **Piedmont's Aerospace Cluster** (Distretto Aerospaziale Piemonte), located in Turin;
- **Torino Social Impact**, a cluster on social innovation and aimed at promoting the transition to a social-impact economy, located in Turin;
- **SmartCommunitiesTech**, the National Technological Cluster for Smart Communities, whose headquarter is based in Turin.

**National Technological Clusters (NTCs)** are networks of public and private entities cooperating all across the country on industrial research, technology transfer and training in specific industrial and technological sectors, identified as being of strategic importance for the country. They act as coordinators of the wide variety of actors operating in each sector, encouraging the activation among them (especially businesses and research bodies) of exchanges and collaborations, as well as their one-stop representatives, available for consultation from the part of the Italian Ministry for Universities and Research.

NTCs were established by said Ministry starting in 2012, when the first call for proposals was launched (Directorial Decree no. 257 of the 30<sup>th</sup> of May 2012<sup>13</sup>), resulting in the selection of eight projects<sup>14</sup> for the establishment of National Technological Clusters and the implementation of their respective Strategic Development Plans. A second call for proposals was then launched in 2016 (Directorial Decree no. 1610 of the 3<sup>rd</sup> of August 2016<sup>15</sup>), resulting in the selection of further 4 projects<sup>16</sup>. The complete list of National Technological Clusters is the following:

- CFI, the National Technological Cluster on smart-factories, headquartered in Bologna;
- Spring Cluster, the NTC on green chemistry and circularity, whose headquarter is located in Milan;
- ALISEI, the life-sciences NTC, headquartered in Milan;
- Trasporti Italia 2020, the NTC on mobility and transport, headquartered in Rome;

11 On the map the cluster shows through one of its managing bodies, Proplast.

12 On the map the cluster shows through its managing body, Piemonte Innova Foundation.

13 <https://www.miur.gov.it/documents/20182/85580/Decreto+Direttoriale+257+del+30+maggio+2012+%E2%80%93+Avviso+per+lo+sviluppo+e+potenziamento+di+Cluster+Tecnologici+Nazionali.pdf/d535d3f3-6a20-4e32-ad0c-7c32288f9f0f?version=1.0&t=1495045004118>

14 <https://www.miur.gov.it/documents/20182/85580/Decreto+Direttoriale+1883+dell+%E2%80%9911+ottobre+2013+%E2%80%93+Graduatoria+Cluster+Tecnologici+Nazionali+e+Progetti+ammessi+a+finanziamento.pdf/726560af-29b9-464a-b830-1f9ee9ad9d23?version=1.0&t=1495112358969>

15 [http://attiministeriali.miur.it/anno-2016/agosto/dd-03082016-\(3\).aspx](http://attiministeriali.miur.it/anno-2016/agosto/dd-03082016-(3).aspx)

16 <https://www.miur.gov.it/documents/20182/85580/DD+n.74+del+18-01-2018+con+Allegato+1.pdf/c0e54b7f-5f5e-4f64-b423-cc615b5dae19?version=1.0&t=1516293778428>

- C.L.A.N., the agri-food NTC, also headquartered in Rome;
- CTNA, the NTC on aerospace, based in Rome;
- SmartCommunitiesTech, the NTC on smart communities, based in Turin;
- TAV, the Tech for Life NTC, based in Lecco (Lombardy);
- TICHE, the NTC on technological innovation for cultural heritage, headquartered in Naples;
- MINIT, the Made-in-Italy NTC, based in Milan;
- Blue Italian Growth - BIG, the blue-economy NTC, based in Naples;
- the energy NTC, headquartered in Rome.

A relevant cluster organisation operating in the region and based in Turin which doesn't show on the online map curated by the ECCP is **CIM4.0**, one of Italy's 8 High-Specialization **Competence Centres**. These were established according to Law no. 232 of the 11<sup>th</sup> of December 2016 (art. 1, clause 115), as public-private partnerships aimed at the promotion and implementation of applied research, technology transfer and training projects, consistent with Industry 4.0 National Plan. CIM4.0, "Competence Industry Manufacturing 4.0" is the national Competence Centre for technology transfer and the dissemination of skills related to manufacturing and service industries<sup>17</sup>. Competence Centres were first funded via the national budget and the 2014-2020 "Business and Competitiveness" National Operational Programme. From 2023 to 2025, their activities are instead funded by the Recovery and Resilience Facility, through the National Recovery and Resilience Plan (NRRP)<sup>18</sup>.

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17 <https://cim40.com/en/>

18 <https://www.mimit.gov.it/it/incentivi/centri-di-competenza-ad-alta-specializzazione>

## CHAPTER III: STATE / REGIONAL SUPPORTS FOR CLUSTERING

This chapter illustrates a series of national and regional policies, tools and/or programs currently supporting clustering in Italy. Among the existing programs and tools, only those actually targeting Piedmont (or the metropolitan area of Turin specifically) and currently under implementation were selected. These are:

- Action I.1i.3 of Piedmont Region's European Regional Development Fund (ERDF) Regional Programme (RP) for the 2021-2027 programming period: "Support for the innovation ecosystem";
- Investment 1.5 of Mission 4, Component 2, of Italy's National Recovery and Resilience Plan (NRRP), funded by the Recovery and Resilience Facility: "Establishing and strengthening of *"innovation ecosystems for sustainability"*, building *"territorial leaders of R&D"*" (hereafter "Innovation Ecosystems");
- Investment 2.3 of Mission 4, Component 2, of Italy's National Recovery and Resilience Plan (NRRP), funded by the Recovery and Resilience Facility: "Strengthening and sectorial/territorial extension of technology transfer centres by industry segments".

### 3.1 ACTION I.1i.3 OF PIEDMONT REGION'S EUROPEAN REGIONAL DEVELOPMENT FUND (ERDF) REGIONAL PROGRAMME (RP) FOR THE 2021-2027 PROGRAMMING PERIOD

Piedmont's **ERDF Regional Programme (RP)** for the **2021-2027** programming period was approved by the European Commission on the 7<sup>th</sup> of October 2022 with Decision C(2022)7270<sup>19</sup>.

With a budget of almost €1.5 billion (by €500 million greater than that of the 2014-2020 ERDF Regional Operational Programme), the Programme will support piedmontese businesses in facing the challenges currently at play and promote the inclusive and sustainable growth of the region.

The Programme is consistent with the two regional cross-cutting strategies for smart specialisation ("Smart Specialisation Strategy", S3) and sustainable development ("Regional Strategy for Sustainable Development", RSSD), both related to innovation, competitiveness and sustainability, and it is structured around 5 Priorities:

- I Priority, "**R&D&I, competitiveness and the digital transition**" (referring to the 2021-2027 EU Cohesion Policy Strategic or Policy Objective no. 1, for a more competitive and smarter Europe);
- II Priority, "Green transition and resilience" (referring to Policy Objective no. 2, for a greener, low carbon Europe, transitioning towards a net zero carbon economy);
- III Priority, "Sustainable Urban Mobility" (again referring to Policy Objective no. 2);
- IV Priority, "Infrastructures for skills development" (referring to Policy Objective no. 4, for a more social and inclusive Europe);
- V Priority, "Territorial cohesion and development" (contributing to Policy Objective no. 5, aiming at bringing Europe closer to its citizens by fostering the sustainable and integrated development of all types of territories).

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<sup>19</sup> [https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2022-10/decisione\\_c2022\\_7270\\_approvazione\\_pr\\_fesr.pdf](https://www.regione.piemonte.it/web/sites/default/files/media/documenti/2022-10/decisione_c2022_7270_approvazione_pr_fesr.pdf)



The largest share of the Programme's budget is assigned to its first Priority and to the Actions it envisages. Among them is **Action I.1i.3, "Support for the innovation ecosystem"**, contributing to Specific Objective RSO1.1, "Developing and enhancing research and innovation capacities and the uptake of advanced technologies". A total budget of €350 million (inclusive of both the ERDF share, amounting to €126 million, and the national co-financing share) is assigned to RSO1.1.

Action I.1i.3 aims to strengthen the regional innovation system by supporting **regional innovation clusters** (*Poli regionali d'innovazione*) as qualified agents of the innovation ecosystem acting as their coordinators and catalysts and as strategic partners of the Regional administration in the definition of technological roadmaps and scenarios and in the participation to national and European initiatives.

**Established in:** the Region's 2021-2027 ERDF RP was approved by the European Commission on the 7<sup>th</sup> of October 2022. A first-time implementation of Action I.1i.3, "Support for the innovation ecosystem", was kicked off by the issuing of *Delibera di Giunta Regionale* (Deliberation of the regional executive body) no. 17/7152 del 03/07/2023, as the programming act illustrating the policy's aims and features. A call for proposals addressed at regional innovation clusters was then launched – "Support for regional clusters development programmes jointly implemented by regional Innovation Clusters, consistent with the Cross-cutting Components of Innovation (*Componenti Trasversali dell'Innovazione*, CTI) identified by the regional 2021-27 Specialization Strategy"<sup>20</sup> – open from the 28<sup>th</sup> of August 2023 to the 28<sup>th</sup> of September 2023. Outcomes have yet to be published.

**Responsible Institution / Department:** Piedmont Region, Directorate for Competitiveness (acting as the Managing Authority of the ERDF 2021-2027 Regional Program).

**Aims:** the initiative aims to support a "Program of Regional Innovation Clusters activities" carried out jointly by the clusters. The Program must be related to the three "Cross-cutting Innovation Components" (*Componenti Trasversali dell'Innovazione*) identified by the regional 2021-27 Smart Specialisation Strategy – namely, "Digital Transition", "Ecological Transition" and "Social and territorial impact" – and will be selected among the applications submitted by the regional Innovation Clusters' managing entities, which are equipped with solid expertise on S3 areas, until the 28<sup>th</sup> of September.

The funded Program will include the following activities:

- animation and networking of the regional innovation and research system;
- elaboration of technology roadmaps related to the S3 Cross-cutting Components of Innovation and to the Priority Systems of Innovation;
- support of the S3 governance and "entrepreneurial discovery process" (the process by which new areas of specialisation on which to invest are identified, with the collaboration of cluster members), promoting an open and interrelated innovation between sectors and areas of specialisation;
- assist the participation of regional innovation and research system actors in extra-regional initiatives, networks and platforms, and promote the internationalisation of the system;
- support for the detection of training needs of the companies, in order to help the matching between training demand and supply;
- sustain the Region in fostering synergy and complementarity between regional and extra-regional R&D support programmes in order to promote attraction of resources and maximise the impact of public funding;

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<sup>20</sup> <https://bandi.regione.piemonte.it/contributi-finanziamenti/sostegno-programmi-sviluppo-cluster-regionali-pr-fesr-2127>

- identification of projects of excellence in the research and innovation system, dissemination and valorisation of project results and elaboration of a showcase of best practices, also aimed at fostering the translation of research outcomes into industrial and economic value;
- encourage a greater involvement of the entrepreneurial system in R&D public policies, by: intercepting companies not yet involved in aid programmes for innovation; promoting cooperation among companies and between companies and research players; guiding companies in correctly targeting projects within the renewed regional system of support instruments for R&D; contributing to the qualification of the companies' human resources; by encouraging the launch and development of entrepreneurial initiatives;
- promote the participation of SMEs in the initiatives that will spring from the strategic projects linked to the creation of "research and knowledge sites" such as the "Science and Environment Hub" (*Polo delle Scienze e dell'Ambiente*) to be established in Grugliasco and the so-called "Airspace City" (*Città dell'Aerospazio*).

The Program that will be selected will have to be fully implemented by 31/12/2026.

**Finance:** the total budget allocated for the call for proposals amounts to €7,000,000.00 and only one project (the Program) will be selected among the applications received. Piedmont's 2021-2027 ERDF RP will finance eligible expenses such as staff, instruments and equipment, consulting fees, communication, promotion and animation, general costs (a share of them). The facilitation consists of a non-repayable grant covering 50% of eligible costs.

**Centralised Supports:** all 7 regional Innovation Clusters are part of "Sistema Poli Piemonte", a system launched in 2022 with the aim of making the most out of the specialized skills developed by regional clusters since 2009, by fostering cooperation, exchange and networking among clusters.

**KPIs:** Action I.1i.3 contributes to the achievement of the targets associated to the Program's output and outcome indicators referring to Specific Objective RSO1.1, namely "Projects for the strengthening of the regional system" (output indicator ISO1) and "New registrations to the innovative Start-ups and SMEs sections of the Business Register" (outcome indicator ISR1).

**Further information:** <https://bandi.regione.piemonte.it/contributi-finanziamenti/sostegno-programmi-sviluppo-cluster-regionali-pr-fesr-2127> .

### 3.2 ITALY'S NATIONAL RECOVERY AND RESILIENCE PLAN (NRRP), FUNDED BY THE RECOVERY AND RESILIENCE FACILITY (RRF) – MISSION 4 – COMPONENT 2

**Italy's National Recovery and Resilience Plan (NRRP)** was approved by the Council of the EU on the 13<sup>th</sup> of July 2021<sup>21</sup> and later amended on the 19<sup>th</sup> of September 2023<sup>22</sup> – when a targeted revision of the plan was approved, concerning a selection of targets and milestones to be attained for the disbursement of the third NRRP instalment to be authorised by the European Commission – and then again on the 8<sup>th</sup> of December 2023<sup>23</sup>, when a more extensive revision of the Plan (including the addition of a new REPowerEU chapter) was approved by the Council.

21 Council Implementing Decision of 13 July 2021 on the approval of the assessment of the recovery and resilience plan for Italy. The original plan can be downloaded through the following link: <https://www.governo.it/sites/governo.it/files/PNRR.pdf>

22 Council Implementing Decision of the 19 September 2023 amending Implementing Decision of 13 July 2021 on the approval of the assessment of the recovery and resilience plan for Italy. Available online at the following link: <https://data.consilium.europa.eu/doc/document/ST-12259-2023-INIT/en/pdf>



Italy's NRRP consists of 7<sup>24</sup> so-called Missions, each of which is further divided into Components. The Plan's fourth Mission, "Education and Research", is made up of two Components: Component 1, "Strengthening the provision of education services: from nurseries to universities", and Component 2, "From research to business".

11 Investments and 1 Reform make up Mission 4, Component 2, of the Plan, for a total expenditure of around € 11.4 billion.

This Component aims to support investment in Research and Development (R&D), to promote innovation and the dissemination of technologies, to strengthen skills, and to foster the transition to a knowledge-based economy. The three lines of action envisaged cover the entire chain of the research and innovation process, from basic research to technology transfer, with measures that differ both in the degree of heterogeneity of the networks between universities, Research centres/institutions and enterprises either by the degree of technological maturity or TRL (Technology Readiness Level).

### 3.2.1 INVESTMENT 1.5 "ESTABLISHING AND STRENGTHENING OF "INNOVATION ECOSYSTEMS FOR SUSTAINABILITY", BUILDING "TERRITORIAL LEADERS OF R&D"

Investment 1.5, "**Establishing and strengthening of "innovation ecosystems for sustainability", building "territorial leaders of R&D"**" is implemented by the Ministry for Universities and Research (*Ministero dell'Università e della Ricerca*, MUR) and was assigned a budget of **€ 1.3 billion**. Its goal is to finance by 2026 **at least 10** so-called "territorial leaders of R&D" – meaning 10 projects for the consolidation or development of **territorial innovation ecosystems** and the implementation by each of their respective Research and Innovation Programme – which shall be selected on the basis of specific competitive procedures.

**Established in:** Italy's NRRP was approved in July 2021; the Ministry responsible for Investment 1.5 of Mission 4, Component 2, kicked off its implementation by issuing Ministerial Decree n. 1141 on the 7<sup>th</sup> of October 2021, approving a set of Guidelines for the implementation of Investments 1.3, 1.4, 1.5 and 3.1 of Mission 4, Component 2. The competitive procedure for the selection of projects to be granted financing was launched on the 30<sup>th</sup> December 2021, through the publication of a dedicated call for projects<sup>25</sup> (Directorial Decree no. 3277 of the 30<sup>th</sup> December 2021) open from the 24<sup>th</sup> of January 2022 to the 24<sup>th</sup> of February 2022. 11 projects were granted financing on the 23<sup>rd</sup> of June 2022 (through Directorial Decrees nos. from 1049 a 1059).

One of the selected projects (**NODES** – NORD OVEST DIGITALE E SOSTENIBILE<sup>26</sup>, meaning "Digital and Sustainable North-Western Italy") was presented by the Polytechnic University of Torino. It was awarded a total grant of € 109.992.488,81. NODES is an Innovation Ecosystem that extends from Piedmont to the bordering region of Valle D'Aosta, to the provinces of Pavia, Como and Varese, in

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23 Council Implementing Decision of the 8 December 2023 amending Implementing Decision of 13 July 2021 on the approval of the assessment of the recovery and resilience plan for Italy. Available online at the following link: <https://data.consilium.europa.eu/doc/document/ST-16051-2023-INIT/en/pdf>

24 Italy's NRRP, approved by the EU Council the 13<sup>th</sup> of July 2021, consisted of 6 Missions, which became 7 with the revised Plan approved by the Council on the 8<sup>th</sup> of December 2023, which includes also the RepowerEU Chapter.

25 <https://www.mur.gov.it/sites/default/files/2021-12/Avviso%20n.%203277%20del%2030-12-2021.pdf>

26 <https://www.ecs-nodes.eu/>

Lombardy. The ecosystem's partners are 24, including universities, innovation clusters, research centres, competence centres, incubators and accelerators, and it is organized into 7 Spokes.

**Responsible Institution / Department:** Italian Ministry for Universities and Research (*Ministero dell'Università e della Ricerca*, MUR)

**Aims:** Innovation Ecosystems are clusters of highly qualified and internationally renowned public and private universities, Public Research Bodies, local and territorial authorities and/or other public and private actors, which are organized into networks with the aim of promoting the activation of collaborations and exchanges among the research domain, public bodies and the productive fabric of the areas in which the ecosystems are established and operate. Each Innovation Ecosystem refers to a specific area of technological specialization, that is consistent with the productive specializations of the area in which the ecosystem operates. Besides that of fostering cooperation among its partners, the goals driving innovative ecosystems are to facilitate and support technology transfer and to accelerate the digital and green transformation of the productive processes employed by the firms operating in the area (especially SMEs).

Innovation Ecosystems are subject to a *Hub&Spoke* governance structure:

- the Hub, which is specifically set up for the establishment of the Innovation Ecosystem, in a stable, non-temporary form, and which has autonomous legal personality, acts as the representative of the Ecosystem and as its point of contact with the Ministry for Universities and Research. It manages and coordinates the Ecosystem, through a dedicated program manager and adequate internal organization;
- Spokes are involved in the implementation of the Ecosystem's activities. Each Spoke reports to the Hub on the activities that it carries out and on all related expenses and receives from the Hub consequent funding. Spokes that are public in nature must activate "cascade calls" amounting to at least 10% of the funding allocated to the Innovation Ecosystem (and to a maximum of 50% of said funding) for the recruitment of researchers and technologists, to grant to non-members funding for research activities consistent with the Ecosystem's Research and Innovation Programme and for purchasing supplies and services necessary for its functioning.

The Ecosystem's Research and Innovation Programs must involve activities falling into the following categories: (a) applied research carried out jointly by universities and enterprises, in particular SMEs, operating on the territory; (b) technology transfer and knowledge and research results valorisation; (c) support for start-ups and spin-offs (including incubation services and venture capital financing); (d) innovative training activities carried out in collaboration by universities and businesses and aimed at reducing the mismatch between skills required by businesses and skills provided by universities; (e) industrial doctorates; (f) activities for the involvement of local communities and civil society on innovation and sustainability issues.

Each Ecosystem's programme has a 36 months duration, starting from the date on which the project was selected and the grant awarded. The Ministry will be able to authorize extensions, though every Programme will have to be fully implemented by the 28<sup>th</sup> February 2026.

**Finance:** according to the call for proposals, the grant awarded to each Ecosystem could amount to a minimum of € 90 million and a maximum of € 120 million. Each of the 11 selected Innovation Ecosystems was actually granted more than € 110 million on average, for the establishment of the Ecosystem and the implementation of its 36-months Research and Innovation Programme.

Eligible expenses include: expenses for the compensation of the professionals engaged in the implementation of the Ecosystem's Research and Innovation Programme; expenses for the acquisition of materials, equipment and licenses necessary for the implementation of the programme; expenses relating to consultancy services; costs relating to the acquisition of buildings and land (including built-up land) amounting to a maximum of 10% of the total project cost; management and administrative costs (maximum 10% of eligible direct personnel costs); indirect costs, which are to be compensated through a Simplified Cost Option (to account for indirect costs, ecosystems are paid 15% of direct personnel costs).

**Centralised Supports:** each Innovation Ecosystem is managed and coordinated by its Hub, through adequate internal organization and the appointment of a program manager. Office II of the Ministry's Directorate General for Research is responsible for Investment 1.5 of Mission 4, Component 2, of Italy's National Recovery and Resilience Plan. A dedicated Directorate General called "*Unità di Missione per l'attuazione degli interventi del PNRR del MUR*" (Mission Unit for the implementation of the Ministry's NRRP initiatives) was established inside the Ministry with the role of supervising the implementation of NRRP investments and reforms. The Unit is structured in three offices, two of which are respectively dedicated to the monitoring of NRRP projects and to their reporting and control.

**KPIs:** Ecosystems are subject to the following dimensional requirements: at least 250 people are involved in the Ecosystem's activities; at least 5 Spokes are formed; each Spoke involves at least 30 people (for the implementation of its activities, as illustrated in the Ecosystem's Research and Innovation Programme). Also, Spokes that are public in nature must activate "cascade calls" amounting to at least 10% of the funding allocated to the Innovation Ecosystem (and to a maximum of 50% of said funding) for the recruitment of researchers and technologists, to grant to non-members funding for research activities consistent with the Ecosystem's Research and Innovation Programme and for purchasing supplies and services necessary for its functioning.

**Further information:** <https://www.mur.gov.it/it/pnrr/misure-e-componenti/m4c2/investimento-15-creazione-e-rafforzamento-di-ecosistemi>

### 3.2.2 INVESTMENT 2.3 "STRENGTHENING AND SECTORIAL/ TERRITORIAL EXTENSION OF TECHNOLOGY TRANSFER CENTRES BY INDUSTRY SEGMENTS"

Investment 2.3 "**Strengthening and sectorial/ territorial extension of technology transfer centres by industry segments**" aims to support a network of fifty centres, which will be responsible for project development, the provision of advanced technological services to companies and innovative and qualifying technology transfer services. This measure pursue also the scope to simplifying and rationalizing the centres to increase advanced technological services for companies by focusing on cutting-edge manufacturing technologies and specializations.

The Investment consists of two lines of interventions:

- under the first line, the RRF finances 35 centres (Competence Centres, Seal of excellence and others) exclusively, without any support from other EU sources, by the end of 2025.
- under the second line, the RRF finances a part of 13 European Digital Innovation Hubs (EDIH) and two Testing and Experimentation Facilities (TEF), with the other share of the cost coming from the Digital Europe Programme, by the 30<sup>th</sup> June 2026.

**Established in:** Italy's NRRP was approved in July 2021, followed by the decree of the Minister of Economy and Finance of the 6<sup>th</sup> of August 2021 "*Allocation of the financial resources foreseen for the implementation of the interventions of the National Recovery and Resilience Plan (PNRR) and allocation of targets and targets for half-yearly reporting deadlines*" which for the implementation of Investment 2.3 assigned the amount of **€ 350.000.000**.

The Ministry responsible for Investment 2.3 of Mission 4, Component 2, published the **Ministerial Decree on the 10<sup>th</sup> of March 2023** defining the resources, procedures and criteria for funding the different types of centres and the two lines of intervention. With this Decree the Ministry allocated 113,4 million euros for the activities of the eight Competence Centres<sup>27</sup>, 114.500.000 € for financing the Seals of excellence, 33.559.000 € for co-finance the European Digital Innovation Hubs; and established a Steering committee that will have the task to monitor the performance of the activity and to promote the coordination between the various subjects involved.

EDIHs, as indicated above, are also funded by European resources, in the context of the "Digital Europe Programme". It supports the digital transformation of European societies and economies through the creation of a European network of digital innovation poles (European Digital Innovation Hubs - EDIHs) pre-selected by the individual Member States and subsequently selected by the European Commission. The Digital Europe Programme goal is to ensure the digital transition of the industry, with particular reference to SMEs, and public administration through the adoption of advanced digital technologies, such as artificial intelligence, high-performance computing, cybersecurity.

A Memorandum of Understanding was signed on the 6<sup>th</sup> of August 2020<sup>28</sup> between the Ministry for Economic Development, the Ministry for Universities and Research and the Ministry for Technological Innovation and Digitisation, which had the purpose of structuring institutional collaboration for the implementation of the pre-selection procedure and national co-financing. Therefore the Ministry for Economic Development published a Directorate Decree<sup>29</sup> the 17<sup>th</sup> of August 2020 for the pre-selection of Digital Innovation Hubs operating in the national territory deemed eligible to participate in the European restricted calls.

The European Commission launched two calls (the first opened from November 2021 to February 2022 and the second from September to November 2022), in which the digital innovation clusters that had passed the pre-selection phase of the Member States could participate. The EDIH, which exceed the threshold established in the restricted European calls, but which cannot be financed from the budget of the Digital Europe Programme, are awarded the "Seal of Excellence" label.

**Responsible Institution / Department:** Italian Ministry of Enterprises and Made in Italy (Ministero delle Imprese e del Made in Italy - MiMIT).

**Aims:** Investment 2.3 aims to support a network of 50 centres (Competence Centres, Digital Innovation Hubs, Seal of Excellence and others) in charge of project development and delivery of advanced technology services and innovative technology transfer services to enterprises. The services provided by the centres shall include: i) digital assessment, ii) test-before-invest, iii) training; iv) access to finance; iv) financial and operating support to the development of innovation projects

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<sup>27</sup> Italy's 8 High-Specialization Competence Centres were established according to Law no. 232 of the 11<sup>th</sup> of December 2016 (art. 1, clause 115), as described in paragraph 2.3 of this report.

<sup>28</sup> <https://www.mimit.gov.it/images/stories/documenti/Protocollo-intesa-domanda-pa-innovazione-2020.pdf>

<sup>29</sup> [https://www.mimit.gov.it/images/stories/documenti/Decreto\\_direttoriale\\_17\\_08\\_2020.pdf](https://www.mimit.gov.it/images/stories/documenti/Decreto_direttoriale_17_08_2020.pdf)

(Technology Readiness Level (TRL) more than 5); vi) technological brokerage; and vii) awareness raising at local level.

- **Competence Centres (CCs)** are stable consortia established through public-private partnerships whose task is to provide guidance and training activities for enterprises on Industry 4.0 issues and support in the implementation of innovation projects, industrial research and experimental development aimed at the implementation by user companies, particularly SMEs, of new products, processes or services (or their improvement) through advanced technologies in the context of Industry 4.0. One of the Competence Center, Competence Industry Manufacturing 4.0 (CIM 4.0) is located in Turin (as already described in paragraph 2.3). The Founding Members of CIM4.0 are Polytechnic University of Turin, University of Turin, Chamber of Commerce, Industry, Crafts and Agriculture and 21 large enterprises such as IREN, ENI, SIEMENS and TIM. CIM 4.0 makes available to SMEs in the automotive sectors, aerospace, ICT, energy and fuels, services for industries, software and hardware development, the experience and support of key players in the world of innovation and Italian industry.

According to the provisions of Decree No. 214 of 12 September 2017 provided by the Ministry of Economic Development, the CCs are responsible for providing a service of: guidance to enterprises, in particular SMEs, through development of a series of tools to support enterprises in assessing their level of digital maturity and technological; training for enterprises to promote and disseminate Industry 4.0 skills through training activities in the classroom, on the production line and on real applications; implementation of innovation, industrial research and experimental development, proposed by the enterprises, including those of collaborative nature between them, and the provision of technology transfer within Industry 4.0, also through stimulating business demand for innovation, in particular SMEs.

- **Digital Innovation Hubs** are hubs identified and selected in order to create a European network of technological proximity for small and medium-sized enterprises. As described in the Commission Implementing Decision on the financing of the Digital Europe Programme and adoption of the multiannual work programme – European Digital Innovation Hubs for 2021 - 2023 (C(2021) 7911 final<sup>30</sup>) an EDIH is a single entity or a coordinated group of entities with complementary expertise and a not-for-profit objective to support on a large scale the digital transformation of companies, especially SMEs and small mid-caps, and/or public sector organisations conducting non-economic activities. EDIHs provide services such as testing before investing, training and skills development, support to find investments, networking and access to innovation ecosystems.

The Commission has signed a grant agreement with 13 Italian EDIHs, for the first 36 months with the possibility, following an evaluation by the Commission, to extend the duration. The EDIHs themselves sign a grant agreement also with the Ministry of Enterprise and Made in Italy regarding national co-financing through a decree granting the funding. In the geographic area of Piedmont and Valle d'Aosta are located two EDIH: **CHEDIH**<sup>31</sup> focused on “circular health”, the connection between human health and the health of animals, plants, and the environment; **EXPAND**<sup>32</sup> (Extended Piedmont and Aosta valley Network for Digitalization), that has the scope to become a recognized European hubs capable of

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30 [https://ec.europa.eu/newsroom/repository/document/2021-45/C\\_2021\\_7911\\_1\\_EN\\_annexe\\_acte\\_autonome\\_cp\\_part1\\_v2\\_d4ygl3fB7OJrEhLGIXBaC5w0X0\\_80907.pdf](https://ec.europa.eu/newsroom/repository/document/2021-45/C_2021_7911_1_EN_annexe_acte_autonome_cp_part1_v2_d4ygl3fB7OJrEhLGIXBaC5w0X0_80907.pdf)

31 <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/chedih>

32 <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/expand>



providing digital evolution services on Artificial Intelligence and Decision Support Cyber security.

- **Seal of Excellence** are hubs, which have proven to be qualitatively satisfactory but that cannot be financed from the budget of the Digital Europe Programme and have been awarded the "Seal of Excellence" qualification. Therefore are financed entirely with national funds. Under the two restricted calls to identify EDIHs, the European Commission awarded the Seal of Excellence to 24 Italian projects, one of which is located in Piedmont and one in Piedmont, Valle d'Aosta and Friuli Venezia Giulia regions. The first one "**HD-MOTION**<sup>33</sup>" has the ambition to make SMEs and public administration achieve a big technological leap, forward by giving rapid acceleration to the development of enabling technology solutions, focusing on innovation and digitization of sustainable mobility and transportation services. The second "**Public Administration Intelligence**<sup>34</sup>" (PAI) is focused on the application of public services to citizens, delivered by Public Administrations (PAs) and, increasingly, by Social Economy Organizations (SEOs).

**Finance:** The final beneficiaries of the services provided by **EDIHs** are enterprises, particularly SMEs, as well as public administrations, within the limits of the provisions of the relevant national and European regulations. The national contribution to activities related to the provision of services to enterprises by EDIHs takes the form of state aid and is granted within the limits of the maximum aid intensities established by the GBER and *de minimis regulations*, subject to the conditions and exemption thresholds stipulated therein, in relation to the activity and size of the enterprise. To the final recipients, funding is transferred in the form of services provided. Upon the expiration of the Grant Agreement<sup>35</sup>, it shall be evaluated whether this condition has been met, and if not, the granted financing shall be recovered plus interest. The recipients of the services provided by the **CCs**<sup>36</sup> are enterprises, particularly SMEs (within the limits of the provisions of the relevant national and European regulations) that can access state grants to obtain a discount and use the resources and infrastructure provided by CCs. and receive services funded up to 100%. The activities financed by the CCs must be functional to strengthen the investments made in terms of know-how and equipment, to expand the range of services offered to businesses in terms of quality and quantity and to reach more enterprises.

**Centralised Supports:** The lead entities of each pole play the role of implementing entities of the measure, providing through their own facilities and with the help of affiliates, services to private enterprises. The Ministry signs an agreement with the implementing parties in order to regulate the relationships, information flow and controls required by national and EU regulations to also ensure

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33 <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/hd-motion>

34 <https://european-digital-innovation-hubs.ec.europa.eu/edih-catalogue/pai>

35 EDIHs sign two specific Agreements, one with the European Commission, which finances 50 percent of eligible costs, and one with the Ministry, subject to verification of compliance with relevant national and European provisions, which will finance the remaining 50 percent of costs. The Agreement identifies the obligations to be borne by the implementing party, the modalities for the implementation of the planned activity, the eligible expenses and costs, the project start date, the amount of the facilities that can be granted, the obligation to request the CUP, milestones and targets expected for each year, the modalities for monitoring, reporting and disbursement of grants, the checks and controls foreseen, the cases of total and partial revocation of the facilities, the cases of eligibility of subjective and objective variations in the agreement, as well as any additional agreed with the parties necessary for the best implementation of the project and its greater impact.

36 According to ministerial Decree 10<sup>th</sup> of March 2023, also the CCs and the Seal of Excellence have to sign a Convention, that identifies the obligations to be borne by the implementing party, with the Ministry,

compliance with all NRRP conditionalities. The implementing party signs an additional grant agreement with the affiliated entities to regulate its relations with them.

A Steering Committee (composed of five members) was established by the Directorial Decree of the 7<sup>th</sup> September 2023, in order to monitor the implementation of the activity and to promote coordination between the different stakeholders involved.

The General Directorate for Industrial Policy, Innovation and SMEs (*Direzione generale per la politica industriale, l'innovazione e le PMI*) is responsible for Investment 2.3 of Mission 4, Component 2, of Italy's National Recovery and Resilience Plan. A dedicated Directorate General called "*Unità di Missione per l'attuazione degli interventi del PNRR del MiMIT*" (Mission Unit for the implementation of the Ministry's NRRP initiatives) was established inside the Ministry with the role of supervising the implementation of NRRP investments and reforms. The Unit is structured in three offices, which are respectively dedicated to the management coordination, monitoring of NRRP projects and to their reporting and control.

**KPIs:** The Investment 2.3 has one target to be achieved by the 31<sup>st</sup> December 2025: entry into operation of 27 new hubs (CCs, Seal of Excellence or others) under the first line of intervention of the measure (excluded the eight Competence Centres already active); and three milestone or targets to achieve by the 30<sup>th</sup> June 2026. The first plans to disburse 307.000 € under the first line of intervention of the measure to technology transfer centres to strengthen the national network and to provide services to firms; the second to support by national financed centres at least 5.000 SMEs through the delivery of services that shall include: digital assessment, test-before invest, training; access to finance; financial and operating support to the development of innovation projects (TRL more than 5); technological brokerage; awareness raising at local level; the last provide the completion of all work packages of the 13 European Digital Innovation Hubs and two Testing and Experimentation Facilities.

**Further information:** <https://www.mimit.gov.it/it/pnrr/progetti-pnrr/pnrr-potenziamento-ed-estensione-tematica-e-territoriale-dei-centri-di-trasferimento-tecnologico>



## CONCLUSIONS – GOALS FOR POLICY LEARNING

This section presents the key experiences, challenges, and opportunities discussed within this case study, it identifies areas which can strengthen the solidification of the Italian and Piedmont Cluster Ecosystem in order to better support SMEs of all sectors to collaboratively tackle their green and digital transitions.

According to the European Commission, Italian economy is facing several significant macro-economic challenges. These challenges encompass sluggish productivity and economic growth, high levels of structural unemployment, and low participation in the labor market, particularly among women and youth. Additionally, there are persistent social and territorial disparities that continue to effect the country.

Italy's ability in sustaining competitiveness is obstructed by its low spending on research and development (R&D), amounting to merely 1.3 percent of GDP, which is less than half of the average observed among OECD countries. In order to close the gap in innovation and enhance its comparative advantage in products and services, Italy needs to establish a virtuous cycle that promotes greater digitalization and fosters the growth of STEM specialists, bringing them closer to the technology frontier.

Digital challenges for Italy include enhancing the digital skills of the population and workforce, promoting the digitalization of businesses and expanding the availability and extensiveness of digital public services. Additionally, it is crucial to accelerate the implementation of essential e-government projects. Italy's digitalization path has been slow, revealing notable gaps in crucial areas such as broadband technology adoption, internet accessibility, online banking and e-commerce. Astonishingly, a mere 2 percent of Italian college students opt for ICT as their major, a figure significantly lower than the average of 6 percent observed among OECD countries. It is imperative for Italy to accelerate its digital transition in order to secure economic prosperity in a world increasingly reliant on digital technology.

Climate and environmental challenges for Italy include enhancing waste and water resource management, making advancements in sustainable mobility and increasing the energy efficiency of buildings.

Italy recurred to the Recovery and Resilience Funds to address its development and innovation challenges: the Italian National Recovery and Resilience Plan (NRRP) - as approved by the Council of the EU on the 13th of July 2021 and as later amended in September and December 2023 – is the ongoing investment instrument the Italian Government has put into place to support the digital and green transition of the country, along with facing the existing territorial and social inequalities.

The amended national recovery and resilience plan has reinforced its emphasis on the digital transition, allocating 25.6% of the available funds to initiatives that promote digital objectives (an increase from 25.1% of the original plan). Moreover, by incorporating the REPowerEU chapter, it places even greater emphasis on the green transition, allocating more than 39% of the available funds to initiatives that align with climate targets (an increase from the original plan's 37.5%). The

modified plan also includes new or expanded investments to improve the efficiency, reliability, and security of the electricity grid, boost hydrogen production, address energy poverty, promote the recovery and recycling of critical raw materials, and strengthen zero-emission railways and bus fleets. Italy's new REPowerEU chapter specifically supports private companies in enhancing the energy efficiency of their production processes. Collectively, these measures are expected to foster Italy's renewable energy capacity and expedite the decarbonization of both the energy generation and transportation sectors.

Although we are not yet able to measure the effects of the NRRP on the strengthening of the Italian innovation ecosystem, we could argue that its success will be crucial in bringing about the productive and structural turnaround that is needed and required in the country and in the Piedmont region.

The NRRP measures and investments in Research and Development (R&D), aimed at promoting innovation and the dissemination of technologies, strengthening skills, and fostering the transition to a knowledge-based economy, seem to lack an integrated strategic vision, by somehow multiplying the innovation actors and players within an already overcrowded innovation environment, with the risk of bringing more confusion than efficiency.

A national industrial policy to foster clustering is more and more needed, since it appears more efficient and useful to enhance the firepower of the existent innovation clusters - rather than simply multiplying their number -through the interchangeable use of “network”, “hubs” and “cluster” in funding programmes. The need stated by cluster managers in Piedmont and Italy is, for the national level, to give continuity to clusters organisations as an effective policy instrument, by consolidating what already works in the area to accomplish a well-managed innovation policy.

At a regional level, Piedmont Region has ensured more coherence in its path towards innovation: the Piedmontese innovation policy has constantly consolidated and strengthened its innovation cluster ecosystem over the years. The main strength of the Piedmont clusters lies in their structure: it is a system with coherence, operational capacity, and programmatic management. On the other hand, when it comes to national clusters organisations, they tend to be small and inappropriate in carrying out more structured, comprehensive and wide-ranging initiatives and activities, since they lack the necessary firepower to undertake them.

Finally, at a local level, a better cluster policy should:

- ameliorate the relations among innovation ecosystem actors, by a greater focus on synergies between operational activities and therefore by optimising existing resources;
- ensure innovation operational continuity by leveraging existing players in the territory and capitalising on existing skills to foster the twin transitions;
- consolidating roles in innovation management, by increasing and systematising the stakeholder engagement.

According to the OECD, the financing mechanism poses a significant challenge to innovation policy. The majority of funding for innovation in Piedmont comes from the EU Cohesion Policy and other

European funds, which, if on the one hand they represent a useful driver for investments, on the other hand on one hand they somewhat restricts the region's ability to take independent actions and creates a substantial administrative burden with complex financing requirements. Consequently, the ability of SMEs to actively participate in the regional innovation ecosystem may be hindered.

Piedmont's cluster management organizations have a crucial role in connecting different actors within the innovation ecosystem to maximize the effectiveness of innovation policy support. Merely providing funding to these organizations is not enough to ensure the development of clusters. Indeed, it is essential to embed financing with continuous knowledge generation and exchange, as well as coordinated innovation activities within and among Piedmont's innovation clusters. This approach would enable local companies to grasp and benefit from the interconnections among regional industries and value chains, leading to the creation of new products or business models based on emerging industries. Achieving this goal requires improved coordination and collaboration among existing clusters, as well as better coordination between cluster management organizations and other actors in the innovation ecosystem. Enhanced cluster collaboration can facilitate industrial diversification, expand the range of activities available to members (and potentially non-members), and effectively address the impact of megatrends such as automation, demographic changes, environmental factors, and economic shifts across all industries, particularly traditional and low-tech sectors.

In conclusion, the effective development of innovation-led growth in Piedmont relies heavily on the ability to attract more public and private sector investments as well as create a more cooperative environment between the actors involved. It is imperative for the region to reconsider its local resources and assets, with the aim of enhancing its economic system and improving firm productivity. By doing so, Piedmont can significantly increase its appeal to potential investors and foster the creation of high-quality job opportunities.

## FOR FURTHER INFORMATION

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