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Determinants and obstacles to circular innovation in SMEs

Leverages and Recommendations for Regional Policies

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Executive Summary

Circular innovation is a strategic tool for increasing the competitiveness and sustainability of Italian SMEs, particularly in areas with a high concentration of manufacturing, such as Veneto and Emilia-Romagna. However, its uptake is still limited and uneven, primarily due to technical, regulatory, financial, and cultural barriers.

This policy brief is based on the "Skills for the Circular Economy" survey, analysing factors promoting the adoption of circular practices in SMEs and identifying the most common obstacles. The companies most inclined towards circular innovation are small businesses with young and diverse management, aiming to join production networks and target international markets.

Based on the data collected, this document proposes operational solutions to strengthen regional policies: targeted incentives, regulatory simplification, promotion of networks and supply chains, investment in training and enabling technologies, and awareness campaigns.

The aim is to support the circular transition of SMEs by contributing to the economic and environmental adaptation of territories.

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Context and significance of the issue

The importance of circular innovation is evident when observing the transition towards circular production models at the heart of European strategies (Green Deal, Action Plan for the Circular Economy, PNRR) and national and regional industrial policies, aimed at combining economic growth, environmental protection, and social inclusion.

The circular economy is based on the principles of waste reduction, resource enhancement, extension of product life, and closure of production cycles through reduce, reuse, recycling, and process innovation. For SMEs, adopting circular practices is not only a response to new regulations and market demands, but also a means of gaining competitiveness by seizing opportunities that improve efficiency, differentiation, and access to new "green" markets.

To date, however, circular innovation is still struggling to spread due to numerous obstacles of various kinds: from those linked to structural factors within companies to those relating to the financial, technological, and regulatory context, which is increasingly dynamic and complex. Understanding which factors can promote or hinder the circular transition is crucial for developing effective and targeted regional policies that can support SMEs in this process and maximise the impact of public and private investment.

This policy brief, developed as part of the GRINS project (Spoke 5, WP5.2), is based on the results of the "Skills for the Circular Economy" survey conducted on a representative sample of manufacturing SMEs in Veneto and Emilia-Romagna. The purpose of this policy brief is to provide empirical evidence and operational proposals for policymakers and local stakeholders.

Empirical evidence

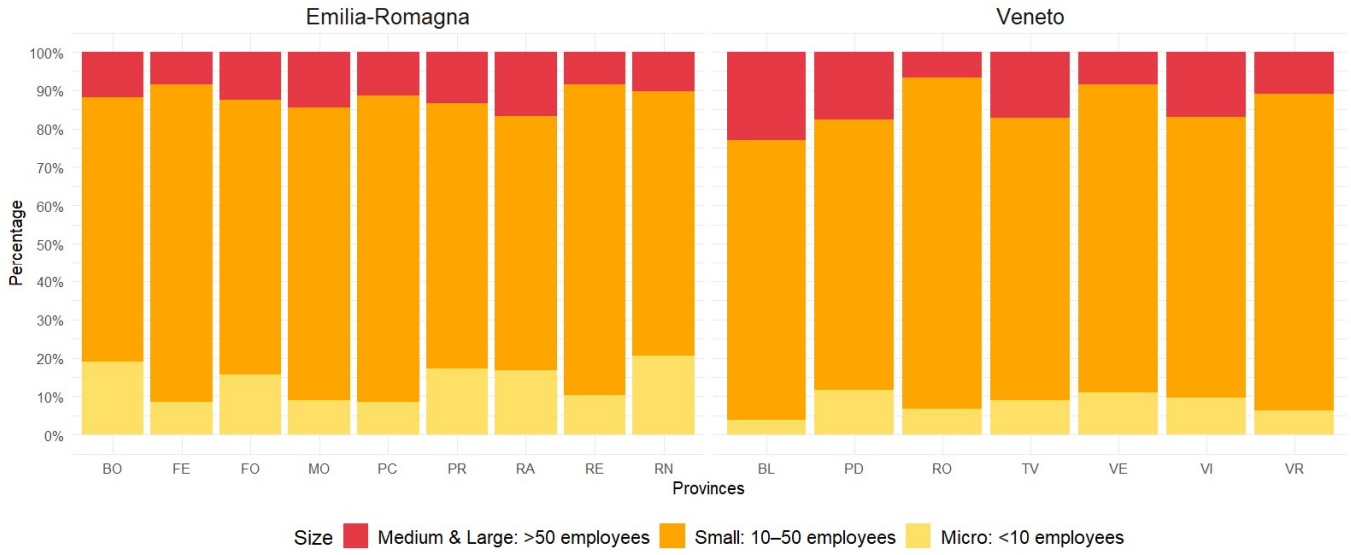
Characteristics of the companies involved

The 'Skills for the Circular Economy' survey analysed a sample of 1,549 manufacturing companies in Veneto and Emilia-Romagna, with balanced representation between the two regions. As shown in figure 1, Most of the companies (74.89% calculated based on the three-year average) analysed are small (between 10 and 50 employees): in particular, there is a significant presence of micro-enterprises (11.04% with 10 or fewer employees) and a significant share of medium-large companies (14.07% with 50 or more employees). The most represented sectors are the manufacture of metal products (27.4% for Veneto and 34.01% for Emilia Romagna), machinery (10.50% for Veneto and 15.22% for Emilia Romagna), clothing

(4.97% for Veneto and 2.17% for Emilia Romagna), leather goods (5.75% for Veneto and 0.93% for Emilia Romagna) and plastics (5.41% for Veneto and 5.59% for Emilia Romagna).

From a geographical point of view, while the provinces of Vicenza, Treviso, and Padua account for over 70% of the companies surveyed in Veneto, the distribution in Emilia-Romagna is more heterogeneous, with Modena, Bologna, and Reggio Emilia together accounting for around 60% of the total.

Figure 1: Distribution of firms by size across the provinces of Emilia-Romagna and Veneto



Outreach and types of circular innovation

Approximately one-third of the companies analysed introduced at least one innovation oriented towards the principles of the circular economy in the three years 2020-2022.

Within the sample, the firms that carried out at least one product, process, or organisational innovation numbered 777, of which 480 are from Veneto and 297 from Emilia-Romagna. The most common types of innovations are:

- Reduction in the use of raw materials and energy (35.26% of companies);
- Adoption of energy from renewable sources and energy saving (22.52% of companies);
- Product changes to minimise the use of materials (17.12% of companies);
- Reduction of waste emitted and reuse of waste in the production cycle (corresponding to 18.02% and 12.48% of the firms, respectively);
- Replacement of materials with sustainable alternatives (representing 15.32% of the firms);

Finally, the rarest innovations concern product disassembly, repairability and advanced recyclability.

Determinants of circular innovation

The econometric analysis in the report shows that companies most inclined towards circular innovation share certain common and recurring characteristics:

- **Size:** smaller and more "mature" companies (with more years of activity) are on average more flexible and inclined to introduce circular innovations than large companies.
- **Management structure:** the presence of young people and women in management positions is positively correlated with the propensity for circular innovation, highlighting the importance of diversity and generational change.
- **Membership of cluster and partnership within supply chains:** being part of an industrial group or production chain promotes the spread of circular practices, particularly thanks to the effects of networking and knowledge sharing.
- **Quality certifications:** data related to the "reduction innovation" show that certified companies (ISO 9001 - quality management, ISO 14001 - environmental management systems, etc.) show greater attention to environmental innovation.
- **Reference markets:** as the data show, for reuse-related innovations, companies oriented towards exports and international markets are more innovative - including in terms of circularity - than those operating solely in the local market.

Main obstacles to circular innovation

For the companies surveyed, the most frequently reported obstacles are:

- **Technical obstacles:** difficulties in implementing new technologies and production processes.
- **Bureaucratic and regulatory obstacles:** administrative complexity, regulatory uncertainty, and slow procedures for obtaining authorisations.
- Financial obstacles: limited access to credit and financing dedicated to environmental innovation.
- **Market response:** uncertainty about demand for circular products and difficulty in communicating the added value to customers.

- **Lack of collaboration:** over 40% of companies say they do not collaborate with other entities (universities, trade associations, public administrations) during the circular innovation process.

Policy analysis

The evidence gathered suggests that regional policies aimed at circular innovation in SMEs must act on several fronts. First, dedicated financial instruments need to be strengthened in order to make calls for proposals more accessible and simplify procedures for accessing credit. Enterprises, particularly small ones, report difficulties in obtaining financing for environmental innovation projects, which is why instruments such as vouchers, public guarantees, and financial advice can be decisive.

Another key aspect is regulatory simplification. Bureaucracy and regulatory uncertainty are major obstacles for all businesses seeking to adopt circular innovation. In this regard, the introduction of tools such as regional info-points, clear guidelines, and digitised procedures could make the innovation process much smoother.

In addition, the promotion of networks and clusters can be a strategic factor. Enterprises operating within industrial districts or clusters show a greater propensity to adopt circular practices, thanks to the sharing of knowledge and resources. Regional policies can be geared towards the creation of collaborative projects and support the dissemination of good/best practices in the area.

Finally, another key element is training and skills development. Circular innovation requires new technical and managerial skills, which often manifest themselves positively with the presence of young people and women in decision-making roles. Investments in targeted training and incentives for collaboration between businesses and training institutions can be a solution for strengthening the innovative capabilities and production systems of businesses.

Operational recommendations

An integrated and multi-level approach can make regional policies more effective. Economic incentives need to be strengthened by making calls for proposals more accessible and easier to manage. Policy makers should ensure the continuity and stability of financial resources so that businesses can invest in innovation with a medium/long-term perspective.

Regulatory framework must be streamlined to reduce uncertainty. Local helpdesks dedicated to the circular economy could provide practical assistance in the launch and management of R&D projects.

The enhancement of networks and value chains must be accompanied by actions to support collaboration between different actors: SMEs, large enterprises, universities, research centres and trade associations. Cooperation between these different entities can implement innovation and promote the dissemination of different and virtuous models.

In terms of skills, it is necessary to promote continuous training programmes, with a particular focus on digital and green skills. This should encourage the inclusion of young people and women in strategic management positions, with upskilling and mentoring programmes.

Moreover, communication with the public plays a key role: investment must also be directed towards raising awareness among businesses and citizens of the benefits of the circular economy and the positive externalities it generates through the promotion of sustainability certifications and the visibility of "green" products on the market.

Conclusion

The transition to a circular economy represents a strategic lever for enhancing the competitiveness and sustainability of Italian SMEs, particularly in manufacturing-oriented regions, such as Veneto and Emilia-Romagna. The results of the 'Skills for the Circular Economy' survey confirm that, despite growing awareness, SMEs still face significant technical, regulatory, and financial obstacles.

The most advanced practices are found among small firms, characterised by young and diversified management and a greater propensity to collaborate within networks and supply chains. However, the spread of circular practices remains limited due to bureaucratic complexity, difficulty in accessing credit, and weak collaboration with external actors.

To promote a circular economy, regional policies should adopt an integrated approach that combines easily accessible economic incentives, simplified regulatory compliance, and active support for the creation of collaborative ecosystems among businesses, research bodies, and local institutions. Investing in technical and managerial training, and by promoting sustainability and consumer awareness, can further accelerate the transition.

Coordinated action along the various fronts analysed in this policy brief can enable SMEs to overcome the current barriers and fully seize the opportunities offered by the circular economy, with the possibility of spillover both in terms of economic growth and environmental resilience for local systems.

Bibliography

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