THE IMPORTANCE OF ECO-INNOVATION FOR INCREASING THE COMPETITIVENESS OF SMEs

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ABSTRACT: *The economies of European countries are going through a period marked by profound changes, which are based on the need for efficient use of resources, increased care for the environment, and sustainable economic growth. In this context, eco-innovation has an essential role in the process of transition to a circular economy, a basic component of sustainable development, and SMEs must contribute to the fulfilment of these objectives by transforming environmental challenges into economic opportunities in a sustainable way. Eco-innovation represents a basic premise for the optimization and efficiency of production processes, the increase of investments and the creation of jobs, and at the same time for the revitalization and efficiency of numerous sectors of activity. The present work aims to present a series of specific aspects and particularities of the adoption of innovative principles by SMEs.*

KEY WORDS: *innovation, eco-innovation, competitiveness, sustainable growth, green economy*.

JEL CLASSIFICATIONS: *O30, O44, Q01.*

1. INTRODUCTION

SMEs represent the engine of the European Union's economy, being key factors of long-term economic growth and sustainable job creation opportunities. In the context of Europe's reindustrialization through investments in sustainability, competitiveness and innovation, SMEs must contribute to the fulfilment of these objectives, becoming more efficient in terms of resource use, preventing waste generation, carrying out effective ecological design, thus transforming environmental challenges into economic opportunities in a sustainable way (European Parliament, 2014)).

In this context, the issue of the competitiveness of companies is approached less from the point of view of reducing production costs and, more and more, from the

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perspective of the ability of companies to generate innovation for a sustainable, inclusive economic growth based on intangible assets.

The new business models aim not only to achieve profitability indicators, but also aim to increase the degree of involvement in the economy and society, ecological sustainability, more efficient use of resources, social responsibility, etc.

In the context of current challenges aimed at the most rational use of natural resources, and at the same time protecting and reducing environmental pollution, it is necessary for companies to adopt a business model that is both efficient and competitive, does not generate losses, but above all be environmentally friendly so as to contribute to sustainable economic growth.

Currently, against the background of the energy and economic crisis, the adoption by companies of eco-innovation and the carrying out of specific actions to favour the transition to a green economy are becoming more and more important, turning into mobiles of their activity.

Companies must be aware that eco-innovation amplifies sustainability and has the ability to revitalize and streamline many sectors of activity. Eco-innovation is a basic premise for sustainable development, for the optimization and efficiency of production processes and, last but not least, the increase of investments and the creation of jobs.

In this paper we will first present the concept of eco-innovation as a basic premise of SME competitiveness in the current economic context. A series of issues related to Romania's innovation and eco-innovation performance in relation to the other EU member states are then addressed. In the last part of the paper, the main advantages that SMEs can obtain from the adoption of eco-innovation in their activity are presented, as well as a series of concrete directions of action.

2. ECO-INNOVATION - CONCEPTUAL APPROACHES

Innovation represents the development and implementation of ideas and technologies that optimize goods and services or increase the efficiency of their production process. It represents a basic premise in achieving a sustainable economic growth that benefits, equally, companies, consumers and national economies, and in terms of environmental protection, sustainability and increased competitiveness we can talk about eco-innovation (https://www.ecb.europa.eu/ecb/educational/explainers/tell-me more/html/growth.ro.html).

„Eco-innovation is the production, assimilation or exploitation of a product, production process, service or management or business method that is novel to the organisation (developing or adopting it) and which results, throughout its life cycle, in a reduction of environmental risk, pollution and other negative impacts of resources use (including energy use) compared to relevant alternatives" (Kemp & Pearson, 2007).

"Eco-innovation is any innovation that reduces the use of natural resources and decreases the release of harmful substances across the whole life-cycle" (https://www.eco-innovation.eu/).

Eco-innovation is an essential element in the transition process to a circular economy, the basic component of a sustainable development. Eco-innovation, by reducing impacts on the environment, increasing resilience against external pressures and using resources more efficiently, is vital in supporting this transition to a circular economy and achieving the objectives of the European Green Deal (https://green-business.ec.europa.eu/eco-innovation_en).

Eco-innovation is a new business approach which promotes sustainability throughout the entire life cycle of a product, while also boosting a company's performance and competitiveness. It can help small- and medium-sized enterprises (SMEs) access new and expanding markets, increase productivity, attract new investment into the business, increase profitability across the value chain, and help SMEs stay ahead of regulations and standards – notably those related to the environment (https://www.unep.org/explore-topics/resource-efficiency).

Also, eco-innovation can be approach in terms of target, mechanism, and impact (Organisation for Economic Co-operation and Development):

- The *target* of an eco-innovation may be related with products (goods and services), processes and production methods, marketing methods, organisations and institutions;
- The *mechanism* relates to the method by which the change in the eco-innovation target takes place or is introduced. The methods can be:
  - modification (small, progressive product and process adjustments);
  - re-design (significant changes in existing products, processes, organisational structures, etc.);
  - alternatives (the introduction of goods and services that can fulfil the same functional need and operate as substitutes for other products);
  - creation, the design and introduction of entirely new products and processes.
- The *impact* refers to the eco-innovation's effect on the environment, across its lifecycle or some other focus area. Potential environmental impacts stem from the eco-innovation's target and mechanism and their interplay with its socio-technical surroundings.

The concept of eco-innovation is addressed in the context of stimulating the sustainable development of national economies, transitioning to the circular economy, within which a series of current challenges have been highlighted, aimed at:

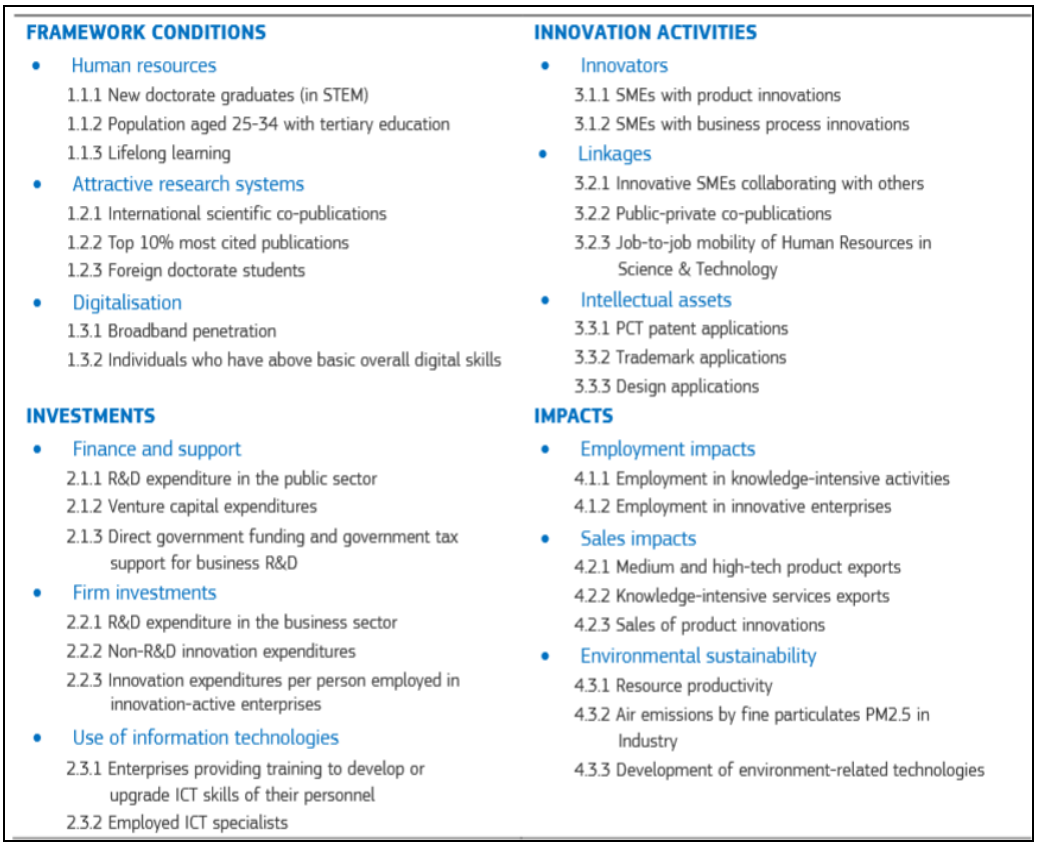
- the most efficient use of resources. This objective can be achieved through the following actions: reducing food waste and waste; reducing the amount of resources used and increasing their productivity; increasing the use of renewable energy sources; reducing carbon dioxide emissions, improving energy efficiency, etc.;
- the application of an integrated industrial policy with the aim of improving the business environment, especially the SME sector. It is intended to stimulate the entrepreneurial spirit, so that European companies become more efficient and competitive, in the context of the antagonistic needs-resources ratio;
- decoupling economic growth from environmental impact and accelerating the transition to a green economy by paying more attention to eco-innovative

solutions. In this context, companies are encouraged to adopt sustainable practices, to contribute to consumer awareness of what a lifestyle in harmony with the environment means.

3. THE CURRENT STATE OF ECO-INNOVATION IN ROMANIA

In terms of innovation, at the level of the European Union, The European Innovation Scoreboard provides a clear picture of the state of innovation in the member countries, highlighting the main strengths and weaknesses and helping to identify the challenges they have to face.

European Innovation Scoreboard distinguishes between four main types of activities - *Framework conditions*, *Investments*, *Innovation activities* and *Impacts* – with 12 innovation dimensions, capturing in total 32 indicators. Indicators that are included in the measurement framework are presented in Figure 1

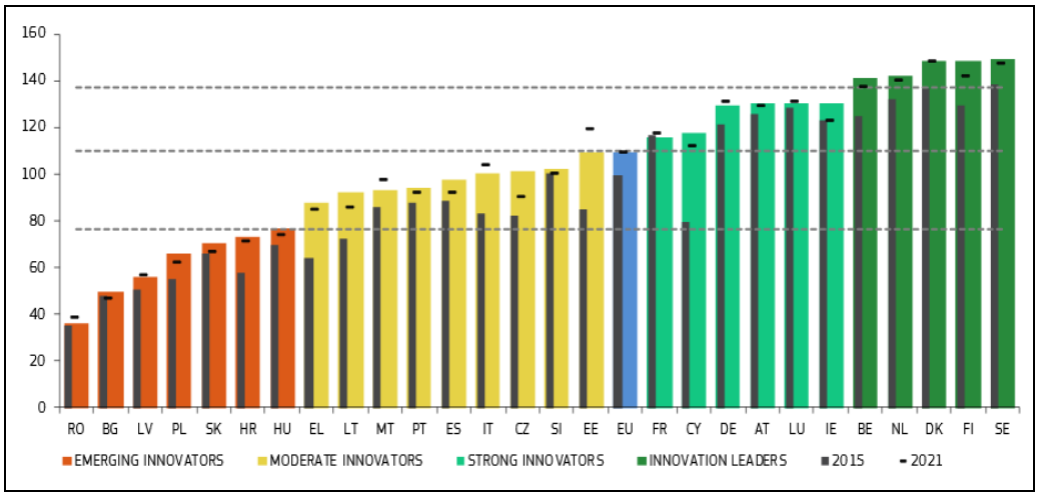


Source: Hollanders, H.; Es-Sadki, N.; Khalilova, A. (2022) European Innovation Scoreboard 2022, Publications Office of the European Union, European Commission, Directorate-General for Research and Innovation, p. 10

Figure 1. Measurement framework of innovation

In terms of innovation performance, the European Innovation Scoreboard 2022 shows that at the level of the European Union it continues to improve, increasing overall by 10% compared to 2015.

Unfortunately, Romania is part of the category of emerging innovators (the weakest innovator in the EU), registering modest progress in terms of innovation, as a whole (Figure 2).



Source: Hollanders, H.; Es-Sadki, N.; Khalilova, A. (2022) European Innovation Scoreboard 2022, Publications Office of the European Union, European Commission, Directorate-General for Research and Innovation, p. 20

Figure 2. Performance of EU Member State's innovation system

The indicators with the lowest performance, in the case of Romania, are: *Population with tertiary education*, *Business process innovators*, *Innovative SMEs collaborating with others*, *Employment in innovative*. At the opposite pole are indicators such as: *Broadband penetration*, *Medium and high-tech goods exports*, *Knowledge intensive services exports*, *Air emissions by fine particulate matter*, *Venture capital expenditures*. Regarding the *Environmental sustainability* indicator group, it records a performance of 45.6% compared to the EU average, and a decrease of about 14% in the period 2015-2022 (Table 1).

Despite some progress made in the last decade, Romania's economic growth is still not decoupled from waste generation, and indicators such as Environmental sustainability and Business process innovators are still quite far from the European average.

At the level of the European Union, the performance of eco-innovation is monitored using the Eco-Innovation Index which is a composite indicator based on 16 sub-indicators in five thematic areas: eco-innovation inputs, eco-innovation activities, eco-innovation outputs, resource efficiency outcomes and socio - economic outcomes (Hollanders et al. 2022).

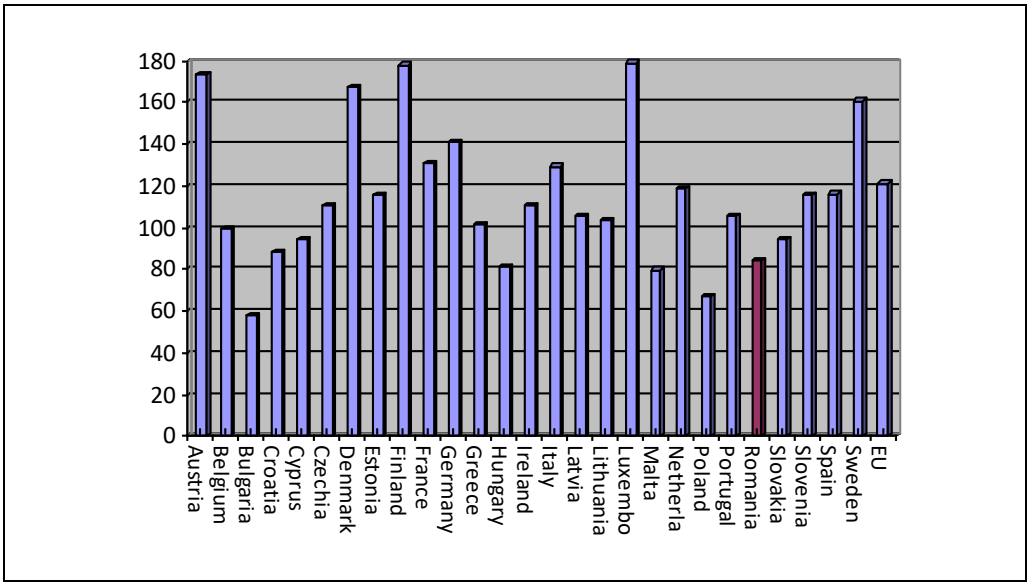
Table 1. The performance of the Environmental sustainability indicators

	Performance relative to EU in 2022 (%)	**Performance change 2015-2022** (%)	**Performance change 2021-2022** (%)
Environmental sustenability:	**45.6**	**-14.4**	**-14.8**
-Resource productivity	7.7	-3.7	-3.1
-Air emissions by fine particulate matter	63.3	19.4	-1.2
-Environment-related technologies	56.5	-62.0	-39.0

Source: Hollanders, H.; Es-Sadki, N.; Khalilova, A. (2022) European Innovation Scoreboard 2022, Publications Office of the European Union, European Commission, Directorate-General for Research and Innovation, p. 70

The Eco-Innovation Index reflects the degree to which the state and the private environment attach importance to ecology, the measurable effects of economic activities of an ecological nature, as well as the efficiency of the use of natural resources by the entire economy.

According to that, at the level of 2021, Romania is in the Eco-Innovation Catching-up group with an eco-innovation index of around 84, alongside countries such as Bulgaria, Croatia, Cyprus, Hungary, Poland. In the Eco-Innovation Index 2022 ranking measuring performance for the reference year 2021, Romania ranks 24th out of 28 countries (Figure 3), a worse situation than in previous years (22nd place in 2016; 19th place in 2015; 20th place in 2014).



Source: https://green-business.ec.europa.eu/eco-innovation_en

Figure 3. European Eco-innovation Scoreboard 2022

As can be seen from the figure above, Romania is far below the overall average score of the EU and is part of the category of countries that is imperative to recover the gap in terms of eco-innovation. Romania registers a below-average performance for all the indicators of the eco-innovation index, less so for the results in terms of resource efficiency, an indicator with which it approaches the European average.

Romania also has a low number of patents related to recycling and secondary raw materials per capita. This is related to political, financial and regulatory factors that seem to be one of the main challenges facing companies and research institutions (https://dezvoltaredurabila.gov.ro/).

In this context, it is imperative that the private sector and, in particular, the SME sector adapt as soon as possible to the new trends in the European Union in terms of innovation and eco-innovation. Moreover, most of the multinational companies present in the Romanian economy offer models of best practices in the field of transition to circular production models, and the organizations dedicated to promoting the transition to a circular economy also support this sector.

4. ECO-INNOVATION AT THE LEVEL OF SMES: NECESSITY, BENEFITS, DIRECTIONS OF ACTION

It is necessary for SMEs to be aware of the fact that eco-innovation does not only involve the creation of new products and services, but aims to reduce the impact on the environment in all stages specific to a product: design, production, use, reuse and recycling. In other words, eco-innovation is a basic component of innovation that offers multiple opportunities for the development of new businesses aimed both at increasing competitiveness and protecting the environment.

The adoption of flexible and innovative business models by SMEs will lead to an increase in the supply of high-quality goods and services, friendly to the environment, penetration into new markets, expansion of the customer portfolio, reduction of costs with the help of increased energy efficiency and, consequently, obtaining higher and more secure incomes, generating competitive advantages.

The main benefits for SMEs adopting the principles of eco-innovation can be summarized as follows:

- ✓ Increasing efficiency by reducing the generation of waste and the extensive use of resources;
- ✓ Increase in turnover meeting the needs of consumers, who increasingly want to purchase sustainable products whose consumption does not negatively affect the environment;
- ✓ Reducing the degree of dependence on limited resources by applying eco-innovative solutions;
- ✓ Attracting new categories of customers by showing an increased interest in environmental issues and by adopting good practices in the field of activity;
- ✓ Companies recognized in the field of environmental responsibility can obtain better classifications from financial analysts compared to other firms;

✓ Attracting people, especially young people, who are looking for "green jobs" and who particularly appreciate the sustainability of the organization.

The main directions towards which SMEs can go by applying the principles of eco-innovation with significant results are synthesized in the following table:

Table 2. The main directions of action of SMEs in terms of eco-innovation

Environmental technologies:	Organisational innovation for the environment:	Product and service innovation offering environmental benefits:	Green system innovations:
• Pollution control technologies	• Prevention of pollution through input substitution, more efficient operation of processes and small changes to production plants (avoiding or stopping leakages and the like)	• New or environmentally improved material products (goods) including eco-houses and buildings	• Biological agriculture
• Cleaning technologies and green energy technologies	• Formal systems of environmental management involving measurement, reporting and responsibilities for dealing with issues of material use, energy, water and waste	• Green financial products, such as eco-leases	• Renewables-based energy system
• Waste management equipment	• Cooperation between companies so as to close material loops and to avoid environmental damage across the value chain	• Solid and hazardous waste management, water and waste water management, environmental consulting,	
• Environmental monitoring and instrumentation		• Services that are less pollution and resource intensive	

Source: Kemp, R.; Pearson, P. (2007) Final report MEI project about measuring eco-innovation, p. 10-11

Summing up, business models based on eco-innovative principles can refer to (Swiss-Romanian Cooperation Programme, 2015):

- Regeneration of waste by reusing it in the form of new products;
- Producing/offering "green" products/services that ensure the satisfaction of consumers' needs and, at the same time, are friendly to the surrounding/natural environment;
- Use of alternative and renewable energies;

- Transport systems with low impact on the environment;
- The intensive use of new technologies to provide solutions for the optimal and rational use of natural resources;
- Optimizing the management of services to offer the functions and benefits of a product instead of the physical product itself;
- The joint use of resources and secondary products by several firms, based on commercial and technological links.

Thus, the new business models are those that; put innovation first; adopt new production technologies; have as their objective the prevention of environmental pollution and care for nature; covers the entire life cycle of a product as well as its impact on the environment in the long term; pays more attention to the development of new, more sustainable ways of production; create new and sustainable jobs; have in mind the maximum reduction of losses in the production process.

At the level of the European Union, actions related to eco-innovation are promoted to support SMEs, through (Official Journal of the European Union, 2006):

- supporting the take-up of environmental technologies and eco-innovative activities;
- co-investment in risk capital funds that provide equity for companies investing in eco-innovation;
- fostering eco-innovation networks and clusters and public-private partnerships in eco-innovation, developing innovative business services, and facilitating or promoting eco-innovation;
- promoting new and integrated approaches to eco-innovation in fields such as environmental management and the environmentally friendly design of products, processes and services, taking into account their whole life cycle.

5. CONCLUSIONS

Eco-innovation is a basic premise in the transition process to the circular economy that will provide a resilient system that will benefit businesses, people and the environment alike, resistant to the effects of climate change or disruptions in the global supply chain.

Romania is part of the category of countries that is imperative to recover the gap in terms of innovation (the lowest score in the EU) and eco-innovation (24th place in the ranking of EU countries, it has the opportunity to adopt good practices from the experiences of other countries, champions at innovation (for example: Austria, Finland, Denmark).

Considering the challenges of the transition to the circular economy and the need to ensure competitiveness, the SME sector in Romania needs a long-term vision and a strategic direction in the adoption and implementation of eco-innovation. This will ensure the prosperity of the whole society through economic growth that ensures a sustainable environment for future generations.

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