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ECO-INNOVATION – A DRIVER TO SUSTAINABLE BUSINESSES

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Abstract: *The urgency for sustainable changes in business performance both in product development or in different processes of the organizational areas emphasize the importance of eco-innovation in business strategy. Eco-innovation becomes a key component of the ongoing process of improving sustainability and for improving the environmental performance of the companies toward a more sustainable business model. Thus, a better understanding of barriers and drivers at the business level could build a better picture of the necessary framework for eco-innovation to be developed in Europe. The paper analyzes the challenges, barriers and drivers for adoption of eco-innovation in the European companies, as well as green markets and resource efficiency, based on two relevant studies carried out in Europe. In this context, the paper underline that European companies need a better support both at national and European level in order to incorporate sustainability into their core decision making and to integrating it throughout all business dimensions, enabling the creation of novel solutions to satisfy market needs.*

Key words: *eco-innovation, sustainable development, sustainable businesses, barriers, drivers, business model.*

JEL CLASSIFICATION: O31; O32; O38; O44.

INTRODUCTION

In recent decades, many governments and companies around the world have shown interest in becoming more sustainable in order to support sustainable development goals, while keeping industry and the economy competitive. For example, Aghion emphasise that there will be no green growth without innovation [Aghion et al., 2009]. Thus, both companies and governments have started to promote eco-innovation through various initiatives and concrete ways. Until now, the promotion of eco-innovation has focused mainly on the development of environmental technologies, but today there is a growing understanding of the non-technological aspects of innovation, which reflects the fact that the focus of innovation on sustainable development demands broad structural changes in society [Nicolai & Pillot, 2017].

With environmental degradation and global resource scarcity presenting growing challenges for business along with related regulatory and market pressures, companies need to think strategically about their business sustainability. Thus, eco-innovation can help them to turn these challenges into new market opportunities. Eco-innovation can provide entrepreneurial opportunities in different fields, such as renewable energy technologies, pollution prevention schemes, waste management equipment, green financial products or ecological agriculture [Arundel & Kemp, 2009] and also can support companies facing fierce competition by providing competitive advantages [Chassagnon & Haned, 2015].

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Research shows that eco-innovative companies of all sizes are growing, on average, at a rate of 15 per cent a year, at a time when their respective markets have remained flat. Small and medium-sized enterprises (SMEs) are particularly responsive to eco-innovation due to their adaptability and flexibility, and as contributors of as much as 70 per cent of GDP and two-thirds of formal employment in developing and emerging economies, they are potentially a key driver of a resource efficient economy [UNEP, 2014].

This paper presents an overview regarding eco-innovation concept, as well as the role of eco-innovation in companies for the development of sustainable businesses. Also, the paper analyzes the challenges, barriers and drivers for adoption of eco-innovation in the European companies, as well as green markets and resource efficiency, based on two relevant studies carried out in Europe.

WHAT IS ECO-INNOVATION AND WHY IT IS IMPORTANT?

As eco-innovation is a relatively recent concept, mentioned for the first time by Fussler and James (1996), over time it has been developed in the specialized literature by many other authors. The first definition of eco-innovation appeared in the book “Driving Eco-Innovation” by Fussler and James and the concept was defined as “new products and processes that provide customer and business value while significantly decreasing environmental impacts” [Arundel & Kemp, 2009].

Over the time the definition of eco-innovation has been expanded to take into account various concerns of an innovation supporting sustainable development. A broader definition of the concept of eco-innovation is provided by the European Observatory on Eco-innovation (2010): “Eco-innovation is the introduction of any new or significantly improved product (good or service), process, organisational change or marketing solution that reduces the use of natural resources (including materials, energy, water and land) and decreases the release of harmful substances across the whole life-cycle” [Methodological report, 2010].

According to UNEP (2014), Eco-innovation is „*the development and application of a business model, shaped by a new business strategy, which incorporates sustainability throughout all business operations based on life cycle thinking and in cooperation with partners across the value chain. It entails a coordinated set of modifications or novel solutions to products (goods / services), processes, market approach and organizational structure⁴ which leads to a company’s enhanced performance and competitiveness*” [UNEP, 2014]. This approach allows companies to identify the solutions that can be implemented in order to face the major challenges, to be able to anticipate and avoid them in the future.

In the national context, eco-innovation has an implication at all levels offering multiple benefits, as we can notice in the Figure 1 „Why to eco-innovate”, both for the economy, environment, society and politics.

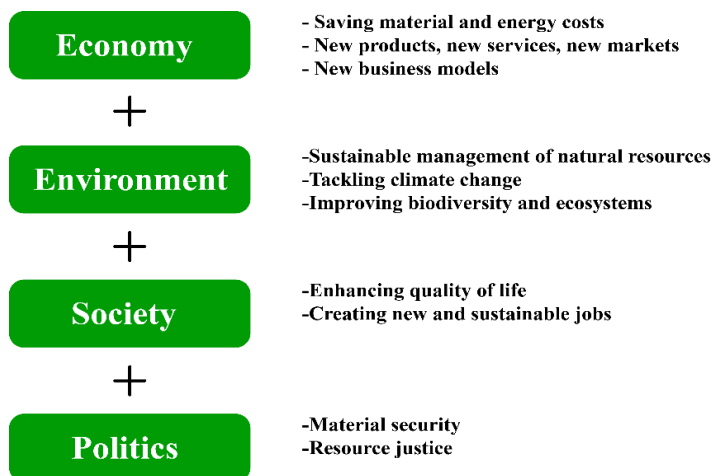


Figure 1. Why Eco-innovation

Source: EIO and CfSD (2013) *Eco-innovate! A guide to eco-innovation for SMEs and business coaches*. Eco-Innovation Observatory. Funded by the European Commission, DG Environment, Brussels

In the actual context of climate change, resource scarcity, environmental degradation, worker welfare, certain factors of change are born in the way companies operate. Instead of viewing the environment as just a source of raw materials, companies are starting to internalise environmental sustainability in how they meet customer needs. Businesses need to change the rules of the game by changing how they create, deliver eco-innovative products and capture value.

Eco-innovation has been widely accepted as a method for improving the environmental performance of enterprises and for supporting them to improve their products, as well as to advance to more sustainable business models, and as a driver of business success and competitive advantage at the firm level.

Smart, sustainable and inclusive growth is the focus of the Europe 2020 Strategy [European Semester]. As recalled by the Flagship initiatives For a Resource Efficient Europe and Innovation Union, eco-innovation is vital for delivering the Strategy’s objectives. Therefore, in December 2011, The European Commission adopted the Eco-innovation Action Plan (EcoAP) with the aim of accelerating market uptake of eco-innovation by addressing its barriers and drivers. The EcoAP is therefore an important element of the European policy framework for sustainable consumption and production [Eco-Innovation].

Each company has its own motivations and reasons for eco-innovating. These motives have been captured by UNEP, analyzed and organized as the five drivers for eco-innovation, which offers an added value to the companies [UNEP 2014]:

1. Access new and emerging markets
2. Increase profitability along the value chain
3. Stay ahead of standards and regulation
4. Attract investment
5. Increase productivity and technical capacity

Eco-innovation refers to the implementation of the strategies to decouple economic growth from environmental degradation and achieve greater resource efficiency. It aims at doing more and better with less across the entire life cycle of products. At its core, eco-innovation is about reducing resource intensity of products and services and creating new business models that are both competitive, respect the environment and generate value along the entire value chain [Szilagyi et al., 2018].

RESOURCE EFFICIENCY, GREEN MARKETS AND CHALLENGES FOR ADOPTION ECO-INNOVATION IN THE EUROPEAN COMPANIES

Over time, various studies have been carried out, at the European level, regarding the efficiency of resources, green markets or the adoption of eco-innovation within companies, in the context of supporting a sustainable growth and development. Thus, the most important studies that evaluate the current levels of actions in terms of resource efficiency and the green market, within companies, are the Flash Eurobarometer surveys: FL342 in 2012, FL381 in 2013, FL426 in 2015, FL456 in 2017 and FL498 in 2021. Regarding the evaluation of eco-innovation activities within companies, there is only one survey carried out in 2011, namely Flash Eurobarometer 315 "Attitudes of European entrepreneurs towards eco-innovation", which offers a perspective on the implementation of eco-innovation, as well as the the challenges faced by entrepreneurs.

In continuation, for a better understanding of the current context in Europe regarding the existing conditions within companies in order to promote the efficient use of resources and the implementation of eco-innovation for a sustainable development, the author analyzes and presents the results of 2 relevant studies in this regard, namely: Flash Eurobarometer 498 “SMEs, green markets and resource efficiency” (2021) and Flash Eurobarometer 315 “Attitudes of European entrepreneurs towards eco-innovation” (2011).

CHALLENGES, BARRIERS AND DRIVERS FOR ADOPTION OF ECO-INNOVATION IN THE EUROPEAN COMPANIES

One of the most important studies regarding eco-innovation at the firm level is The Flash Eurobarometer 315 “Attitudes of European entrepreneurs towards eco-innovation” [Gallup, 2011] that identifies the main concerns, barriers and drivers perceived by EU entrepreneurs regarding eco-innovation. A total of 5,222 SME’s managers from 27 EU Member States were interviewed by telephone between 24 January and 1 February 2011. The survey covered SMEs from various sectors (agriculture, forestry and fishing; manufacturing, constructions, water supply and waste water, waste management and food) and focused on four main aspects: how cost and availability of materials affects the businesses; the status of eco-innovation activities and investments in the companies; the barriers to an accelerated uptake of eco-innovation and the drivers for an accelerated uptake of eco-innovation.

The main findings of the survey referring to the European companies revealed that [Gallup, 2011]:

- Almost a quarter (24%) of managers said that 50% or more of their company’s “total costs” (gross production value) consisted of “material costs”.
- Three-quarters of businesses had experienced an increase in material costs in the past five years; In Germany, Poland, Malta and the UK, more than 80% of respondents answered that material costs for their company had increased moderately or dramatically in the past five years (between 85% and 88%).
- in order to reduce material costs, 56% of companies had purchased more efficient technologies in the past five years, while 53% had developed more efficient technologies in-house during that time frame.
- Just over a third of companies (35%) reported that less than 10% of their innovation investments in the past five years were related to eco-innovation – i.e. implementing new or

substantially improved solutions resulting in more efficient use of materials, energy and water. A quarter estimated that this share was between 10% and 29%.

- In only six countries, over a fifth of respondents estimated that 30% of their innovation investments were related to eco-innovation: Sweden (21%), Greece (22%), Austria (23%), Cyprus and Luxembourg (both 24%) and Poland (30%).

- Roughly 3 in 10 (29%) companies in the EU had introduced a new or significantly improved eco-innovative production process or method in the past two years, while roughly a quarter (24%) had introduced a new or significantly improved eco-innovative organisational method. A similar proportion (25%) had introduced a new or significantly improved eco-innovative product or service on the market.

- It was expected that those medium-sized companies with an annual turnover between 10 and 50 million euros and those that have grown in terms of turnover in the last two years have introduced these types of eco-innovation.

Interviewees were presented 14 potential barriers and drivers to an accelerated development and uptake of eco-innovation. In the table below, the author has made a top of 8 potential barriers and drivers to an accelerated development and uptake of eco-innovation, based on the survey’s results. As we can see the main barriers in the European companies regarding implementation of eco-innovation is related to the lack of funds, the uncertain market demand or uncertain return of investment. As far as that goes the main drivers of developing eco-innovation are related to current high energy and materials prices or expected increases in energy prices.

Table 1. Top 8 potential barriers and drivers to an accelerated development and uptake of eco-innovation

BARRIERS	DRIVERS
to an accelerated uptake of eco-innovation	
Uncertain demand from the market	Expected future increases in energy prices
Uncertain return on investment or too long a payback period for eco-innovation	Current high energy prices (as an incentive to innovative, to use less energy and decrease the cost)
Lack of funds within the enterprise	Current high material prices (as an incentive to innovate to use less material and decrease the cost)
Insufficient access to existing subsidies and fiscal incentives	Good business partners
Existing regulations and structures not providing incentives to eco-innovate	Secure or increase existing market share
Lack of external financing	Access to existing subsidies and fiscal incentives
Technical and technological lock-ins (e.g. old technical infrastructures)	Technological and management capabilities within the enterprise

Source: Made by author based on the source [Gallup, 2011].

Other interesting finding regarding the *barriers* to an accelerated uptake of eco-innovation is that “A lack of qualified personnel and technological capabilities within their enterprise” was considered a very serious barrier just by 23% of respondents, while 28% said this was a somewhat serious barrier. A smaller number of respondents thought that limited access to external information and knowledge was a barrier to introducing eco-innovations in their company (16% “very serious” and 27% “somewhat serious” responses).

Regarding the *drivers* to an accelerated uptake of eco-innovation, an important finding to underline is that the respondents in companies that had introduced at least one eco-innovation in the

past two years were not only more likely to describe various eco-innovation barriers as being “very serious” or “somewhat serious” ones, they were also more likely to think that each of the potential eco-innovation drivers listed in the survey were “very important”. For example, 44% of managers in eco-innovative companies said that the “increasing market demand for green products” was a very important driver for a faster uptake of eco-innovation in their company; the corresponding proportion in companies that had not introduced any eco-innovations in the past two years was 29%.

SMEs, GREEN MARKETS AND RESOURCE EFFICIENCY WITHIN EUROPEAN COMPANIES

In the context of the European SME Strategy, the Directorate-General for Internal Market, Industry, Entrepreneurship and SMEs commissioned a Flash Eurobarometer survey to evaluate the current levels of resource efficiency actions and the state of the green market among Europe’s SMEs, as well as in neighboring countries and in the US. This survey was carried in 27 Member States of the European Union, Albania, North Macedonia, Montenegro, Serbia, Turkey, Iceland, Moldova, Norway and the US in 2021, more than 17 500 SMEs and large companies were interviewed via telephone in these countries. The most important topics of the survey were: Actions that SMEs are currently undertaking to be more resource efficient; SMEs’ level of investment in resource efficiency; Measures in place to reduce carbon footprint and become climate neutral or negative; Barriers to going green and resource efficient; Type of support for going green and resource efficient; Tools and forms of assistance that would help most to go green and resource efficient; Green markets for SMEs and Type of support for producing green products or services; SMEs with employees in green jobs.

The main findings of the survey reveal that [Flash Eurobarometer 498, 2021]:

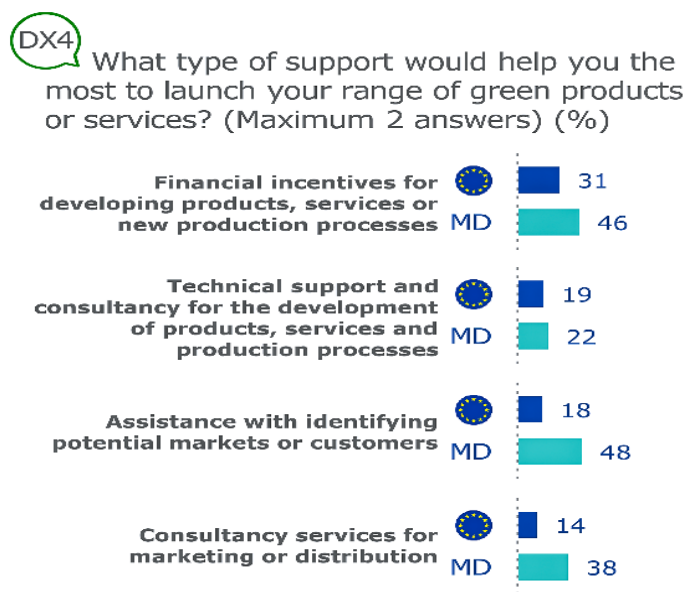
- Most SMEs surveyed are taking measures to be more resource efficient: 89% of SMEs are taking at least one of the actions listed in the survey, compared to 9% that are not taking any action
- The most common resource efficiency actions undertaken by SMEs are minimising waste (64%), saving energy (61%), saving materials (57%), recycling by reusing material or waste within the company (47%) and saving water (46%).
- More than three-quarters (77%) of SMEs plan to implement (further) measures to improve resource efficiency in their company. The most common resource efficiency actions that are planned for the next two years are saving energy (53%), minimising waste (50%) and saving materials (48%).
- Actual investment in resource efficiency remains low – 35% of SMEs surveyed invested 1% or more of their turnover in this area in the past two years.
- A vast majority of SMEs (72%) do not (yet) have a concrete strategy in place to reduce their carbon footprint and become climate neutral or negative.
- The most common difficulty SMEs encountered when setting up resource efficiency actions is the complexity of administrative or legal procedures (34%), followed by the cost of environmental actions (24%). Other barriers refers to a lack of supply of the required materials, parts, products or services.
- Among SMEs that take resource efficiency actions, 64% rely on their own financial resources and 54% on their own technical expertise in their efforts to be more resource efficient. About a quarter of SMEs (24%) rely on external support.
- More than one third of SMEs (36%) think that grants or subsidies would help their company the most to be more resource efficient.
- About one in three (32%) SMEs in the EU offer green products or services, with a further 11% planning to do so in the next two years.

- At least one full-time employee working in a green job some or all the time: 33% say there are between one and five ‘green’ employees in their SME and 5% that their number is higher than five.

SMES, GREEN MARKETS AND RESOURCE EFFICIENCY IN MOLDOVA

The Flash Eurobarometer survey 498 reveals also some useful data besides *Moldova* [SMEs and green markets, 2021], with the mention that the results should be interpreted with caution due to the smaller number of interviews that having been conducted (107). Regarding the most common resource efficiency actions undertaken by SMEs from Moldova, the trends are a little bit different from the EU average: minimising waste (58%), saving energy (54%), saving water (52%), saving materials (47%). Using predominantly renewable energy (e.g. including own production through solar panels, etc.) is the least action undertaken by SMEs from Moldova in proportion of just 7%. Furthermore, 39% from the Moldovan companies have invested less than 1% of annual turnover in order to be more resource efficient and about 37% companies have invested between 1 and 10% of their annual turnover, that represents a higher average than EU countries (35%).

The study also reveals that just 14% from Moldovan SMEs have a concrete strategy to reduce their carbon footprint and become climate neutral or negative, in comparison with EU companies that represents an average of 24%. Regarding the type of support for going green and resource efficient, the most important for the SMEs from Moldova are: Grants or subsidies (48%) and Consultancy on how to improve resource efficiency in your company (32%). Also, we can notice in the existing survey that about 38% from the companies offer green products or services, a figure higher than the EU27 average that represents just 32%. At the same time, 35 of the SMEs says that they do not offer green products or services and are not planning to do that. Finally, regarding the situation in Moldova, the study reveals that companies need assistance in identifying potential markets or customers (48%) in order to launch their range of green products or services and also financial incentives for developing products, services or new production processes (46%), as we can see in Figure 2.



Base: SMEs that do not offer green products or services

Figure 2. Type of support that would help SMEs to launch their range of green products or services

Source: Flash Eurobarometer 498 „SMEs, green markets and resource efficiency” 2021, Moldova factsheet

The figures presented in this analysis must be interpreted with caution, because they do not represent the national context, due to the small number of companies interviewed in this study, in Moldova. However, data helps to have a general overview of the actual context within enterprises regarding the efficient use of resources as a premise in the development of eco-innovation and sustainable businesses.

CONCLUSION

Our planet needs actors that take transformative action towards new ways of production, new ways of consumption that are mindful of planetary boundaries and ultimately reduce the need for natural resources. Thus, eco-innovation represents an opportunity for businesses that aims at stimulating human creativity at its best. Eco-innovation is one of the key enabling instruments identified by the EU for the transition to a more resource efficient economy. It is embedded in the Europe 2030 strategy for a more sustainable growth and the European Commission has developed over the years a policy framework and dedicated funding to encourage uptake of eco-innovative solutions by the market, for example by creating Eco-innovation Action Plan (EcoAP) with the aim of accelerating market uptake of eco-innovation in the European countries.

The analyzed studies in this paper reveal that Europe have a great potential in the development of eco-innovation and there are optimistic changes within companies regarding resource efficiency. Three-quarters of businesses from Europe had experienced an increase in material costs and 56% of companies had purchased more efficient technologies in the past five years [Gallup, 2011]. However, just over a third of companies (35%) reported that less than 10% of their innovation investments were related to eco-innovation. In this context, the study “Attitudes of European entrepreneurs towards eco-innovation” emphasizes the main barriers and drivers for adoption of eco-innovation in the European companies. Of the 14 *barriers* listed in the survey, three could be identified as being mentioned most frequently as a very serious or somewhat serious barrier to an accelerated uptake of eco-innovation in respondents’ companies: (1) uncertain demand from the market, (2) lack of funds within the enterprise and (3) an uncertain return on investment or too long a payback period for eco-innovations. At the same time, of the 14 *drivers* listed in the survey, current and future high energy prices were mentioned most frequently as being “very important drivers” of accelerated eco-innovation uptake in respondents’ companies, as well as Good business partners.

Regarding the SMEs, green markets and resource efficiency within European companies we can underline that most of SMEs are already taking measures to be more resource efficient. The most important actions are related to minimising waste, saving energy, saving materials, recycling by reusing material or waste within the company and saving water. The most common *difficulty* SMEs encountered when setting up resource efficiency actions is (1) the complexity of administrative or legal procedures, followed by (2) the cost of environmental actions, (3) lack of supply of the required materials, parts, products or services.

In conclusion, we can say that although European companies show their interest in using resources as efficiently as possible, to eco-innovate or to create green products and services, they face a series of challenges and barriers, mostly related to the lack of funds, complexity of administrative or legal procedures or uncertain return on investment. Companies need a better support both at national and European level in order to incorporate sustainability into their core decision making and to integrating it throughout all business dimensions, enabling the creation of novel solutions to satisfy market needs. As part of this process, companies should be helped to look beyond its gates to assess

sustainability risks and opportunities throughout its value chain, and in cooperation with the key partners.

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