

CURRENT STATE, BEST PRACTICES AND RESEARCH FINDINGS AT A STATE LEVEL

REPORT



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Introduction

With the development of the circular economy agenda, the European Commission has spelled out specific aims for achieving resource efficiency in the EU's economic model. In particular, more value must be gained from resources already in use within society to meet economic, social and environmental goals. Eco-Innovation is the change implemented to achieve these aims. It is about adapting and changing business practices, consumer behavior and lifestyles toward higher levels of sustainability, and requires new and adapted policy instruments and strong policy frameworks to support these changes.

Companies are at the core of most of the environmental impacts caused by society, contributing to generating impacts across the entire life cycle, from raw material extraction and manufacturing, through to distribution, product use and end-of-use/end-of-life. Small and medium enterprises (SMEs) play an important role in this context, as they account for the vast majority of existing companies. SMEs generate more than half of the total value added in Europe through the manufacturing and delivery of products and services. Furthermore, SMEs still face a number of difficulties for integrating sustainability into their core businesses processes, being still largely reactive to environmental issues. Currently, a large amount of concepts and tools are available to support the integration of sustainability into companies' core business. Eco-innovation is seen as one of the key approaches for SMEs, due to its potential to enhance the SMEs green competitiveness' through the development of innovative products, processes and organizational capabilities.

The innovation capacity of SMEs is a key issue for Europe's competitiveness and growth. The contribution of business to innovation is crucial, and a dynamic business sector is a key source and channel of technological and non-technological innovation. Smaller companies frequently exploit technological or commercial opportunities that have been neglected by more established companies and commercialize them, thereby contributing to growth and employment. As a result, SME innovation 'capacity' is naturally at the top of the European, national and regional innovation policy agendas.

Eco-innovation

The concept of eco-innovation has emerged as a global approach for fostering sustainable development for all societies. Eco-innovation can be defined as "all efforts from relevant actors that introduce, develop, and apply new ideas, behaviors, products and processes and contribute to reducing environmental

burdens or ecologically specified sustainability targets”. Eco-innovation plays a key role in promoting and implementing green growth because it promotes all forms of innovation that reduce environmental impacts and strengthens resilience to environmental pressures. It is also decisive in efforts towards resource efficiency and a circular economy.

Eco-innovation is a key element because it increases value for both producers and consumers while reducing negative impacts on the environment. In a global context, where changes increasing and innovation is disruptive, sources of competitive advantage must be created, and differentiation strategies must be developed through eco-innovation. Investment in eco-innovation enables firms not only to gain a privileged market position but also to maintain this position in the long term. If companies are unable to compete through cost, they can compete through innovation. The trend is positive and increasing, and the data reflect the tertiarization of the economy. Therefore, eco-innovation should not be overlooked in service sectors. In the ecological domain, these innovations may originate by viewing the environment as an engine for strategic change. Eco-innovations can take place in three business areas, as:

Process innovations

These innovations relate to the production of goods and services. The goal is usually to enhance eco-efficiency. In most cases, these improvements are based on the use of more environmentally-friendly production technologies.

Organizational innovations

These innovations relate to restructuring within the companies. These innovations primarily concern employees and the organization of their work tasks. New forms of management such as the adoption of environmental management models also fall into this category.

Product innovations

These innovations refer to the development of a completely new product or service or the improvement of an existing product or service. For example, ecological design could offer a good alternative to producing products that use natural resources more efficiently. The use of recycled organic materials is an example of the improvement of an existing product. The development of long-term sustainable environmental technologies such as renewable energy technologies entails the development of new products in the market.

The evolution and development of eco-innovation and ecopreneurship would be impossible without the support of other key elements in the ecological transition. These elements include ecological consumers, whose consumption habits define a new lifestyle.

Ecopreneurship

The term ecopreneurship is a portmanteau word formed from combining the form eco (as in ecological) and entrepreneurship. The term eco comes from the Greek word *eikos*, which literally translates as *home*. Ecology is the branch of science that studies how our home functions in the sense of our environment and surroundings. People's interest in taking care of and preserving biological resources has increased in response to a model of production that consumes natural resources more quickly than they can recover. Under such a model, resources are depleted more quickly than they are replenished.

Entrepreneurship, on the other hand, is generally defined as the **discovery of gaps in the market** in which entrepreneurs are capable of spotting and exploring new business opportunities. Thus, ecopreneurship is the search for new opportunities that help protect the environment in pursuit of environmental sustainability.

Ecopreneurship is related to the economic concept of the common good, which refers to fostering and imparting the human values of dignity, solidarity, sustainability, social justice, democracy, and transparency. The economy of the common good has a broad scope and covers principles that concern not only people but also the environment. The companies' goal is to conduct its business activities without negatively affecting people and the environment.

Ecopreneurship cannot be understood without considering innovation. Ecopreneurship and innovation are two distinct yet interrelated concepts that have a symbiotic relationship in the context of environmental development. The Environmental Technology Action Plan (ETAP), which was adopted by the European Commission (EC) to promote eco-innovation and the use of environmental technologies, defines environmental innovation as follows: "the production, assimilation, or exploitation of a novelty in products, production processes, services, or in management and business methods, which aims, throughout its life cycle, to prevent or substantially reduce environmental risk, pollution, and other negative impacts of resource use (including energy)."

Eco-innovation and SME relations

It is the small and medium-sized companies' core to properly address the importance and impact of eco-innovation in their day-to-day business. Eco-innovation matters in two ways for SMEs. First, many SMEs could benefit by introducing eco-innovative approaches into their operations. Second, SMEs, and especially start-ups, can be the ideal incubators for eco-innovation, and can bring to market new, less environmentally damaging products, services and processes.

Eco-innovation can be an idea for a new start-up or product as well as for making improvements to existing operations. One focus of eco-innovation is new technologies, but creating new services and introducing organizational changes are just as important. At its core, eco-innovation is about creating business models that are both competitive and respect the environment by reducing resource intensity of products and services.

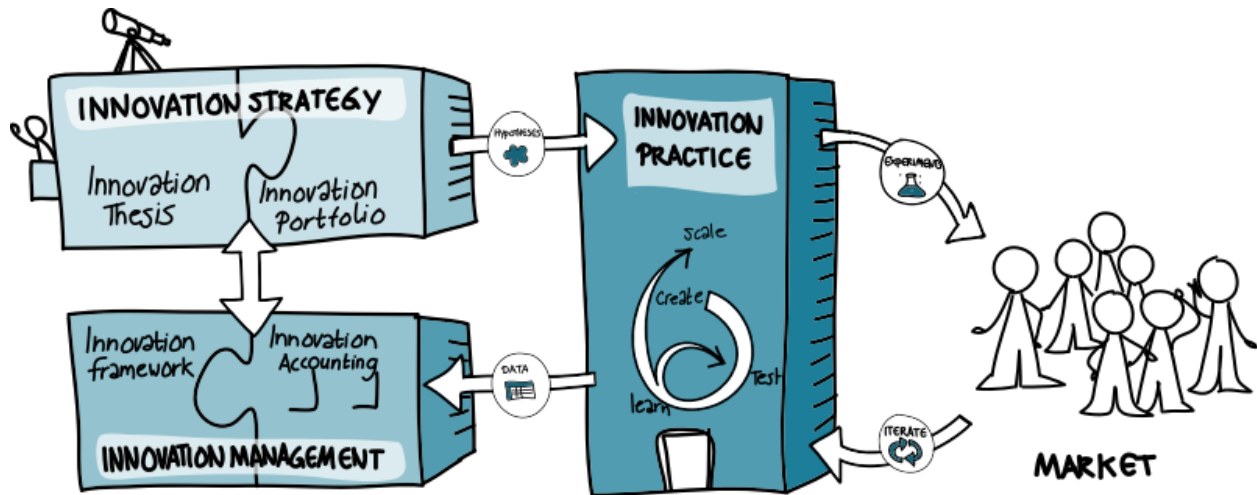
What is about?

Eco-innovation is the introduction of any new or significantly improved product (good or service), process, organizational 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 lifecycle**.

Eco-innovation takes the full lifecycle perspective into account, rather than just focusing on environmental aspects of individual lifecycle stages. It does not just mean inventing new products and delivering new services, but it also encompasses reducing environmental impacts in the way products are designed, produced, used, reused and recycled.

Incremental eco-innovation focuses on improving existing goods and services, whereas disruptive eco-innovation is about thinking outside of the box and bringing completely novel approaches to market.

Eco-innovation makes both economic and environmental sense. It means being economically competitive while respecting the natural environment.



BUT

Many SMEs have a limited knowledge about eco-innovation “potential”, environmental regulations or tools they can use to improve the environmental performance of their products or services.

Many SMEs do not understand their role in a stable and sustainable circular economy and eco-innovation.

Many SMEs are unaware that they are not just producers but also consumers can contribute for uptake of circular economy principles dissemination.

Eco-Innovation performance across the EU

European environmental policy has moved European industries towards greater sustainability. The goal now is to integrate eco-innovation in environmental and industrial policies by focusing on its contribution to economic growth, job creation and EU industry competitiveness.

A special feature presents the most recent (2018) Eco-Innovation Index developed by the *Eco-Innovation Observatory*. In the 2018 version of the Eco-Innovation Index, Luxembourg leads the ranking of all EU countries. Germany and Sweden follow very closely. In addition, Finland and Austria have been grouped

to the 'eco-innovation leading' countries. Eleven Member States obtained scores around the EU average and were therefore labeled as 'average eco-innovation performers'.

However, strengths and weaknesses between single components vary widely among countries and performance categories. The 'ecoinnovation leaders' group, for instance, had high performances across almost all components, but reached relatively lower positions in the sub-index regarding socio-economic outcomes. This implies that policy measures to improve employment rates and turnover in eco-industries and circular economy sectors should be considered for those countries with a low performance in that eco-innovation area. Regarding the low performances of the country group 'catching up in eco-innovation', further efforts are needed regarding R&D spending in order to trigger eco-innovations on the ground.

The graph below shows the EU Eco-Innovation Global Index for 2018 regarding the *Eco-Innovation Observatory*.

The Eco-Innovation Index aims at capturing the different aspects of eco-innovation by applying 16 indicators grouped into five thematic areas.

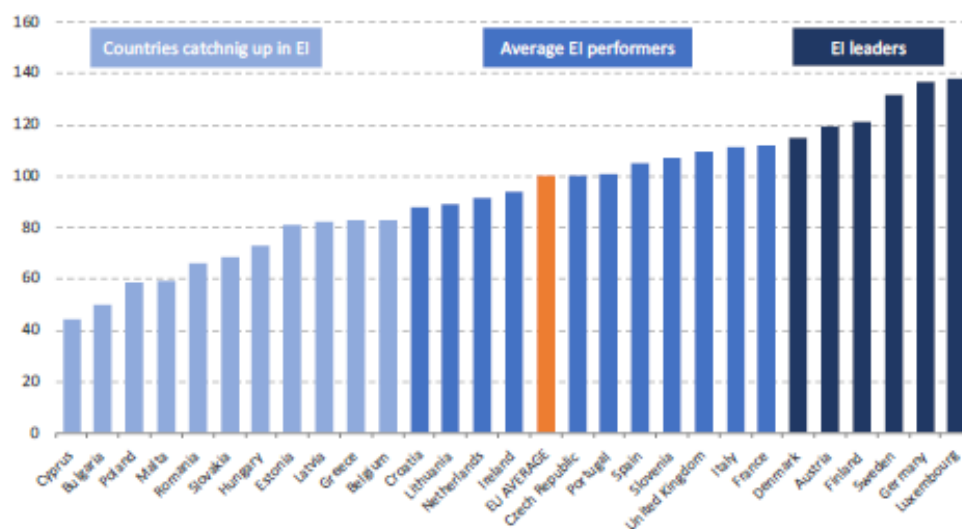


Figure 1 Eco-innovation index 2018¹

¹ Source: Eco-innovation observatory

The tendency, clearly demonstrated in the data for 2018, is for low values of the eco-innovation index in the Balkan and Mediterranean countries.

Policy instruments to promote the circular economy transition. Good practices.

A number of policy instruments are already in use at the EU-level and are being adapted to the needs of the circular economy while others are being developed to steer the transition. Altogether, synergies and overlaps between instruments must be strengthened to help streamline administrative procedures (e.g. by using the same basic metrics and criteria for product evaluation) and facilitate greater uptake of good practices across product groups, sectors and Member States. Labeling schemes are the most widely implemented voluntary measure and are just starting to be used to distinguish products, which contribute to a circular economy transition. The European Ecolabel is one of the oldest and most recognised ecolabels in the EU (celebrating 25 years in 2017). The European Commission has started to integrate circular economy criteria for product groups (e.g. computers and tablets will need to pass robustness and battery longevity tests) and aims to continue to do so in the future. However, a lack of promotional activities for the EU Ecolabel, a wide gap in uptake across different Member States (Spain has over 30,000 ecolabelled products and services, while 13 Member States have less than 200) and significant differences in the uptake of different types of products hamper effectiveness of the label for promoting widespread change. Tax reductions or other incentives to engage producers would help to this end. The Nordic Swan Ecolabel is an example of an ecolabel aiming to branch out towards promoting secondary raw materials, services and sharing-based models of consumption to better reflect circular economy criteria. Such experiences could also help feed into the EU Ecolabel to strengthen it in the future. In practice, established green public procurement practices do not yet deliver widespread circular economy benefits. Green public procurement criteria in the EU are linked to the Circular Economy Action Plan, which addresses strategies such as product end-of-life management by contractor, recycled content, design for recycling, design for longevity and packaging. However, there are also gaps. For example, criteria requiring refurbished or remanufactured products are barely represented among the criteria for the 21 product groups distinguished by EU procurement criteria. Some examples from Member States set an example for other countries, regions and organisations. *For example, Aalborg Municipality (Denmark) included innovative circular economy principles in tendering for school furniture and circular procurement from Wales resulted*

in 45 per cent of all furniture in the new offices of Public Health Wales being reused, with 49 per cent of items remanufactured and only 6 per cent sourced from new stock. Dialogue and communication with suppliers and throughout the process appear to be critical to gaining a shared understanding on the values and commitments that benefit final results and help public organisations to rethink their procurement strategies.

The Environmental Management and Audit Scheme (EMAS) is a well-established tool in the EU that can help companies and organisations to identify circular economy opportunities. It has been in operation since the mid-1990s, leading to a high level of experience regarding both operational efficiency and know-how towards helping companies and organisations evaluate, report and improve their environmental performance, in particular as regards resource efficiency. EMAS Annexes were revised in 2017, requiring organisations to assess the significance of their environmental impacts from a life cycle perspective. This is the first step towards increasing knowledge and identifying potential business opportunities related to the circular economy transition. To continue to make use of such tools, an expansion and scaling-up of organisations using EMAS tools seems to be key to increasing outreach and potential for change, in particular in those countries with a low level of participation (there is a high concentration of EMAS certified organisations in a handful of Member States, with its prevalence relatively low in the majority of Member States). Organisations using EMAS express interest in seeing both higher levels of EMAS awareness among the general public as well as recognition from policy, in particular in the form of fee reductions and/or tax relief. Indeed, in many Member States, there is a weak system of incentives from the government for companies to implement and maintain EMAS registrations. An overall review of EMAS found that informational and marketing instruments were widely favoured (with over 80 per cent of Member States implementing such instruments) over legal (with 55 per cent of Member States employing some form of legal instrument such as streamlined permit procedures) and financial ones (present in 35 per cent of Member States). Increasing incentives to encourage participation is therefore a key step, along with strengthening the support EMAS can offer to different types of organisations (77 per cent of EMAS registered organisations were SMEs in 2017) toward implementing the circular economy in their daily operations, practices and business models.

Extended Producer Responsibility (EPR) can directly contribute to the circular economy by linking product design with end-of-life management, but so far the focus on recycling in many EPR schemes

has prevented further investment in innovations for reuse, repair or remanufacture. The application of EPR schemes range from take-back requirements (around 75 per cent of all schemes) to disposal fees and deposit refund systems. Schemes with varying levels of maturity and performance exist across EU Member States, with specific EU legislation in place for end-of-life vehicles and waste electrical and electronic equipment.

For example, between 2012 and 2015, Germany's packaging waste production continued to rise, whereas packaging waste generation in France stabilised (mainly due to related national legislation implemented in 2012). Germany has the lowest performance regarding the prevention of packaging waste in the EU, which is explained by the absence of effective incentives for producers to prevent or reduce the amount of packaging waste (e.g. incentives for ecodesign are missing, producer fees were reduced over time, etc.). Another challenge observed in Germany (and beyond) is the downcycling of plastic packaging waste – despite high levels of collection, low quality hampers reuse). Many of these issues will be tackled under a new scheme set for 2019, however waste prevention will still not be explicitly reflected in the German fee system. In contrast to Germany, France has been able to reduce the amount of packaging waste produced and increase the recycling of packaging waste. A collective EPR scheme is in place, which requires producers to ensure the end-of-life management of the products they put on the market, in particular through the implementation of fees. In 2012, these fees were adapted in line with environmental criteria. Good sorting practices and eco-design are now rewarded and packaging which hampers recycling is penalised. Examples of best practices and key lessons learned can therefore be considered when implementing similar EPR schemes in other Member States and at an EU level. Altogether, strengthening financial incentives for eco-design seems crucial to the successful application of EPR schemes.

The Ecodesign Directive, which historically addressed mainly the energy efficiency aspects of energy-using products, is being expanded toward material efficiency. The Commission is systematically considering the possibility of establishing more product-specific and/or horizontal requirements in terms of material efficiency in revisions of existing ecodesign measures as well as new measures in order to cover areas such as durability (e.g. minimum life-time of products), reparability (e.g. availability of spare parts and repair manuals, design for repair), upgradeability, design for disassembly (through for example easy removal of certain components), information provision (e.g. marking of plastic parts) and ease of reuse and recycling (e.g. avoiding incompatible plastics). However, challenges related in particular to

possible rebound effects and trade-offs (e.g. repair is not per se more material efficient if it is particularly material or energy intensive; consumers shifting behaviour to purchase higher levels of reused products could lead to increased amounts of consumption instead of less) must be addressed.

The Product Environmental Footprint is an instrument that is currently in a transitional phase and aims at measuring the environmental performance of goods and services throughout their life cycle. The pilot phase period was conducted between 2013 and 2018 and was designed as a multi-stakeholder process, involving more than 280 volunteering companies and organisations. Within the pilot phase, ‘Product Environmental Footprint Category Rules’ were developed, each containing a set of rules on how to calculate the life-cycle wide environmental performance of the product in scope. Consumers who participated in the pilot tests confirmed a general interest in information generated through the Product Environmental Footprint. Most small and medium sized enterprises queried declared product environment footprints to be a useful tool in terms of increasing performance and reducing negative impacts. Overall, high potential is seen for using the PEF method in existing schemes such as the EU Ecolabel, sector standards, and green public procurement, or for exploring its use in support of green claims. Further ways to integrate the product environmental footprint into existing or new policies are currently being explored.

A number of bottom-up instruments are being implemented in EU Member States, which could serve as inspiration or models for replication across the EU. *For example, economic and tax incentives for repair services have started drawing the attention of national and local policy makers in a number of Member States. Sweden has introduced two main forms of tax-based incentives to increase the use and uptake of repair services. Several other Member States such as Ireland, Luxembourg, Malta, the Netherlands, Poland, Slovenia and Finland have also introduced VAT reductions on minor repair services (including mending and alteration) of items such as bicycles, shoes and leather goods. Social enterprises, for example in France and Belgium, involved in collection and sales of used goods are also exempt from and/or have reduced VAT rates. Because many consumers are still wary of buying second-hand products due to the belief that second-hand implies lower quality, many social enterprises are taking action to create quality labels. For example, in the Netherlands, re-use centres can be certified for three years following a formal audit and undergoing interim checks. A pilot project in Ireland, consisting of 10 re-use organisations, launched “Re-*

Mark”, Ireland’s Re-Use Quality Standard of Excellence in 2017. Finally, 12 Member States have developed deposit refund systems for beverage containers, helping to combat plastic waste.

Altogether, products play a key role to ensuring a close looped system within the circular economy. **The level of systemic change possible within the context of product eco-innovation for the circular economy is not an isolated effort of just business, but requires widespread societal transition, including the broad spectrum of actors across economies and societies.** Greater synergy between existing and new instruments would greatly increase their effectiveness and contribute to higher levels of uptake across the EU. Greater levels of coherence from a systemic perspective may also help to ensure that individual instruments are not used to incentivise specific pathways of the circular economy (e.g. recycling) at the costs of others (e.g. reuse and repair). Waste prevention must remain a key priority as well as the inclusion of citizens in the circular economy transition through actions to raise awareness, shift behaviors and promote more sustainable practices and lifestyles.

Entrepreneurial activity in Bulgaria – key findings

There are substantial differences across different parts of Bulgaria that need to be accounted for in national policies and government programs and initiatives. Understanding entrepreneurial intentions as a function of profoundly local factors are mandatory for establishing a nation-wide culture and practice of entrepreneurship. The most entrepreneurially active group is the 35-44-year-olds. The group of 18-24-year-olds shows a participation rate almost as high as the 35-44-year-olds.

Bulgarian entrepreneurs exhibit very low levels of international orientation, and this result is consistent with the explanation of a two-tier distribution of the Bulgarian early stage companies, a small number of which are internationally competitive.

In accordance with the GEM’s² latest annual³ report about the entrepreneurial activities in Bulgaria and other public available sources there are could be outline several key findings in regards to the environment, status and general picture as following:

- Only 52.9% of Bulgarian adults regarded entrepreneurship as a good career choice, compared to 57.5% a year earlier. 66.9% (71.5% in 2015) agreed that successful entrepreneurs enjoy high

² GEM- Global Entrepreneurship Monitoring

³ GEM Bulgaria 2016/2017

status in Bulgaria and 40.7% (49.3% in 2015) perceived that entrepreneurship receives regular media attention. The real danger here is that entrepreneurship might have fallen even further in the national agenda and that this early sign might be indicative of a weakening support and acceptance of entrepreneurship as the engine for the productivity leap that the Bulgarian economy needs to make in order to breach the gap in competitiveness compared to the high-income countries.

- In 2016 21.0% (15.8% in 2015) of the adult population in Bulgaria perceived good opportunities to start a business in the area where they lived. This result is significantly lower than the corresponding figure for Turkey and Greece. 39.7% (35% in 2015) of the population reports having capabilities to embark on this endeavor. In 2016 in Bulgaria, both the perception of opportunities and capabilities increased by the same degree. There is a very well established relationship between entrepreneurial intentions and perceived capabilities to start a business. therefore, the increase in the perceived capabilities to start a business can be seen as an early signal for increasing entrepreneurial intentions=
- The national rates of reported fear of failure (25.1%) are below the average group rates for efficiency-driven societies at 33.0%.
- The number of potential entrepreneurs is extremely low at 7.1% (5.3% in 2015) not only compared to the three benchmark groups but also globally. arguably, both the relatively low perceived opportunities and weak individual capabilities (these include both skills and self-confidence) explain the result in the case of Bulgaria, but it is clear that the stronger explanation relates to deficiencies in the business environment as respondents see few profitable business opportunities
- Young entrepreneurs have some significant strength including the low opportunity cost of time and stimulating entrepreneurship among them might be particularly effective. providing conditions for entrepreneurial opportunities for the youth has the potential to decrease the rate of youth emigration and even become one of the key factors to stimulate returnees
- In Bulgaria, there is no evidence for a gender gap regarding entrepreneurship. This must have a positive impact on the overall economic environment because economies with high female labor force participation are more resilient as they experience economic growth slowdowns less often.

- Despite its small territory, Bulgaria has sharp regional asymmetries regarding wealth generation, incomes per capita and ultimately, quality of life. There is a marked difference of 10 percentage points between residents in Sofia and those who reside elsewhere regarding their perception of entrepreneurship as a good career choice.

According to the national experts and studies, Bulgaria has a number of significant weaknesses. The most critical ones have to do with the entrepreneurship education at primary and secondary levels and the lack of explicit government support and initiatives that turn entrepreneurship into a government priority.

Some of the main weaknesses is the access to physical infrastructure and services, followed by access to commercial and professional infrastructure and supportive government policies related to taxes and bureaucracy.

The “one-stop shop” could not be identify entity that supports small and medium businesses and think that the support offered by existing entities is deficient. They recognize the increased number of government programs for startups and entrepreneurial ventures, but they also criticize the ways in which these initiatives are implemented. Moreover, there are serious reserves about the capacity of government officials engaged in these activities to efficiently and competently carry out their tasks.

In Bulgaria, access to finance comes as the second most important obstacle for entrepreneurship endeavors mostly due to: low financial culture of early-stage entrepreneurs, lack of adequate funds, lack of competent fund managers and proficient investors, conservatism and risk-aversion of more traditional fund providers such as banks, and lack of a critical mass of angel investors. These are common to all immature entrepreneurial environments.

Education is inextricably linked to entrepreneurial, eco-innovation intentions and growth as it influences entrepreneurs’ confidence in whether they have the skills and knowledge to start a business. Practical entrepreneurship training may better prepare school graduates for the transition from school to the labor market.

Entrepreneurship and eco-innovation entrepreneurship, in particular, in Bulgaria is not taught widely nor effectively. A continuous failure to include the pursuit of entrepreneurial mindset and skillset into the secondary education curriculum will lead to an increasing pool of idle and unemployable young men and women who will grow increasingly disengaged from the productive roles in the society.

Public institutions such as universities are not playing a central role in facilitating knowledge transfer and stimulating innovation. A common view is that universities have little to no role in supporting entrepreneurship.

Bulgaria's low levels of entrepreneurial activity are heavily influenced by a dominant culture of very low propensity to entrepreneurial risk taking. The experts share that currently, the dominant sentiment in Bulgaria is that little can be achieved through personal efforts and personal initiative.

Eco-innovation country profile - Bulgaria

Bulgaria has a rather small but vibrant group of innovation-oriented businesses which undertake innovation with a remarkable efficiency. In fact, this pattern of 'elite' innovation suggests that there might be a two-tier population of both early-stage and established businesses: one small group of innovation-active businesses and a much larger group of businesses that do not engage in innovation.

In the 2017 Environmental Implementation Review (EIR) report, the main challenges identified for Bulgaria for the implementation of EU environmental policy and law were:

- **to improve air quality,**
- **to ensure appropriate collection and treatment of urban waste water;**
- **and to properly implement nature protection legislation.**

Since the 2017 EIR report, Bulgaria has not yet held a national EIR dialogue to discuss those challenges.

Measures towards a circular economy

The Circular Economy Action Plan emphasizes the need to move towards a life-cycle-driven 'circular' economy, reusing resources as much as possible and bringing residual waste close to zero. This can be facilitated by developing and providing access to innovative financial instruments and funding for eco-innovation.

Following the adoption of the Circular Economy Action Plan in 2015 and the setting up of a related stakeholder platform in 2017, the European Commission adopted a new package of deliverables in January 2018. This included additional initiatives such as: (i) an EU strategy for plastics; (ii) a Communication on how to address the interplay between chemical, product and waste legislation; (iii) a report on critical raw materials; and (iv) a framework to monitor progress towards a circular economy.

Examining the 10 indicators in the circular economy monitoring framework, the circular (secondary) use of material in Bulgaria was 4.3 % in 2016 (significantly lower than the EU-28 average of 11.7 %). On the other hand, Bulgaria performs in line with the EU-28 average in terms of the number of persons employed in the circular economy, at 1.76 % of total employment in 2016 (EU-28 average 1.73 %). The percentage of jobs in Bulgaria related to the circular economy seems to have dropped since 2012, when it was 1.83 %.

In the 2017 Special Eurobarometer on EU citizens' attitudes towards the environment, 84% of Bulgarians said they were highly concerned about the effects of plastic products on the environment (EU-28 average 87%). 89% said they were concerned about the impact of chemicals (EU-28 average 90 %). Support for circular economy initiatives and environmental protection measures in Bulgarian society appear to be strong.

Resource productivity (how efficiently the economy uses material resources to produce wealth) in Bulgaria was 0.30 EUR/kg in 2017 compared to the EU average of 2.04 EUR/kg (as shown in *Figure 2* below). According to Eurostat provision data for 2018, the overall trend is maintained, with the average European level being 2.2391 EUR/kg and for Bulgaria 0.390 EUR/kg. That means that the resource productivity in Bulgaria remains among the lowest in the EU together with Estonia and Romania.

As pointed out in the 2017 EIR, no overarching circular economy policy programme exists in Bulgaria:

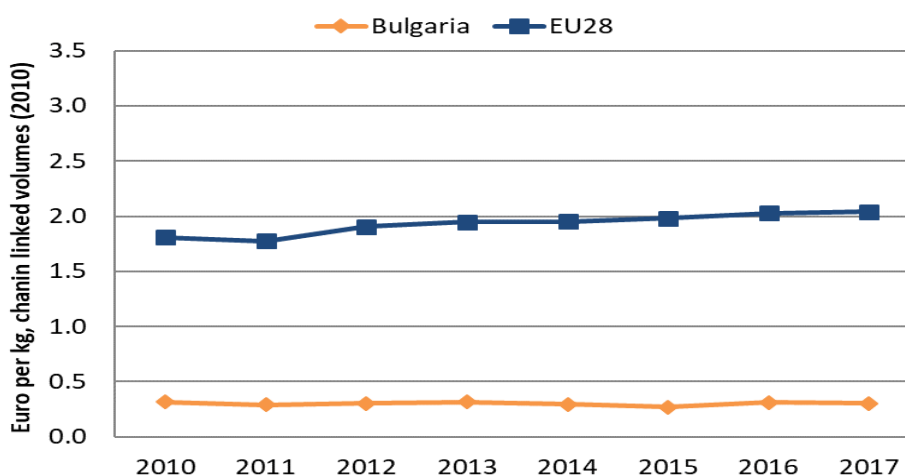


Figure 2 Resource productivity 2010-2017⁴

⁴ Source: European Commission, Resource productivity.

The number of EU Ecolabel products and EMAS-licensed organisations in a country can give a rough measurement of the circular economy transition. These two indicators show to what extent this transition is engaging the private sector and other national stakeholders. These two indicators also show the commitment of public authorities to policies that support the circular economy. As of September 2018, Bulgaria had only 23 products and 5 licences registered in the EU Ecolabel scheme out of 71707 products and 2167 licences in the EU8. Bulgaria had 9 organisations registered in EMAS as of May 2018.

The main challenges for eco-innovation in Bulgaria include shifting towards a low carbon economy and promoting resource efficiency. Since 2013, energy efficiency and the use of renewable energy has improved, slowly reaching the level agreed upon with the European Commission for 2020: a 50% reduction in energy intensity of gross domestic product (GDP) by 2020, resulting in approximately 25% improved energy efficiency. Regarding renewable energy, the objective of 16% share of RES energy in the gross end energy consumption by 2020 for Bulgaria has already been reached (18.8% in 2016). The challenges related to the transport sector and the development of green technologies include achieving the objective of 10% share of the energy from renewable sources in transport by 2020 (7.3% in 2016), and developing the R&D sector so that it represents 1.5% of GDP by 2020.

Some of the main challenges that Bulgaria faces in terms of developing a low carbon economy and promoting resource efficiency include:

- The use of outdated energy infrastructure in certain geographical areas, which generates significant losses in the transmission and distribution of energy; however, recent investments have been observed in this domain.
- The use of outdated equipment and technologies used by some industry sectors; however, this is not the case for all industry sectors in Bulgaria. Most new industrial installations have modern equipment and technologies. Investments in enterprises (technologies and equipment) were also co-funded by the EU programmes and initiatives at both national and European level.
- Limited funding to finance renovation and modernisation of the machinery and equipment of Bulgarian enterprises. Funds for renovation and modernisation come mostly from EU funding and financial instruments.
- Despite the decrease in Bulgaria's energy intensity, it nevertheless remains high among EU Member States. Based on Eurostat data in 2012 the share of renewable energy use in Bulgaria

reached 16% as a part of the country's total energy consumption, which has since steadily increased (18.8% in 2016).

- Improving capacity and performance in terms of developing eligible projects to apply for EU funding.
- The persistence of **energy poverty and high energy prices** faced by the Bulgarian population is an important issue that may feed into the population's lack of interest for the use of innovative green technologies.
- Further improvement is needed in transport infrastructure. Since 2008, there have been significant investments in infrastructure (highways, roads, railways, etc.), however further developments are needed in this domain, mainly in the North-West Region.

Despite the challenges noted above, several positive trends have been identified in Bulgaria towards further progress in eco-innovation and circular economy. This includes the government's increased focus and priority in these domains, which are seen through recent funding schemes and policy initiatives. In addition, Bulgaria's service oriented economy, IT services and tourism are performing well, which can be used to further develop opportunities in eco-innovation and circular economy.

SME and resource efficiency

Bulgarian SMEs continue to perform below the EU average on environmental aspects of the Small Business Act (see *Figure 3*). Since 2008, only limited progress has been made in this area.

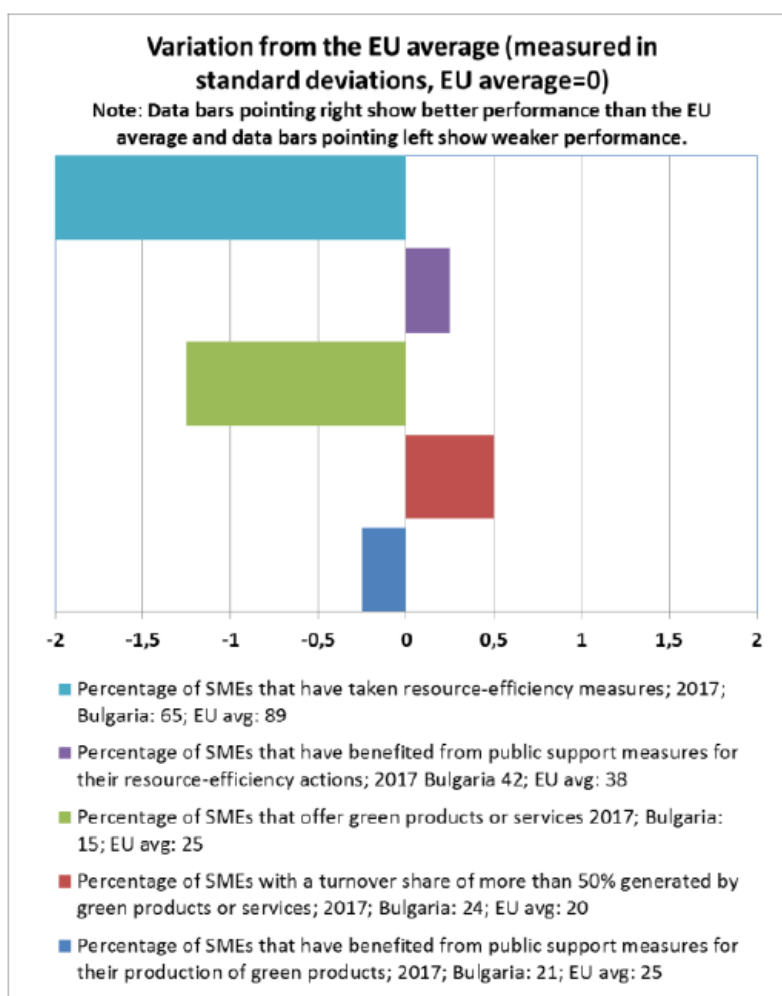


Figure 3 Environmental performance of SMEs⁵

The percentages of SMEs that have taken resource efficiency measures or that offer green products or services are well below the EU average.

The proportion that creates more than 50 % of their turnover from green products and services is higher than in most EU countries. Small businesses taking resource efficiency measures receive more public support than the EU average. Against this background, the Bulgarian support system seems well equipped to reach out to more SMEs and encourage them to take actions that are more ambitious.

⁵ Source: European Commission, 2018 SBA fact sheet - Bulgaria, p. 14.

The latest Eurobarometer on ‘SMEs, resource efficiency and green markets’ asked companies about both recent resource-efficiency actions they had taken and additional resource efficiency actions they planned to take in the next 2 years. The Eurobarometer then compared these responses with responses given to the same questions in 2015. Bulgarian companies show a decline in intentions to invest in all eight aspects of resource efficiency, from the already low levels in 2015.

Only 13 % of Bulgarian companies (against a range of 3 %-38 % in the EU and an average of 22 %) relied on external support in their efforts to be more resource efficient. For them, private sector funding and private sector consultancy gained in importance, while public sector funding and advice fell significantly compared to 2015.

Among Bulgarian companies, grants and subsidies are mentioned by 32 % as useful help; the different types of consultancy are assigned similar importance (17-18 %) slightly less than the EU average (20-23%).

There is significant potential for raising awareness and ambition among SMEs to become more resource efficient and to develop products and services for green markets.

Establishing accessible and effective support services is an essential element of any strategy — but this is having less impact because Bulgarian enterprises currently assign little value to external cooperation.

Eco-innovation in Bulgaria

General overview

In 2017, Bulgaria was ranked last under the Eco-Innovation Scoreboard. This indicates low performance of the country in terms of circular economy and eco-innovation activities. Despite this, Bulgaria has made efforts to improve their performance. In 2018, Bulgaria ranked 27th on the 2018 European Innovation Scoreboard, as the sixth worst-growing innovator (having slipped 1.5 % since 2010) (see *Figure 1*). As shown in *Figure 4*, since 2010, Bulgaria’s performance continues to be well below the EU average.

However, for the period 2015-2018 a lasting trend can be established to improve overall performance and almost double the results.

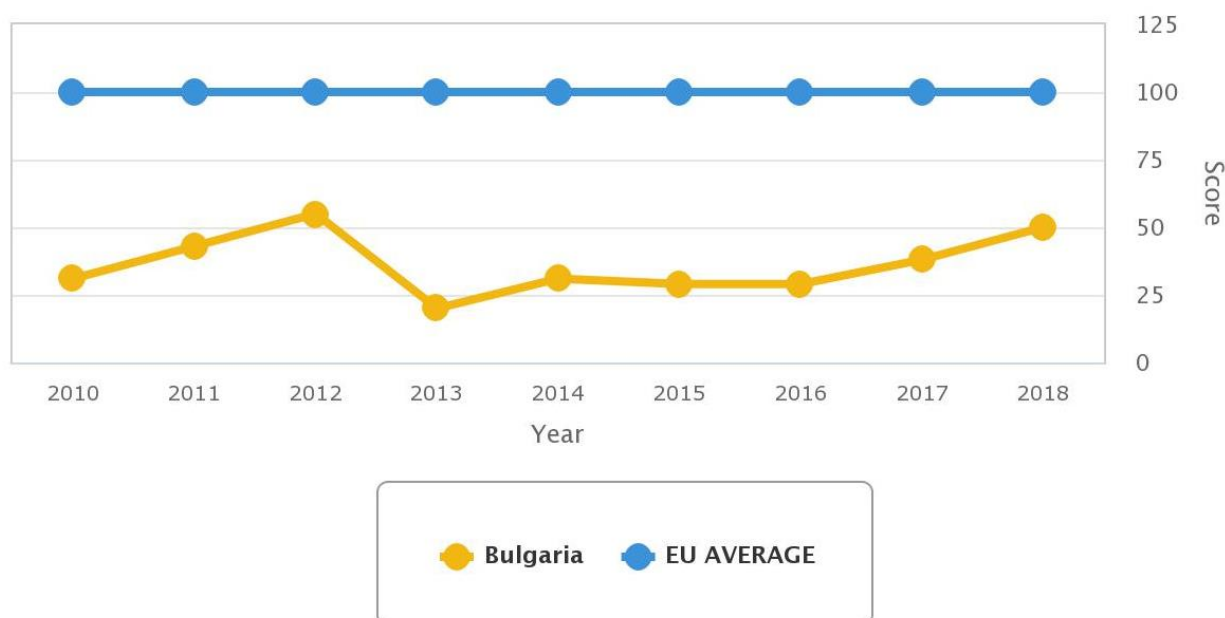


Figure 4 Eco-innovation index, 2018⁶ Bulgaria and EU average

This indicates low performance of the country in terms of circular economy and eco-innovation activities. Despite this, Bulgaria has made efforts to improve their performance in these domains through the implementation of several Operational and National Programmes since 2013.

Bulgaria continues to be categorised in the lowest performing Member States (MS) group, although a key objective is to obtain higher performance by 2020. The main challenges for eco-innovation in Bulgaria include increasing domestic and foreign investment opportunities in eco-innovation and circular economy, promoting efficient use of resources through increasing energy efficiency (especially in homes and building infrastructure), further developing renewable energy sources, and improving sustainability practices within the transport sector. National investments from government and industry would significantly encourage more support for eco-innovation and circular economy initiatives. Furthermore, the legislative framework could be further improved to encourage more investment in the sector.

Economic, financial, administrative and socio-cultural barriers were identified, which hamper the advancement of eco-innovation in the country. Important barriers included limited investment and funding opportunities, high energy prices and inefficient energy infrastructure. Nonetheless, several

⁶ Source: Eco-innovation observatory

significant drivers were also identified; the most significant include: increased awareness from both business, citizens and government regarding the benefits of green products and technologies, high skilled human resource and knowledge capital and Bulgaria's leading regional position in the information and communications technology (ICT) sector. Despite the growing demand for environmentally-friendly products and services, stakeholders remain reluctant to invest in these areas due to consequences of the economic crisis. To meet the objectives of promoting energy efficiency, renewable energy sources, waste management and green transport, local stakeholders are taking advantage of funding options set up by the European funded Operational Programmes.

Bulgarian Components of the Eco-innovation index

Bulgaria's performance is based on the five components of the index: eco-innovation inputs, ecoinnovation activities, eco-innovation outputs, environmental outcomes and socio-economic outcomes.

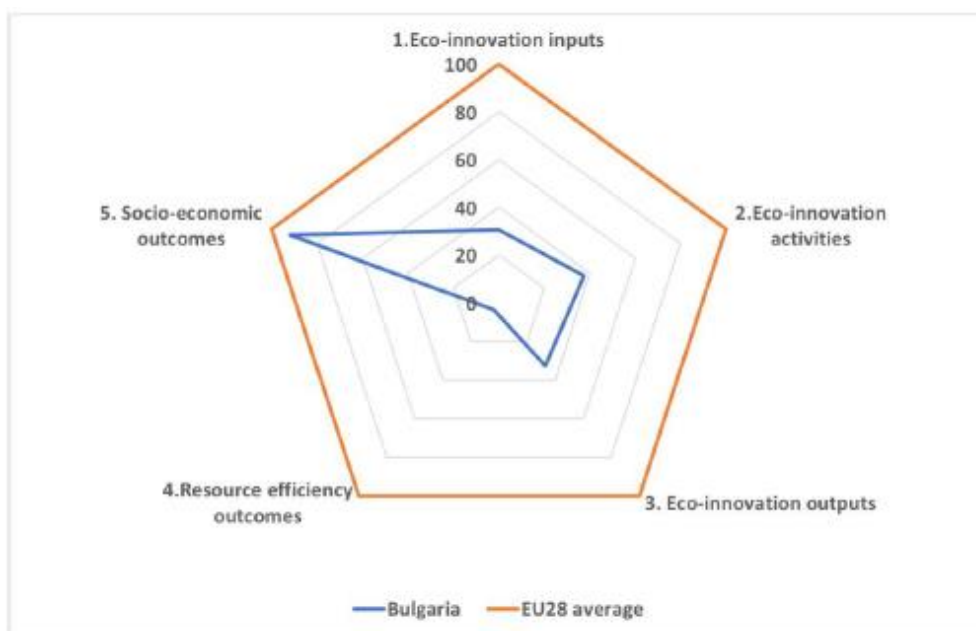


Figure 5 Components of the Eco-innovation index for Bulgaria, 2017-2018

The component Eco-innovation input consists of aggregated figures of three indicators: **“Governments environmental and energy R&D appropriations and outlays”** (Share of GDP) with a value of 2, **“Total R&D personnel and researchers”** (Share of total employment) with a value of 27. The indicator **“Total value of**

green early stage investments” (€/cap) could not be evaluated due to lack of data. The Input component’s value of 30 positions Bulgaria before Cyprus, Malta, Croatia, Slovakia and Lithuania among EU countries.

The **Eco-innovation activities** component has a score of 37. This positions Bulgaria along with Romania and before Poland (17), Belgium (11) and France (10). Compared to the other components, Bulgaria’s higher ranking here is due to the relatively high value for the indicator “ISO 14001 registered organisations” (per mln pop) at 39, which is higher than the EU 28 average of 30. The other two indicators of this component – “Enterprises that introduced an innovation with environmental benefits obtained within the enterprise” (% of total firms) and “Enterprises that introduced an innovation with environmental benefits obtained by the end user” (% of total firms) represent respectively the scores of 5 and 6. These results can be explained by the low interest of enterprises in introducing innovation with environmental benefits obtained within the enterprise and the low interest of end users in products and services that have environmental benefits. The weak interest of end-users is mainly due to still relatively low purchasing power of the population.

The component **Eco-innovation output** is an aggregated figure of three indicators: “Ecoinnovation related patents” (per mln pop), “Eco-innovation related publications” (per mln pop), and “Eco-innovation related media coverage” (per number of electronic media). For Bulgaria, their respective values are 2, 0 and 34. The generally low scores of the three different indicators put Bulgaria in the second to last position for Eco-innovation output along with Slovakia and before Hungary.

The component **Resource efficiency outcomes** is an aggregated figure based on four indicators: “Material productivity” (GDP/Domestic Material Consumption, €/kg), “Water productivity” (GDP/Water Footprint, €/m³), “Energy productivity” (GDP/gross inland energy consumption, €/toe), and GHG emissions intensity (CO₂e/GDP). According to this component, Bulgaria is ranked second to last among the EU 28 with a score of 4, just before Estonia (2). “Material productivity”, “Water productivity”, “Energy productivity” and “GHG emissions intensity” have respectively the score of 0, 0, 6 and 0. All indicators hold the lowest values and lag largely behind the leaders in each group. Compared to 2015, GHG emissions intensity has slightly improved, due to enhanced control on industrial polluters and society activity against air pollution.

Based on the fifth component **Socio-economic outcomes**, Bulgaria comes close to the EU average with the score of 85, which places the country in the middle of the ranking along with Austria and France. Within this component, the indicator “Turnover (revenue) in eco-industries and circular economy” (% of

total revenue across all companies) holds the highest value of 65, compared to the other two indicators in this group: "Employment in eco-industries" (% of total employment across all companies) with a score of 40 and "Exports of products from eco-industries" (% of total exports) with a value of 10. In 2015, the final score for this component was comparable (81).

The analysis of the composite Eco-innovation index shows that Bulgaria has relatively high performance in certain indicators within some components and concurrently low performance for the other indicators within those same components. This difference in the indicators' weight and share within the components displays a lack of balance in the nation's innovation system. A specific example would be the "ISO 14001 registered organisations (per mln pop)" indicator, which is strength within the EI Activities Component and the indicators related to enterprises that introduced an innovation with environmental benefits obtained within the enterprise or the end user, which are weaknesses within the same component. The results of this component based on its indicators show low level of innovation activity in enterprises and relatively high level of organisations implementing environmental management systems. The explanation behind this can be increasingly stringent regulatory requirements and public pressure that encourage organisations to use on a voluntary basis internationally recognised standards to identify and manage the environmental impact of their activities. Nonetheless, the ISO 14001 certification appears to serve as a precautionary measure to prevent non-compliance with multiple regulations rather than investment to improve environmental performance. The results of the Eco-IS highlight the fact that barriers and areas for improvement still exist for the government to improve eco-innovation and circular economy in the country, which can explain why Bulgaria score has remained the lowest since 2013.

Some of the main challenges for eco-innovation in Bulgaria are still: to increase investment opportunities, promote efficient use of resources, further develop renewable energy sources, and improve sustainability practices within the transport sector.

Significant drivers of eco-innovation have also been identified, such as increased awareness among businesses, citizens and government of the benefits of green products and technologies; highly skilled human resources and knowledge capital; and Bulgaria's leading regional position in the information and communications technology (ICT) sector.

Targeted support for eco-innovation is provided, for example, by the National Innovation Fund and the European Regional Development Fund (by Operational Programme "Innovation and Competitiveness")

2014-2020). In recent years, projects have been approved for innovative technologies for environmentally sound treatment of hazardous waste, recovery of waste rubber products, production of heat by waste pyrolysis, analysis of exhaust emissions, conversion of conventional electric vehicles, etc. In 2018 Bulgaria approved National Research Programmes with around EUR 30.5 million to be spent in research projects until 2022. Two of these programmes cover research related environmental challenges – National research programme for low carbon energy for the transport and households and National research programme for environmental protection and reduction of the risk of adverse phenomena and natural disasters with financial resource of approximately EUR 3.7 million and EUR 3 million respectively.

Eco-innovation is also promoted by organisations such as Cleantech Bulgaria, which is a business network founded in 2012 to promote sustainable economic development through clean technologies and green innovation.

The Eco-innovative Virtual Lab was set up as part of the Ecolnn Danube project co-funded by the Interreg Danube Programme. The general objective is to improve cooperation between people active in eco-innovation, with special emphasis on the development and application of eco-technologies in the Danube Region.

Barriers to eco-innovation and circular economy

In Bulgaria, some of the most important barriers to eco-innovation and a circular economy are of **economic and financial nature**.

Bulgaria is characterised by **high-energy prices**. Although electricity prices in Bulgaria are the lowest amongst countries in the EU, the main problem is the low-income level and the energy consumption structure in the country. As such, few countries with the climate conditions of Bulgaria use so much electricity for household heating, which is ineffective and results in higher costs for primary energy, compared to more environmentally sustainable and lower cost energy sources. This share has increased in recent years. Furthermore, it is important to note that part of the losses in the energy sector also include renewable sources of energy because of legal requirements stipulating that a part of the energy comes from such sources; however renewable energy production is very expensive in Bulgaria.

Another economic barrier is the **limited funding to finance renovation and modernisation of the machinery and equipment of Bulgarian enterprises**. Funds for renovation and modernisation comes

mostly from EU funding. For example, in Bulgaria, the JEREMIE Holding Fund (JHF) aims to improve access to financing for micro, small and medium-sized enterprises (SMEs). The Eleven and Launchub investment funds, created with European and national funds, have already invested over EUR 20 million in 180 start-ups. At the same time, under OP "Innovation and Competitiveness" 82 start-ups contracts were launched under the "Innovation Development" procedure, totalling to more than EUR 15 million. At present, under the OP "Innovation and Competitiveness" program, actions have been made towards the improvement of production capacity in SMEs, through a total of 741 contracts, representing a total grant amount of BGN 399 Million (EUR 204 Million).

Further, there is a lack of capacity to develop proposals for funding, which could absorb the relatively high percent of co-financing of approved projects and language barriers in local companies eligible to apply for European programmes in the field of eco-innovation (especially regarding H2020 and LIFE programmes).

Related to the above is the **inadequate volume of domestic, private and foreign capital investments**. Investment opportunities are limited despite significant efforts of the Government to encourage increased investment.

The country's **legal framework** also lacks clarity in order to further attract private investments that would complement public investments. Therefore, improvements are needed towards a more stable legal framework, which would ensure a more predictable business environment. This would require increasing the institutional capacity of the state as well as the need for clear priorities, securing state funding for them and focusing on quality rather than quantity. In addition, policymakers' reluctance to pursue low-carbon growth through a comprehensive set of policies, fearing negative political repercussions is also a hindrance to more eco-innovation priorities.

In terms of socio-cultural barriers, **further awareness** is needed on the benefits of long-term investments in eco-innovation and energy-efficient products and technologies. Bulgaria also faces the growing problem of **energy poverty** (i.e. lack of access to affordable energy sources), which could lower the priority of eco-innovation and circular economy aspects for their citizens. According to the Bulgarian Energy Minister, Temenuzhka Petkova, vulnerable energy consumers amount to approximately 30 percent of the Bulgarian population. Aid for vulnerable consumers amounts to about EUR 45 million per year. The three factors determining the level of energy poverty - low income, high energy prices and poor quality buildings - are present in Bulgaria.

Finally, in addition to the above, other important barriers include:

- Further improvement needed **in transport infrastructure**: In Bulgaria, road transport is linked with an increase in fuel consumption and emissions of harmful substances in the ambient air, including greenhouse gas (GHG) emissions, ozone precursors, and particulate matter (PM). In the transport sector, road transport is responsible for 92.54% of the total energy use (EEA, 2015).
- The use of **outdated energy infrastructure** in some locations generates significant losses in the transmission and distribution of energy; however, recent investments have been observed in this domain.
- The use of **outdated equipment and technologies** by some industry sectors, however this is not the case for all industry sectors in Bulgaria. Most new industrial installations have modern equipment and technologies. Investments in enterprises (technologies and equipment) were also co-funded by EU Funds.

2019 PRIORITY ACTION: A strategic long-term view and an integrated approach for mainstreaming government's policies to speed up the uptake of the circular economy by all economic sectors needs to be developed.

What SMecoMP project is about?

Small and medium-sized enterprises (SMEs) in the Balkan Med area face strong challenges, especially in the areas of innovation, entrepreneurship and environmental protection and investment in innovative and/or "green" products or services is very small. Furthermore, the recent economic crisis increased unemployment and created the biggest brain drain in the region in modern times, depriving SMEs and Higher Education Institutes (HEI) from young, talented, and well educated personnel. The SMecoMP project addresses both challenges by developing a strong and resilient knowledge alliance among HEIs, vocational education training (VET) centers and SMEs, to promote eco-entrepreneurship, -management and -innovation. The overall objective is to promote eco-management and -innovation among existing SMEs and support young entrepreneurs in entering in the "green" and/or "blue" economy, creating new added value jobs, improving the area's competitiveness, ameliorating the brain drain phenomenon, contributing thus to the area's sustainable development.

Small and medium-sized enterprises (SMEs) dominate economic activity in all countries among the project partners. Despite their, substantially above EU average, contribution to their economies, SMEs in face strong challenges, especially in the areas of entrepreneurship and environment, which are exacerbated by the continuing economic crisis. Despite recent efforts to ease the process of starting and closing a company, there are still significant problems in promoting the set up of innovative, growth producing SMEs. Although countries in the area have some of the highest proportions of micro-enterprises in the EU, these are mostly small business focused primarily on producing current family income instead of boosting innovation and generating growth. Furthermore, only a small proportion of SMEs are investing in resource-efficiency measures or produce 'green' products/services. There are still vast opportunities, shared by all countries, in both managing environmental resources and natural beauty areas and introducing environmental issues in managing SMEs. Another common challenge is the brain drain phenomenon, which though could also be viewed as an asset for SMEs since they can capitalize on young people with good education high motivation and excellent talent. The SMecoMP project addresses the above common challenges and exploits the use of common assets, by creating a network of academic institutions and businesses' umbrella organizations in the programme area that will develop an educational framework to create and support eco-entrepreneurship and the appropriate eco-management tools and skills for businesses' staff and managers. The project's approach relies mainly in developing a business-university collaboration across countries in the programme area to promote eco-entrepreneurship, management and innovation. Universities are an integral part of the "skills and innovation supply chain" to business. However, for this supply chain to be of high quality, strong, resilient and close collaboration, partnership and understanding between business and universities is required. These are the foundations upon which the SMecoMP Transnational Network will be developed in order to address the two main common challenges identified above, inadequate entrepreneurship education and environmental and resource management knowledge and skills. Through collaboration, the SMecoMP will develop a comprehensive framework of training curricula that include courses, coaching and mentoring tools, seminars, workshops, impromptu think tanks and motivational videos, provided through classroom or electronic environments. Although none of these tools is innovative on its own, the combination of all of them, their tailor-made learning modules on eco-entrepreneurship and management and their focus on SMEs, definitely covers an existing gap in the programme area. SMecoMP will teach, mentor and coach green entrepreneurs that will produce/offer a product, service, or process

that benefits the environment. Promoting the participation of the area's SMEs in the "green economy" and, in the same time, exploring cooperation opportunities, will improve the area's competitiveness.

The SMecoMP project aims at establishing a strong and resilient knowledge alliance among Higher Education Institutes (HEIs), vocational education training (VET) centers and SMEs, in the programme area, to promote eco-entrepreneurship, -management and -innovation by developing an educational framework based on solid research and the exchange of experiences and best practices and using innovative education and training tools and methods. The overall objective is to improve quality of education and enhance SMEs' competitiveness in the programme area.

In this regard, the project has set the following specific objectives:

- report the existing and assess the required by SMEs in the programme area eco-entrepreneurship, -management and -innovation knowledge and skills,
- review the available and develop new formal and non-formal educational training processes and other initiatives,
- develop an innovative learning framework, by collaboration of the strategic partners (HEIs, VET centers and SMEs), to support education modernization and SMEs' staff lifelong learning,
- develop a learning-outcomes-based curricula jointly by the HEIs and VET centers and the labor market actors based on the identified SMEs professionals' cognitive and training needs,
- develop and deliver tailor-made training modules adapted to eco-innovation entrepreneurial knowledge and skills required by SMEs staff,
- increase professionals and SMEs' awareness on eco-innovation and sustainable economy practices,
- establish an active transnational network of academics, vocational trainers, researchers, mentors, professionals, spin off staff and new business entities to foster the integration of education, research and business,
- provide a self-sustaining implementation strategy to support the recognition and transfer of SMecoMP approach outside the Balkan Med area.

The SMecoMP's main outputs are:

- SMecoMP Transnational Network of academics, SME's staff and other stakeholders, that strengthens their collaboration and improves their capacities,
- development of a learning-outcomes based curricula and 4 training modules, focusing on Eco-Innovation and Entrepreneurship (EIE) knowledge and skills, catering to the needs of SMEs' staff and young entrepreneurs,
- establishment of the SMecoMP pre-Incubator program for individual entrepreneurs to receive training, coaching and mentoring,
- customization of an ICT training platform to deliver blended learning courses on EIE.

HEIs' participation in SMecoMP will improve their understanding of actual markets' needs and thus their curricula and enhance cooperation with businesses. SMEs will benefit from receiving training for their staff in sustainable practices, improving economic performance and competitiveness. SMEs' staff will improve their skills and competences, enhancing their performance at current occupation and also their employment opportunities. Young entrepreneurs will be supported to develop their ideas by receiving services such as management training, mentoring, coaching and networking connections.

SMecoMP contributes to Balkan Med programme's priorities: Innovation and Entrepreneurship and Environment.

The project's results are:

- i) The SMecoMP Transnational Network will become a focal point in the program area promoting and supporting sustainable practices of existing SMEs and fostering eco-innovation entrepreneurship, improving SMEs' competitiveness. The alliance will play a strong role in disseminating sustainable practices, setting up the basis for further and more focused cooperation schemes in the future. The SMecoMP's European character is supported by the participation of the Club NE, member of the European Confederation of Young Entrepreneurs.
- ii) Enhancement of SMEs owners and staff awareness and knowledge on eco-innovation and sustainable practices resulting in economic benefits for the business and the region but also in social benefits through minimization of environmental impacts enhanced efficiency of natural resource use and climate change resilience of the region.

iii) Improvement of existing SMEs' competitiveness and support of the establishment of new spin-off companies, contributing to the creation of new and high added value jobs and thus, ameliorating the brain drain phenomena in the program area.

iv) Development of an infrastructure (learning-outcomes-based curricula and training modules delivered through innovative ICT tools) that supports and enhances enterprise development and eco-entrepreneurship.

v) Improvement in higher education practices, by embedding practical knowledge and entrepreneurship across the University curricula.

vi) Improvement in lifelong learning processes, by equipping students, graduates and professionals with an enhanced capacity to generate ideas, the skills to realise these ideas and the knowledge and capabilities required to apply these abilities in the context of setting up a new venture or business.

SMecoMP results will not create economic advantages for the participating partners over their competitors.

Best practices

Best practices in Bulgaria

Since 2013, new sectors for eco-innovation have emerged, which has been supported by the implementation of funding and the economic development of the country.

Sustainable transport: To meet energy efficiency goals, Bulgaria's must improve the sustainability of the transport sector, which accounts for a large part of GHG emissions. To meet this objective, the Transport and Regional Development Operational Programmes provide funds to develop road infrastructure and accessibility. For example, significant investment has been and is currently made notably in rolling stock – such as new and more environmentally-friendly buses (mostly compressed natural gas (CNG)), trolley buses and trams. Additional incentives have been introduced to encourage the purchase of non-greenhouse gas vehicles as a result of a 30% reduction in the product charge for electric cars. The Climate Investment Program of the National Trust Eco-Fund: finances the purchase of electric vehicles by public institutions. By the end of 2017, a total of 44 electric and hybrid vehicles were delivered.

The initiatives listed above set up measures to increase the number of electric and hybrid vehicles by eliminating taxes for those vehicles, reducing registration fees, purchasing and developing infrastructure for electric charging, and raising awareness of the benefits of using electric or hybrid vehicles. While there were only about 1,500 registered electric and hybrid vehicles in Bulgaria in 2014, sales reached 800 units in 2016, which accounts for an annual growth of 50%. In 2017, a plan to install 80 charging stations in Sofia was announced⁵. According to data of the Industrial Cluster "Electromobiles", as of 1 September 2017, in Bulgaria there were already more than 80 charging stations for electric vehicles, with approximately 2,000-2,500 units of electric vehicles. Regarding the development of biofuels, very little has been done to support their use and deployment.

Sustainable energy consumption: To meet the demand for energy efficiency, the Energy Efficiency and Renewable Sources Fund still provides Bulgarian companies, municipalities and private individuals financial tools such as credits with below market interest rates and partial credit guarantees in the field of energy efficiency in order to improve building insulation and promote the use of renewable energy. In 2016, 185 projects were financed by the fund. The projects were applied for by municipalities, corporate clients, universities and hospitals and totalled a value of BGN 75.8 million (EUR 38.7 million); in comparison, 170 projects representing BGN 67.6 (EUR 34.6 million) were financed in 2014. Waste management: In 2015, Bulgaria received CHF 27.4 million (EUR 24,7 million) for two new projects under the Bulgarian-Swiss Cooperation Programme that will be implemented until May 31, 2019 by the Ministry of Environment and Water through The Enterprise for Management of the Environmental Protection Activities (EMEPA). The work on the two strategic projects for the management of specific waste streams financed by the Bulgarian-Swiss cooperation program include topics such as the ecological disposal of disused pesticides and other expired plant protection products and the study and development of pilot models for environmentally sound collection and temporary storage of hazardous waste from households. Both projects bring new practices in Bulgaria, which can be considered innovative at the national level. In October 2017, the Ministry of Environment signed a financing agreement with the Fund Manager of Financial Instruments, which envisages that BGN 52.4 million (EUR 26,5 million) from the Operational Program "Environment 2014-2020" will enter the Fund and used to provide bank guarantees for projects in the "waste" sector. The implementation of financial instruments that provide additional funds to beneficiaries is a new initiative under the Operational Program "Environment 2014-2020" and aims to compensate for the shortage of public financial resources for investments. The main outcome of the

implementation of the financial instrument is expected to be the reduction of the amount of municipal waste landfilled by providing additional capacity for re-use and facilitating the access of the population to re-use centres⁶.

Water supply and treatment: The OP Environment provides BGN 2.3 billion for financing of measures under the Priority Axis "Water", and 11 procedures have been announced so far, amounting to more than BGN 881 million (EUR 450 million). Active work on the implementation of the so called yearly and phased projects is carried out in 13 municipalities. The first two-phased projects (treatment plants) have already been completed. A prerequisite for this is the finalisation of the work on regional pre-investment studies, which will identify the priority investments in water and sewerage infrastructure in agglomerations of more than 10,000 hectares in the territory of 16 consolidated water and sewerage companies. The implementation of these projects aims to meet the requirements of two key EU directives - the Drinking Water Directive and the Urban Waste Water Treatment Directive.

Cleantech: Promoting eco-innovation is carried out also by organisations such as Cleantech Bulgaria, which is business network founded in 2012 to promote sustainable economic development through clean technologies and green innovation in Bulgaria. Throughout the years of its activity, Cleantech Bulgaria has been able to influence the development of the local innovation eco-system by:

- Providing education campaigns to more than 22,000 employees on green office practices;
- Providing dedicated guidance for sustainable business for 200 C-Level professionals and 700 entrepreneurs and students;
- Supporting over 20 emerging technologies in the pipeline for market launch and scale up;
- Developing business clusters that focus on clean technologies, which currently consists of over 30 companies.

Projects are already being funded to implement innovations in enterprises, develop innovations in start-ups and product and production innovations to boost innovation. The projects currently being implemented include eco-innovation in the field of renewable energy sources, fuel systems for vehicles, technologies for the extraction of precious and expensive metals from the processing of electrolytic and solid waste, automated monitoring and management of the water cycle, etc. Targeted support for eco-innovation is also provided by the National Innovation Fund, which funds research and development projects and technical feasibility projects to develop new or develop existing products, processes or

services to increase economic efficiency, improve innovation potential and the technological level of enterprises, and encouraging the dynamics of innovative processes. In recent years, projects have been approved for innovative technologies for environmentally sound treatment of hazardous waste, recovery of waste rubber products, production of heat by waste pyrolysis, analysis of exhaust emissions, conversion of conventional electric vehicles, etc.

Electric vehicle car sharing and charging stations infrastructure

Ever-growing urbanisation is facing increasing problems caused by harmful emissions and heavy traffic. Electric vehicles (EV) and free-flow electric vehicle sharing are particularly effective at addressing these problems. The demand for electric vehicles and shared mobility services has grown rapidly over the past few years, and is expected to continue to do so in the foreseeable future. SPARK Bulgaria (which includes both SPARK Lithuania and Eldrive) is the first car sharing service company to enter the Bulgarian market. SPARK initiated operations in Sofia at the end of October 2017 and is growing rapidly. Together, Eldrive and SPARK strive to promote EV mobility by expanding the charging stations' infrastructure and allowing for contemporary and zero-emission urban mobility to fit the needs of modern society. Keywords: electric vehicle, car sharing, sustainable transport, shared mobility services

Link: <http://spark.bg>

Entrepreneurship for Circular Economy solutions

Cleantech Bulgaria operates an array of entrepreneurial formats and pre-incubation and acceleration programmes in partnership with Climate-KIC and InnoEnergy such as the Climate LaunchPad green business idea competition, PowerUp sustainable energy start-up competition, InnoEnergy Primer Pre-Accelerator, GreenHouse Pre-Incubation Programme and The Climate-KIC RIS Accelerator Programme. In the last three years, the initiative has supported over 20 new ventures that enable the local economy transition towards circular economy models.

Keywords: circular economy, start-ups, local economy, green business ventures

Link: <http://cleantech.bg>

Eco-innovative Virtual lab

This virtual lab is created as part of the Ecolnn Danube project co-funded by the Interreg Danube Programme. The general objective of the Ecolnn Danube project is to enhance cooperation of innovation actors in the field of eco-innovations with special emphasis on development and application of eco-technologies in the Danube Region. At this platform ecoinnovators can submit an offer either for a challenge they are facing or a solution they've designed. The web platform also provides access to an expert database and stakeholders map. Keywords: eco-innovations, eco-technologies, multi-actor cooperation

Link: <http://ecoinnovative.eu>

Sofia Urban Challenge

In 2017, Sofia Municipality and Cleantech Bulgaria, with the support of Climate-KIC, the largest EU public-private partnership supporting innovation towards tackling climate change, organised the first open innovation pitch event in the capital of Bulgaria "Sofia Urban Challenge", on the topic of air quality. The objective was to attract start-ups from all over EU, with the greatest potential to improve the air quality in Bulgaria's capital. The start-up Eljoy bikes was selected during the Sofia Urban Challenge Phase I open innovation competition, among six other competitors from the EU, as the start-up that provided the most appropriate solution for tackling Bulgaria's capital air pollution challenge. During Phase II of the project, a pilot-test of the proposed solution – an e-bike sharing system was developed, conducted and deployed with the vision to exploit suitable opportunities for scaling up the project and attracting a consortium of stakeholders to support the development of the ecofriendly urban mobility system. The initiative was part of Urban Challenge - a Climate-KIC programme that supports EU cities to define the challenges they face, for entrepreneurs to respond to these challenges and for solutions to be tested and implemented to meet real world needs.

Keywords: clean technologies, green mobility, eco innovation, e-bikes

Link: www.climate-kic.org/success-stories/sofia-urban-challenge

Start - up company

Bulgaria is one of the most dynamic start-up and entrepreneurial ecosystems in Central and Eastern Europe.

Between 2013 and 2018 there were about 2000 startups in the country, half of the companies that have received funding still exist, according to the Ministry of Economy of the Republic of Bulgaria. A predominant share of startups was created in Sofia. According to the EDIT.BG - InnovationShip 2018 report, which examines the development of the innovation ecosystem in Bulgaria, there were a total of 415 launches at the end of 2017, of which 219 were also active in the field of digital product development (30%), or in the provision of digital services (70%).

The "Innovation" is most often in the service sector (63%), followed by products (55%) and only 6% of the companies are engaged in industrial innovation. The most common activities are marketing and software development.

In 2017, Bulgaria is the second most innovative upper-middle income country in the world, the most innovation efficient country and the top innovation achiever in SEE together with Moldova, according to the Global Innovation Index 2017 and the report "Southeast Europe: Fintech and Innovations" edited by SeeNews.

An essential conclusion from the start-up companies' market analysis is that: **The Universities are less used source to find talent and less than a quarter of companies take advantage of it.**

Drivers and opportunities for eco-innovation and circular economy



In terms of **economic and financial drivers** for the development of eco-innovation in Bulgaria, it is important to highlight the role of SMEs, who are increasingly active and aware of the different options for funding. Data from the EU funds management

system reflects this trend (i.e. a large number of applicants under different calls). There is also a large

number of qualified scientists and engineers, creative entrepreneurs, relevant educational, training and R&D institutions, which strengthens Bulgaria's human capital in the eco-innovation sector.

Other drivers include **market demand for new green products and technologies** due to the improvement in the quality of life and orientation towards a healthy lifestyle; and demand for products with high added and ecological value for export compared to the nation's traditional markets.

Finally, **the demand for new jobs in the areas of green and blue economy**, can also be highlighted as a driver for eco-innovation and the circular economy in Bulgaria. Internationalisation and globalisation of the economy would require increased competitiveness of SMEs, based on innovative & eco-innovative technologies, energy and resource efficiency.

The European Institute for Innovation and Technology (EIT) coordinates and manages different instruments for innovation support activities in the following thematic fields: energy, climate, digitalisation, raw materials, health and food. Different calls for proposals are launched every year by the KICs (Knowledge and Innovation Communities) based on their geographical coverage. The EIT Community operates through core and local partners. Starting from 2015, two of the KICs - Climate KIC and InnoEnergy are represented in Bulgaria by Cleantech Bulgaria. Through its partnership with two out of the six currently operating KICs, Cleantech Bulgaria is providing green innovation opportunities to a wide range of stakeholders in Bulgaria with the objective of developing the eco-innovation ecosystem in the country. *Showing advanced results for this period, in 2018 Bulgaria was chosen to pilot the EIT Community Hub – the first Cross-KIC dissemination and outreach facility combining all six KICs in a “one-stop shop”.*

Political drivers for eco-innovation are also important in Bulgaria. According to ex-President Rosen Plevneliev, the achievements of Bulgaria in the field of innovations are forthcoming and the country has great potential to further develop in this sphere. Under the Innovations and Competitiveness Operational Programme, EUR 1.4 billion are available to businesses.

In October 2015, the funding agreement between the European Investment Fund (EIF) and the Bulgarian government was established to implement the **SME Initiative in Bulgaria**. This innovative instrument releases over EUR 600 million of additional funding for small businesses in Bulgaria. At the end of 2016, the European Investment Fund signed operational agreements with 10 financial intermediaries – resulting in concrete funding for SMEs. The final selected beneficiaries must be active SMEs. Loans will be granted for investments in tangible and intangible assets as well as working capital. Only new business credits are

eligible, refinancing of old credit obligations is excluded. The minimum credit period should be no less than 24 months and no more than 12 years, and the maximum amount of funding is up to Euro 5 Million.

The operational programme for Science and Education for Intelligent Growth 2014 – 2020 holds great potential to help drive the country towards increased eco-innovation and circular economy initiatives. Part of the programme is designed especially for scientific infrastructures to assist government and business in innovation, ecological issues, etc.

In 2017, projects that were submitted under the programme for establishing scientific infrastructure include the Centre for Excellence and Centres for Competence. The projects are in line with the Bulgarian Smart Specialisation Strategy. The results of the project selection were published in early 2018. The largest scientific project entails the establishment of the Centre for Excellence in mechatronics and clean technologies (M&CT) with a budget of around EUR 34 million. Two other projects that will receive funding from the programme include the Centre for competence in clean technologies for sustainable environment – water, waste and energy for circular economy with a budget of approximately EUR 12 million euros and the Centre for competence in intelligent mechatronic, eco and energy-saving systems and technologies. Preliminary results of these projects should be expected in early 2020.

Sustainable waste management has also become a priority for the Bulgarian government. This includes building a comprehensive infrastructure for waste treatment and creating a strategic framework for waste management to determine future measures for waste generation prevention, promote recycling and reuse of waste and more efficient use of resources, the development of sustainable systems for management of specific waste streams and investment promotion activities associated with waste management.

Important eco-innovation and circular economy policy measures and funding

In the Research policy strategy published in 2016, the Bulgarian government proposed the following priority research areas for the period up to 2025:

- Mechatronics, clean technology and new energy and energy efficient technologies;
- Health and quality of life, green and eco-technologies, biotechnologies, eco-foods, purification and waste technologies;
- Environmental protection;

- Utilization of raw materials and bio-resources;
- Environmental monitoring
- Materials and Nanotechnology;
- Information and communication technologies;
- National identity and anthropology; and
- Socio-economic development and governance.

Innovative Strategy for Smart Specialisation of the Republic of Bulgaria, 2014 – 2020

The Strategy promotes eco-innovation in Bulgaria until 2020 with a focus on developing green economic growth, particularly in the following areas: ICT and Informatics, new technologies, mechatronics, clean technologies, healthy lifestyles and biotechnology industries. The specific objectives of the strategy for implementing sustainable patterns of production and consumption include:

- Supporting the development of eco-innovation;
- Supporting the development of "green" business in Bulgaria;
- Encouraging sustainable patterns of production and consumption by introducing eco-innovation and eco-technologies; and
- Encouraging and promoting innovative technologies aimed at improving the protection and preservation of the environment

The Strategy also includes the objective for Bulgaria to move from the group of "modest innovators" to the "moderate innovators" group by 2020. To achieve this, the Strategy consists in:

- Focusing on innovation potential in the identified thematic in order to create and develop new technologies, leading to competitive advantages and increase of the added value of domestic products and services);
- Supporting innovation for resource efficiency and ICT applications in enterprises throughout the industry (for accelerated absorption of technologies); and
- The measures planned in RIS3 have to contribute to the implementation of these strategic planning documents.

In addition, according to Bulgaria's *Smart Specialization Strategy*, in order to improve their status from modest innovators to moderate innovators by 2020, different thematic areas will continue to be

promoted such as creation and development of new technologies, resource efficiency and ICT applications through Structural Fund investments in Research & Innovation as part of the Europe 2020 Strategy. A number of financial instruments are used to implement the Innovation Strategy for Smart Specialization, of which the Operational Program "Innovation and Competitiveness 2014-2020" (OPIC), which is funded by EU funds, is key.

Regarding Bulgaria's position at the international level, it is important to note the following:

- Bulgaria ranks 15th in the world and outpaces 20 of the 28 EU member states in terms of innovative efficiency (ratio between result and created conditions for innovation) i.e. ability to generate more and better results from relatively less favorable conditions for Innovation Activity (Global Innovation Scoreboard)
- Insufficient innovation system, despite positive results (Global Competitiveness Report)
- Unbalanced innovation system (Innovation Union Ranking)

Operational Programme for Innovations and Competitiveness, 2014-2020

Operational Programme for Innovations and Competitiveness 2014-2020 (OPIC) facilitates the introduction of eco-innovations in companies. It supports, within the common framework for all types of innovations: implementation of high-tech solutions to optimise production processes and reduce the use of raw materials; introducing modern technologies to use waste as a raw material in new production and/or other alternative uses; introduction of non-waste producing technologies, innovative manufacturing materials, technologies for the production of "green products" in all other sectors of the economy. The focus of OPIC in this direction is the introduction of eco-innovations that contribute to the rational use of resources and energy and to increasing productivity of enterprises.

Operational Programme for Regions in Growth, 2014-2020

Approximately 22 % of the funds under the Operational Programme for Regions in Growth will be allocated to measures for energy efficiency in public and residential buildings; 9 % of the funds will be invested in the development of an integrated urban transport system.

Operational Programme for Transport and Regional Development, 2014-2020

The OP for Transport consists in the development of road and railway infrastructure along the major national and Pan-European transport axes that represents more than 75% of the fund allocations, as well as improvement of inter-modality for passenger and freight, which represent 22% of the funds.

Operational Programme for the Environment, 2014-2020

The Operational Programme for the Environment is the programme through which Bulgaria receives the greatest amount of funding from the European Union for investment in the environment. It is directly related to the implementation of the "Europe 2020" Strategy of the EU by promoting sustainable growth and effective use of resources.

The financial support under the Operational Program for the Environment 2014-2020 aims to manage waste using state-of-the-art technologies by helping businesses implement circular economy principles and investing in waste-recycling technologies, adding value to businesses. In order to improve the living conditions of the population, the promotion of waste recycling at the expense of landfilling, the construction of pre-treatment and composting facilities continues.

Operational Programme for Science and Education for Smart Growth, 2014-2020

The Operational Programme for Science and Education for Smart Growth (OP SESG) will be managed by the Ministry of Education and Science (MES) with a total budget of BGN 1.37 billion (to be secured through European and national funding). This is the first time Bulgaria has adopted an operational programme dedicated to the development of science and education.

Financial mechanism of the European Economic Area (EEAFM) 2014-2021

In the framework of the European Economic Area Financial Mechanism, EUR 115 million has been provided by the donor countries since the end of 2016 to finance projects for local development and poverty reduction, energy efficiency and security, environmental protection and the development of entrepreneurship in the field of culture.

National Waste Management Plan, 2014-2020

The Plan includes objectives on the transition from waste management to the efficient use of waste as a resource and sustainable development through waste prevention. Successful implementation of the plan will lead to preventing and reducing the harmful effects of waste on the environment and human health

and reducing the use of primary natural resources. The Plan supports the central and local authorities to concentrate resources from national and European funding sources on priority projects in the field of waste management.

EU Ecolabel

In 2007, Bulgaria replaced its national environmental labelling scheme with the uptake of the EU Ecolabel scheme (Regulation (EC) No 66/2010 on the EU Ecolabel). The scheme contributes to the overall EU transition towards a low-emission, circular economy and sustainable development. It encourages the repair, reuse, recycling and eco-design of products and services. The Ministry of Environment and Water is the competent body in terms of awarding the EU Ecolabel. There are three licence holders with 18 products in Bulgaria – two tissue paper manufacturers (9 products) and one detergent manufacturer (9 products).

The EU Eco-Management and Audit Scheme EMAS

There is an increasing interest in implementing the EU Eco-Management and Audit Scheme (EMAS) in Bulgaria. By the end of 2015, there were only three organisations registered under EMAS. Between 2016 and 2017, six additional organisations with 15 sites joined EMAS. The registered organisations usually reduce their water, energy, material consumption and waste.

Identifying the eco-innovation and entrepreneurial qualifications and training needs of enterprises



Bulgarian SMEs still have major disadvantages that undermine their competitiveness on the EU level mainly related to lack of access to finance, low levels of innovation and **training investments**, and poor environmental performance

Bulgarian SMEs have a very poor environmental performance compared to the rest of the EU. Due to the lack of financial resources, not many companies are

investing in green technologies, with the exception of resource efficiency measures, which were funded

by European funds through OP Competitiveness. Similarly, only 11 % of local companies have tapped into the eco-friendly market and offer green products to their customers. Over 50% of companies do not offer such products because green values are not part of the company's culture or public image, while 38 % of respondents would consider introducing eco-products if there were sufficient financial incentives.

In connection with implementation of the project '**A knowledge Alliance in Eco-Innovation Entrepreneurship to Boost SMEs Competitiveness**', funded by the Interreg Balkan MED programme, have been organized and conducted an **online survey** and **in-depth interviews** with representatives of companies operating on the **Bulgarian market**. The goal was to identify what the **business needs** are related to **eco-innovation** and **entrepreneurial trainings**. The survey was conducted among representatives of business organizations from different business sectors and with different activities. Most of the economic sectors in which they operate in Bulgaria were covered. The survey and interviews are conducted on local and national level by and on request of **Trakia University and BIA**⁷. The **general outcomes** are summaries and presented below.

Presented summary results are based on studies and interviews of more than 50 companies operating in different economic sectors in Bulgaria.

The survey's results are presented below. The results outline some main conclusions and findings as:

- Conversations with business organizations representatives and questionnaires' results show **low level of understanding on the examined topics**.
- Most of the companies need clarifications on the topic on its main definitions, content and cover. Moreover, **it is difficult to define specific needs related to eco-innovation and entrepreneurship as in fact their needs are at a very basic level**.
- The small and middle enterprises operating on the Bulgarian market **do not have a clear view nor they have planning regarding any trainings**.
- More of the shared problems are related to operational issues. Topics like green practices, eco trainings, eco labelling, management systems, internal capacity development are known on basic level with no detailed insights.

⁷ Bulgarian Industry Association

- They are not aware with the benefits of such practices or their influence on the business process. Only small part of the middle and mostly big companies has experience on real issues and knowledge on them.
- **As common, could be pointed the perception of the examined topics as not enough important for the business development.**
- However, the big companies have identified quite specific topic related needs as circular economy, recycling projects, managing their environmental impacts, ISO implementation, etc.
- In small and partly middle business organizations, the person who is able to answer the questions is the general manager of the company but usually he/she is not willing to participate and comment specific issues for their business. The rest of the team representatives have no role in identifying key topics, risks and needs for the business, they do not know if their organization has any activities in that direction.

The main business organizations needs on to the "Eco-innovation and entrepreneurship" topic are related: providing more information in order to understand covered issues and more shared practices, trained and educated employees, knowledge and compliance of legislation, sufficient funding for the implementation of various projects in the field.

Questionnaire's results - conclusion

Based on the questionnaire's results we can make the following conclusions:

QUESTION A – On current needs/problems

- There is a necessity for sufficient, well-trained employees and development of specific for each employee skills.
- Compliance with the legislation was identified as an apparent need for the companies.
- Small and medium-sized enterprises are generally lacking enough information on the "Eco-innovation and entrepreneurship" topic.
- In general, companies lack sufficient funding for business development and in addition, the technological equipment is outdated.
- Lack of national legislation

- Growing costs for the services of other organizations in the implementation of activities related to ecological management
- Exceedingly high financial risk for the implementation of eco-innovations and delayed return of investment

QUESTION B – On relation with eco-innovation and entrepreneurship

- Small and medium-sized enterprises are generally lacking enough information on the topic "Eco-innovation and entrepreneurship" and therefore it is considered as "not important".
- "Better trained employees on understanding of the topic" are identified as possible "eco-innovation" by some business companies.
- Outdated technology hinders eco-innovation.
- There is a necessity for incentives for the introduction of eco-innovation by business organizations.

QUESTION C – On currently eco-innovation and entrepreneurship problems solving

- Providing well-trained staff, training of the employees.
- Different projects implementation.
- Intension to protect the environment in which the business organizations operate.
- Optimization of the processes.

QUESTION D – On current expenditure (as a rough % of total annual turnover) associated with green practices/solutions and/or green products/services of the company (e.g. Ecolabel for products/services, establishment of environmental management systems, such as EMAS or ISO 14001)

- A significant part of the business companies do not have special budget or % of annual turnover for eco-innovations.
- Such costs are not determined as necessary.

- Several companies has shown number as 0.5% to 6%

QUESTION E – On necessary employees competences (knowledge & skills) to address issues associated with green practices/solutions and/or green products/services of your company? (e.g. Ecolabel for products/services, establishment of environmental management systems, such as EMAS or ISO 14001)

- More information on the subject.
- Eco-innovation legislation and its compliance.
- Good eco-innovation practices.
- Hygiene in the work environment.

QUESTION F – On eco-innovation and entrepreneurship training thematic areas

- Ecology trainings are not recognized as a necessity for many business organizations.
- Those who listed educational areas are working on the topic or at least have information about it because they identify specific topics for the sector in which they operate. They are mainly big companies not in the segment of SME.
- There is lack of capacity and sufficient financial resources for training of the employees.
- Sustainable business model development/ communication skills
- Waste management

QUESTION G –On training format (e.g. morning/afternoon sessions, full day, sessions in weekends, classroom/online/blended learning environment)

- Business organizations declare flexibility in the format of training. Most of them would participate in trainings, regardless of their format.

Interview's results - conclusion

We can make the following conclusions from the interviews:

QUESTION A – On current needs/problems

- There are not enough and well-trained employees.
- The procedures related to state institutions and legislation as a whole are too slow.

QUESTION B – On relation with eco-innovation and entrepreneurship

- Well-trained employees are a great necessity.
- Funding is insufficient.
- Companies address eco-innovation and entrepreneurship as possible answers to their problem / need.

QUESTION C – On currently eco-innovation and entrepreneurship problems solving

- Most companies have implemented ISO systems.
- Training, financing, partnerships with organizations specialized in eco-problems are among the methods to deal with this issue.

QUESTION D – On current expenditure (as a rough % of total annual turnover) associated with green practices/solutions and/or green products/services of the company (e.g. Ecolabel for products/services, establishment of environmental management systems, such as EMAS or ISO 14001)

- A significant part of the business companies don't have special budget or % of annual turnover for eco-innovations.
- However, if they indicate a percentage of the costs for some kind of "green topics", in most cases it is less than 10%.

QUESTION E – On necessary employees competences (knowledge & skills) to address issues associated with green practices/solutions and/or green products/services of your company? (e.g. Ecolabel for products/services, establishment of environmental management systems, such as EMAS or ISO 14001)

- Knowledge related to the ISO environmental management system.
- Sustainable development practices.
- Developing of an organisational culture in this field.

QUESTION F – On eco-innovation and entrepreneurship training thematic areas

- Measuring and monitoring the results of green practices.
- Internal Entrepreneurship.
- Good practices (case studies).

QUESTION G – On training format (e.g. morning/afternoon sessions, full day, sessions in weekends, classroom/online/blended learning environment)

- Business organizations declare flexibility in the format of training.

Instead of a conclusion –key findings

Some specific environmental factors are particularly influential in creating supportive business and entrepreneurial contexts.



Bulgaria has a number of significant weaknesses (as it presented above) that could be transfer into opportunities as:

- The business organizations show **low level of understanding on eco-innovation and eco-entrepreneurial.**
- **The SME are difficult to define specific needs related to eco-innovation and entrepreneurship as in fact their needs are at a very basic level.**
- There is no a specific strategy, policy and tools to encourage SME to train and increase the qualification among its staff.
- The SMEs are not aware with the benefits of such practices or their influence on the business process.
- **Lack of information shared practices about the topics and potential benefits.**

- **The main potential in regards to “eco...” is concentrate to young people but in other hand they do not poses expertise and means.**
- Critical moment is the eco-entrepreneurship education at primary and secondary levels and the lack of specific government support and initiatives, which turn entrepreneurship into a government priority. Entrepreneurial experience and/or education help employees develop new skills that can be applied to other challenges in life. Non-cognitive skills, such as opportunity recognition, innovation, critical thinking, resilience, decision-making, teamwork, and leadership benefit sustainable development and growth.
- The most important weakness regarding eco-innovation and entrepreneurship in Bulgaria is the access to physical infrastructure and services, followed by access to commercial and professional infrastructure and supportive government policies related to taxes and bureaucracy.
- Another significant problem is the lack of effective communication between SME and universities in search of practical solutions and knowledge and qualification increase.
- Only 11 % of local companies have tapped into the eco-friendly market and offer green products to their customers. Over 50 % of companies do not offer such products because green values are not part of the company’s culture or public image, while 38 % of respondents would consider introducing eco-products if there were sufficient financial incentives.
- The majority of Bulgarian companies have not yet taken advantage of the benefits of energy saving and cost reducing green measures.

Entrepreneurial activity is an output of the interaction of an individual’s perception of an opportunity and capacity (motivation and skills) to act upon this and the distinct conditions of the respective environment, in which the individual is located. An economy cannot increase the quantity and quality of potential and intentional entrepreneurs without creating an enabling environment in which entrepreneurship can flourish. Informed policy decisions, which help to create a nourishing entrepreneurial environment will be of benefit to entrepreneurs in all phases of their businesses, be it young start-ups, established or repeat entrepreneurs.

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