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Environmental Economy and Green Transition in the European Union: Two Complementary Concepts

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Abstract. *The environmental economy and green transition are closely related concepts that focus on promoting new sustainable paths and economic growth and reducing the negative impact of activities on the environment. Therefore, the environmental economy and green transition have become two of the most important directions in the continuing development of the world. The environmental economy involves the ongoing progress of green technologies, green energy, and different activities aimed at changing society's attitude toward more environmental solutions and policies. The environmental economy is a discipline that studies the economic effects of environmental products, services and policies in different realities, economies, and societies. It includes goods and services that help to preserve the stock of natural resources and protect the environment. The green transition refers to the process of transforming people, planet, and partnerships to an environmentally friendly economy. This includes also implementing policies and practices that reduce greenhouse gas emissions, promote energy efficiency, increase the use of renewable energy sources, and reduce waste and pollution. The aim of this paper is to analyze, based on Eurostat data, the evolution of the environmental economy for the EU Member States, considering that the topic has nowadays prompted both governments and corporations to make commitments and place increasing emphasis towards protecting the environment and promoting a sustainable economic development through various programs or regulations. Additionally, this article is also aiming to observe the influence of the environmental economy on exports across the EU and understanding the process of having a green transition.*

Keywords: Environmental economy; Green transition; European Union; Green Deal; Green economy.

Introduction

The notions of environmental economy and green transition are at the heart of the Sustainable Development Goals (SDGs) and the European Green Deal. The transition to a resilient economy and a green low-carbon climate following a sustainable trajectory in line with the SDGs offers opportunities to the entire society and supports the economic recovery post-COVID-19 to build an advantageous future (European Bank for Reconstruction and Development, 2020).

An important action plan at the international level in terms of sustainability is the 2030 Agenda, adopted by the United Nations General Assembly in 2015. The Agenda 2030 is a roadmap for sustainable development that includes 17 Sustainable Development Goals (SDGs) set to be achieved within the next 15 years and sets targets and aims for a more sustainable international environment. It aims at ending poverty in all its forms by its goals and envisions 'a world of universal respect for human rights, the rule of law, justice, equality, and non-discrimination' (Council of Europe, 2022). The SDGs aim to end poverty, protect the planet, ensure that all people can have prosperity, education, and equality, fight against climate change, etc. (Valls Martínez et

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al., 2022). The 2030 Agenda recognizes that sustainable development requires the cooperation of governments, society, the private sector, and individuals. Furthermore, it recognises that sustainable development must be integrated and balanced in economic, social, and environmental dimensions. At the end of 2019, the European Commission (EC) presented the European Green Deal, a set of strategies and policy initiatives aimed at transforming the EU scenario into an efficient and modern economy with zero net greenhouse gas emissions by 2050 and with economic growth decoupled from resource use. The Green Deal, named 'this generation's defining task' (European Commission, 2019), aims to transform the economy in a sustainable and lasting way by eliminating fossil fuels, promoting clean and renewable energy, and developing a circular economy (European Commission, 2020). According to Zhironkin and Cehlar, this is an initiative that is promoting a progressive transition to a circular and green economy by utilising renewable energy and resources and expanding sustainable pathways of production and markets (2022). Also, in accordance with Guéguen, the introduction of the EDG is to be considered 'a change of paradigm' central to the EU. 'It is clear that the Green Deal underpins a change of paradigm with the objective of qualitative improvement, a sort of <<new European way of life>>. Beyond this ambition, cooperation and time are required, as are technological leaps and significant funding' (Guéguen, 2020).

The EU vision entails multiple facets of the green economy following, therefore, the three main pillars of sustainability, including the economic aspects, the environmental aspects, and the social aspects.

> the economic aspects: an economy that secures growth, sustainable consumption and production; the environmental aspects: an economy that preserves natural capital, invest in natural resources and mitigates climate change through low-carbon and resource-efficient solutions; the social aspects: that improves human well-being, reduces inequalities, provides decent jobs and tackles poverty (European Commission and Directorate-General for International Cooperation and Development, 2018).

Starting from the EU definition of a green economy, the European Commission established specific rules when considering an environmental economy, outlined in EU Regulation No. 2015/2174, which provides an indicative compendium of environmental goods and services [...] and defines itself as the core term of this study concerning the environmental economy. The environmental economy is represented by goods and services that aim at the protection of natural resources and have the purpose of:

> Preventing or minimising pollution, degradation, or natural resource depletion; Repairing damage to air, water, waste, biodiversity, and landscapes; Reducing, eliminating, or managing pollution and natural resource depletion; Carrying out activities associated with environmental protection or resource management (Eurostat, 2020).

Further measuring elements of the environmental economy or green economy consist of collecting data, calculating indexes, and analyzing results, and we consider this worth studying given the multitude of information available, as well as the increasing importance of the topic for governments, NGOs, and businesses among others. This article aims to understand how environmental economy data evolved during 2018 and 2019, how it helps growing exports and economic indicators, as well as which are the main strengths and weaknesses of the green transition considering the high importance of today's set of policies such as the European Green Deal. We selected data from 2018 and 2019 because these are the most complete among others and because we can have a better comparison with the full set of data.

The article is composed of three main sections, including a literature review – covering existing research on the environmental and green economy topic, methodology used, as well as

results of our article that aims to contribute to the debate on the environmental economy, and to raise a few issues of concern for the future of it.

Literature review

Different scholars have studied the concepts of green economy and green transition realizing that their objects remain directly linked with notions such as sustainable development, renewable resources, etc. (Xueqi et al., 2022). In the early 2000s, the concept of green transition became more crucial for the public discourse, as different economic and political actors started calling for a fundamental shift to a system that must be less damaging to the environment (Hatch et al., 2017).

The current literature on this topic focuses on the widespread awareness of the green transition related to energy savings, expanding market demand, creating new jobs, achieving sustainable economic development, and eliminating poverty (Chien-Chiang et al., 2022). Businesses, workers, consumers, and the general community need time to adjust to new business models, employment opportunities, or lifestyles. Further change needs to be set and political action initiated as soon as possible. Concrete timelines with middle or long-term goals and investments are related to real scenarios of industries, workers and consumers for Member States, regions, and local communities (Heyen et al., 2020).

The green transition refers to multidimensional change that turns the global situation into a sustainable paradigm, and it involves combating climate change through specific actions. According to the World Health Organization (WHO), 9 out of 10 people breathe polluted air (Santander, 2022). Therefore, to live in a sustainable environment, it is necessary not only to consider specific products and services, but also to expand to a general idea of a greener economy and society.

The green transition is a general concept of moving to a more sustainable economy than the actual economic scenario. Countries are pursuing a sustainable process to align with the global goals of 2030 and 2050. At the European level, a fundamental initiative regarding this transition is the European Green Deal as a response to the growing threat of climate change. The Green Deal aims to make Europe the first climate-neutral continent in the world and set the blueprint for this transformational change. These will create new opportunities for innovation and growth for the economy, as well as: reduce emissions, create jobs and growth, address energy poverty, reduce external energy dependency, improve health and well-being, make transport sustainable, lead the third industrial revolution, clean the energy system, renovate buildings for greener lifestyles etc.

Environmental sustainability is at the heart of the Paris Agreement setting a clear goal to limit the global average temperature increase to below 2 degrees C. Climate change and environmental threats are accelerating with severe effects, and investments in low-carbon technology and energy efficiency must increase by a factor of five to achieve this goal. Some of the specific environmental remedies include air and water quality, waste management, the shift to smart mobility, natural capital preservation (e.g., marine resource and coastal zone management), the active promotion of a clean and circular economy, and an environmentally friendly food system (European Bank for Reconstruction and Development, 2020).

The green economy represents a pathway for achieving SDGs in a European and global context. Furthermore, green economy frameworks promote coherence between economic and environmental policies and contribute to SDGs that allows balance in the three dimensions of sustainable development (European Commission and Directorate-General for International Cooperation and Development, 2018). Also, if examining the effects of the green economy today, it is observable that it has played an essential role in the world economy in recent times; estimates

of total international investments in clean energy in 2021 seem to have accomplished $755 billion, up 27% from a year earlier, according to Bloomberg New Energy Finance (Mathis, 2022).

The circular economy and the green economy share the same principle of adapting or transforming the current economy towards sustainability principles, and this ideal economic system is in harmony with the environment (Santeramo, 2022). The promotion of the circular economy has become an important EU policy priority and an opportunity to transform our economy and generate new sustainable competitive advantages for Europe. Circularity offers opportunities to promote resource efficiency chains with a system-wide approach. This implies avoiding waste in production and supply by designing products for reuse, re-manufacturing, and using them for as long as it is possible (European Commission and Directorate-General for International Cooperation and Development, 2018).

As stated before, the 2030 Agenda for Sustainable Development and its 17 SDGs respond to the need for global action toward environmental sustainability. It permits us to balance our economies in all dimensions. Goal 8 of the SDGs on promoting inclusive and sustainable economic growth or Goal 12 on ensuring sustainable consumption and production show that economic progress and environmental sustainability can be communally reinforcing (European Commission and Directorate-General for International Cooperation and Development, 2018). For example, Goal 7 'Affordable and clean energy' appears to be meeting goals as 'the EU was able to reach its 2020 energy efficiency target and, based on the progress achieved so far, appears to be on track towards its 2030 target' (Eurostat, 2022b:12). Additionally, while the SDGs do not have legal force, national governments are still expected to assume responsibility for them and establish national frameworks towards their completion.

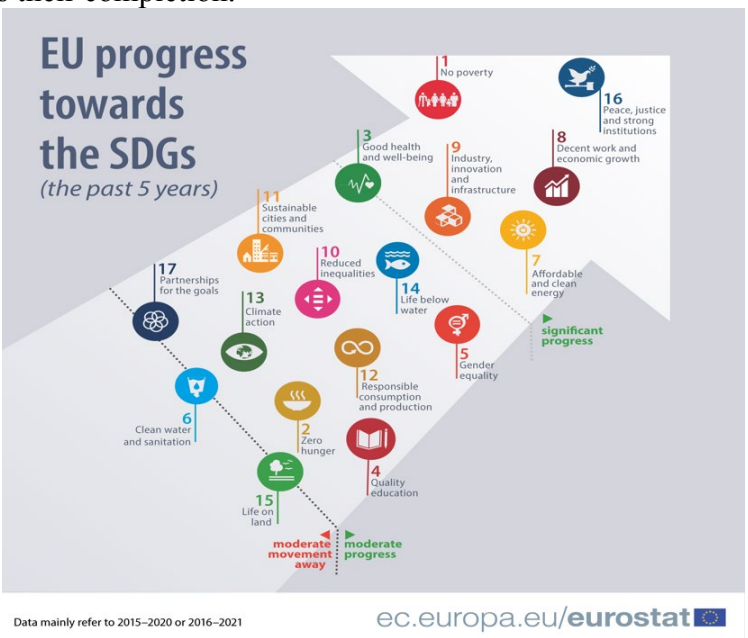


Figure 1. EU progress towards the SDGs.

(Source: Eurostat, 2022b: 10).

The green economy defined as an economy that can ensure growth and development while improving human well-being is a key element in this context. A green economy reduces environmental risk and ecological scarcity while improving social equity (Muhammad, 2022). Considering the 2012's definition of International Energy Agency, the green economy consists of

'decoupling of unsustainable resource use and environmental impacts from economic growth'. Successful methods for developing countries to implement green economy include new energy uses, government supports, rural infrastructure development, and green technology (Chien-Chiang et al., 2022). Numerous studies underline that the green economy is better than modern economic development by dealing with the actual economic, social, and environmental problems, avoiding the depletion of natural resources, controlling risks, and coping with the challenge of climate change (Chien-Chiang et al., 2022).

Understanding how green economy can evolve across market is important to map the level of freedom and openness of economies around the world. There is a specific index that marks the degree of local economic freedom from government intervention, the Index of Economic Freedom.

For more than two decades, the Index of Economic Freedom has measured the impact of freedom and free markets around the world, and the 2022 Index confirms the positive relationship between economic freedom and progress, as illustrated in Figure 2. Rapid economic growth comes with economic freedom, which is also evidenced by Singapore status as the world's top-ranked index value of 84.4 and Switzerland with 84.2, with North Korea ranked last with a value of index of 3.0. According to this statistic, only seven nations have a free economy, 32 are repressed, and 57 of the nations are mostly unfree.

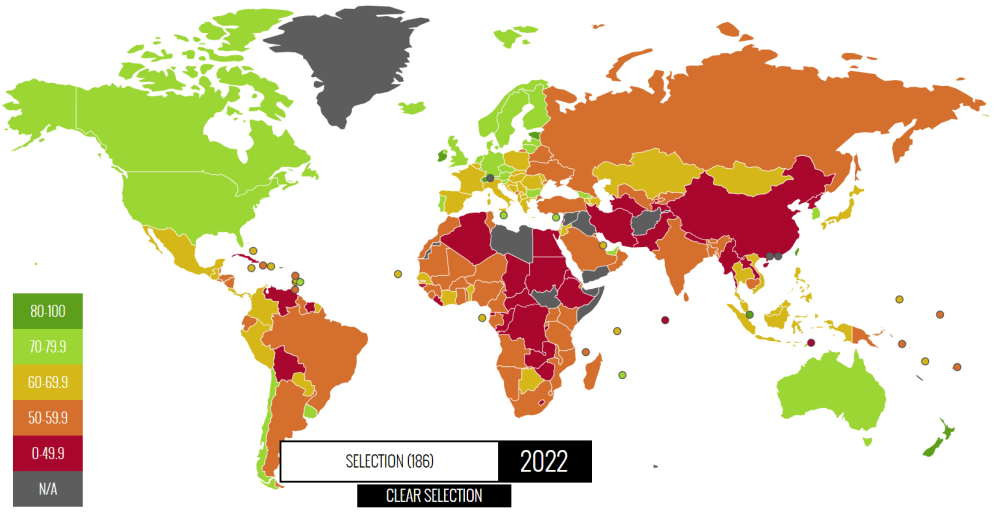


Figure 2. 2022 Index of Economic Freedom

Source: Economic Freedom Index, 2022.

As illustrated before, not all economies have a relevant degree of freedom and a large proportion of consumers in developing countries remain committed to irresponsible consumption. Those who are oriented towards buying sustainable products and services or prove that the producer is behaving ethically are opening the wave of an ethical economy.

Therefore, for understanding which goods and services are considered sustainable Regulation No. 2015/2174 gives us an explanation. Regulation No. 2015/2174 is about the indicative compendium of the environmental goods and services sector (EGSS) consisting of elements such as organic agricultural, fuel wood, electric and efficient transport equipment produced within a country. This Regulation underlines that an environmental economy includes EGSS if their purpose is to protect the environment and maintain natural resources. The environmental goods and services include a large and diverse basket of products such as renewable energy, electric vehicles, organically grown fruits, and vegetables, etc. (Eurostat, 2020). The

European environmental-economic accounts adhere to the same accounting principles as national accounts and are consistent with the UN's System of Environmental-Economic Accounting – Central Framework, which serves as an international statistical standard.

Article 1 of Regulation (EU) No. 691/2011 amended by Regulation No. 2015/2174 has six separate modules present data on: (i) air emissions, (ii) environmental taxes, (iii) economy-wide material flows, (iv) environmental protection expenditure, (v) physical energy flows, and (vi) environmental goods and services.

The criterion for environmental goods and services considers the environmental purpose, identified in practice by assessing the actual general impacts in conjunction with the characteristics of the technical products that must be suitable to protect and preserve the environment (Eurostat, 2020). Environmental goods and services are essential for sustainable development, as they support economic prosperity while also preserving natural resources for future generations. In recent years, there has been increasing recognition of valuing and investing in these goods and services, both for their economic and ecological benefits.

Further, our article focuses on the methodological side, including the materials and methods used to conduct this research.

Methodology

This article is based on a qualitative research method, as it aims to describe the importance of the environmental economy and the green transition in the European context. The qualitative research consists of exploring and creating a discussion about the key topics of this paper and clarifying some results thanks to data illustrations and comments about the numbers and information considered.

The focus of the research is based on the following aspects:

1. analyzing the Eurostat row data from 2018 to 2021 about the environmental goods and services output
2. understanding how the environmental economy relates to the export situation
3. understanding the evolution of employment in the EGSS sector
4. represent with a SWOT analysis (strengths and weaknesses) which are the main elements of going toward a green transition process in the EU context.

Points 1 and 3 of the methodology consider 2018, 2019, and 2020 data, as these are the most complete and exhaustive sets of data among the years, but it also includes 2021 data which are less updated than the others as it can be seen in Figure 3 and Figure 5. The second point of this section considers only 2018 data, as these were the most updated on the Eurostat data browser. The overall data of points 1, 2 and 3 consist of Eurostat data selection because these can provide valuable information on the analyzed sector performance.

Results and discussions

The EGSS includes a range of industries and activities essential for maintaining the health and well-being of ecosystems, human societies and economies. These become as relevant as topics such as sustainability, green economy and renewable energies grow in importance. Therefore, Figures 3 and 4 about EGSS can help us understand how the environmental economy is.

The figures of this discussion section present data submitted to Eurostat by EU Member States and EFTA countries from 2018 to 2021. Therefore, to reply to the first point of methodology, Figure 3 summarizes how data about the environmental goods and services sector (EGSS) in Europe evolve among Europe.

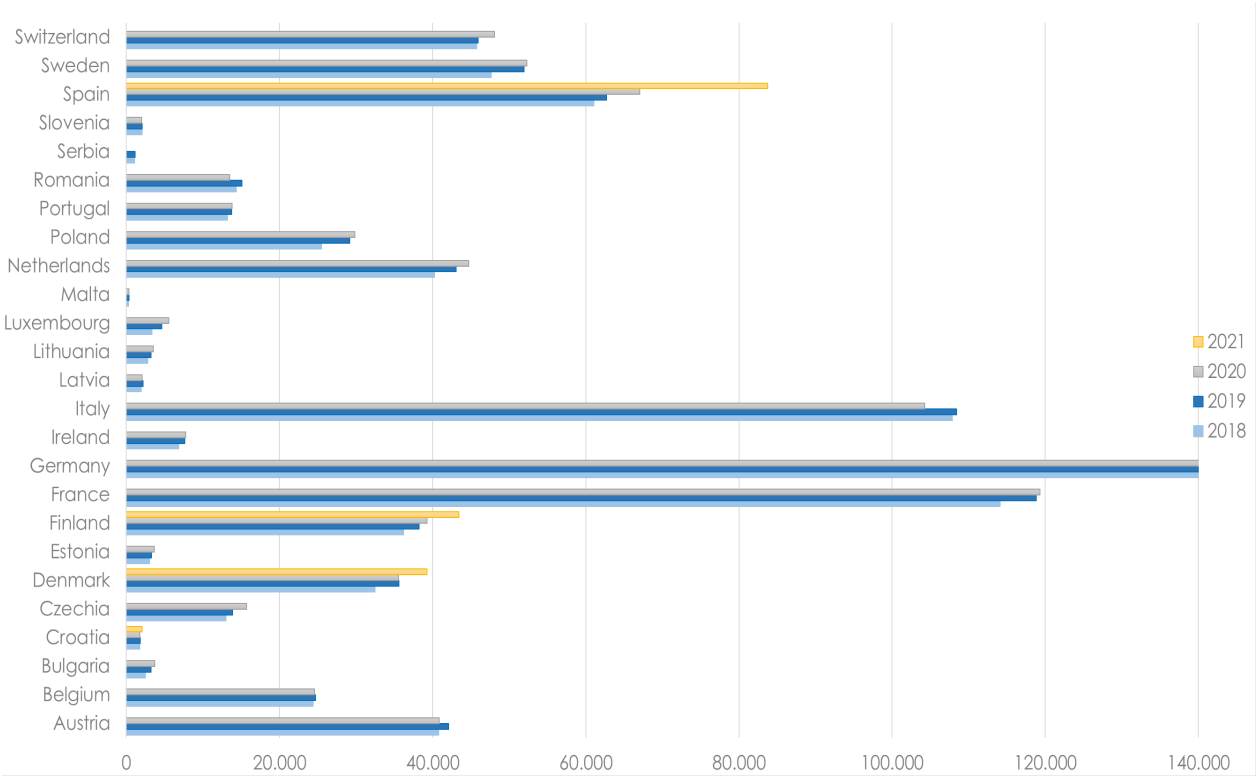


Figure 3. The total of production, value-added and exports in the environmental goods and services from 2018 to 2021

Source: Eurostat (Total environmental goods and services output from 2018 to 2021 ENV_AC_EGSS2) and the author's own elaboration

The unit of measure in Figure 3 is in millions of euros and the analysis includes 25 countries. As shown in Figure 3, in 2019, we registered an EGSS growth comparing data with 2018 of 27,23% in Luxembourg and 23,77% in Bulgaria. The lowest score is in Slovenia with -0,14% and Switzerland with 0,39%. These data are constantly updated, and we can see their evolution by consulting the Eurostat database. In 2019 the EGSS output grew for 20 out of 25 EU Member States analyzed by more than 2,5%.

According to these data, the significant expansion of the environmental goods and services sector (EGSS) in several EU Member States indicates a promising trend in the growth of green and sustainable economic activities. Consequently, the expansion of the EGSS may signal a rise in environmental sustainability awareness as well as a move toward a greener, more circular economy in these nations. Another indication that this is not a singular trend, but rather a widespread one across the EU, is the fact that the growth in the EGSS was seen across most of the EU member states considered, with growth rates higher than 2.5%. As per current data, it appears that various EU countries are successfully implementing regulations and initiatives meant to encourage sustainable development and clean economic activity. Overall, the information included in Figure 3 suggests that many EU member states are making progress towards a more environmentally conscious economy.

In response to the second point of the methodology, Figure 4 represents the 2018 export situation of the environmental economy by country. We decided to focus on exports because they

play an important role in a country's economy, influencing employment, economic growth, and the balance of payments.

Growth in exports can create employment and exported jobs are an important source of employment for countries and regions. Exports influence economic growth as they are a component of aggregate demand (AD). Rising exports will help increase AD and cause strong economic growth. Finally, the strength of exports has a specific role in determining the current account deficit. For example, in the past few decades, different European countries have had a persistent current account deficit, which many attribute to the poor export performance of countries.

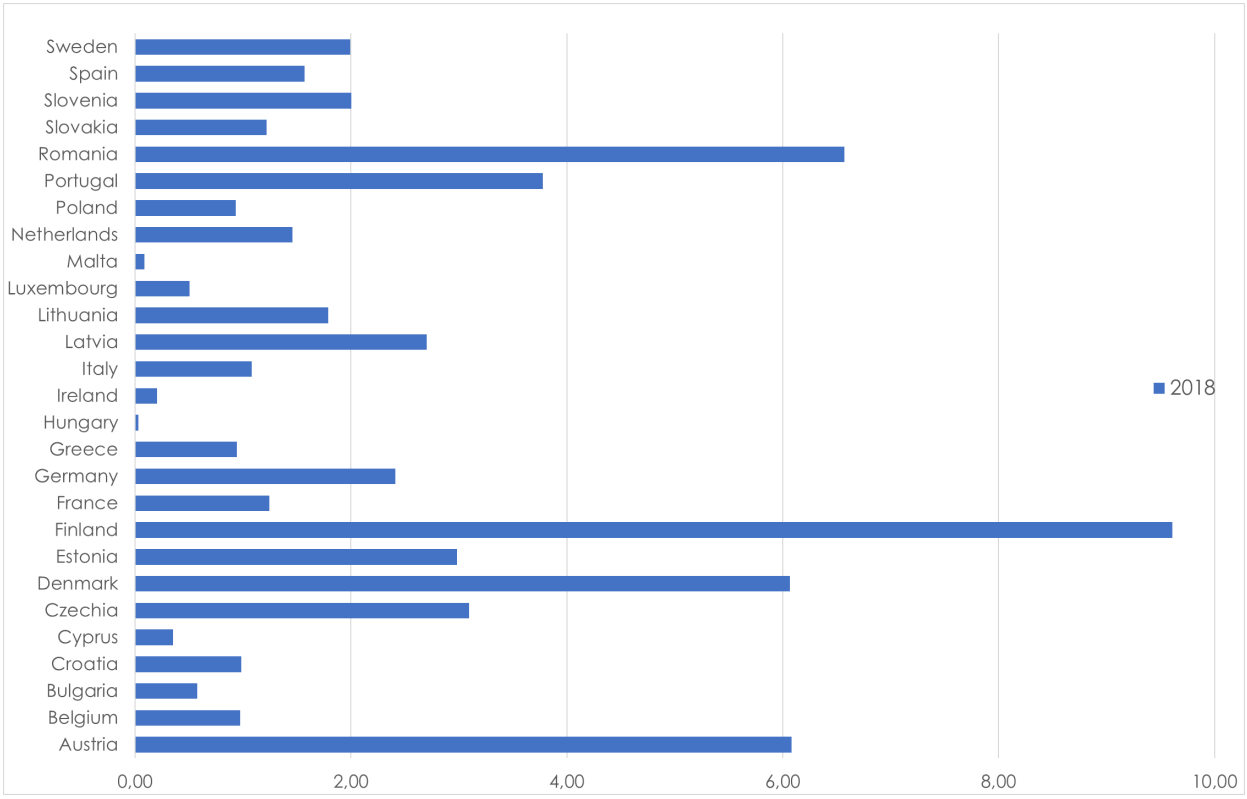


Figure 4. Exports from the environmental economy in 2018 (% share in total exports)

Source: Eurostat (online data codes: env_ac_egss2, nama_10_gdp) and the author's own elaboration.

The bar in Figure 4 is calculated by dividing the total of environmental goods and services into the country's GDP and its components. In 2018, EGSS contributed to exports by 10% in Finland, more than 6% in Romania, Austria and Denmark and only 0,1% in Malta. Plus, the lowest EGSS score was registered in Hungary. This shows that some countries place a greater interest on the manufacture and export of environmental goods and services, whilst other nations may have a less developed industry. The composition of environmental exports varies between countries. Romania products for the protection of ambient air and climate, Finland exports wood and paper products, Austria, and Denmark export equipment for renewable energy production, etc., and other countries similar products and services or specific ones. (Eurostat, 2020). This indicates that each state exports its own distinctive collection of environmental goods and services, which may be impacted by elements such as natural resources, technological capacity, and legislative frameworks.

Overall, the environmental economy has a significant impact on a country's exports, both in terms of the products and services being exported and regarding impact of them the markets. This is because many environmental goods and services have high demand on global markets, particularly in countries that are committed to reducing their environmental impact and promoting sustainability.

To understand how the EGSS evolves across Europe it is important also to consider the evolution of employment, as seen in Figure 5 about the Employment in the EGSS.

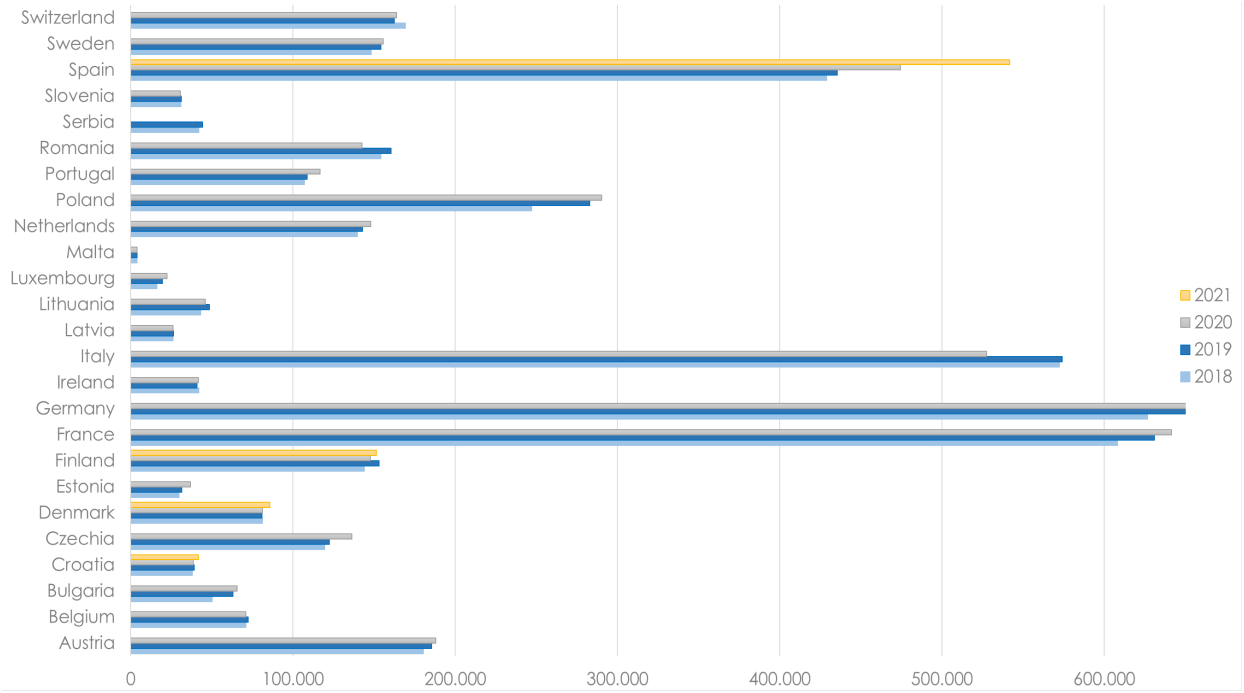


Figure 5. Employment in the environmental goods and services sector from 2018 to 2021
Source: Eurostat (online data codes: env_ac_egss1) and the author's own elaboration.

The unit of measure in Figure 5 is in FTE (full-time equivalent) calculated as an employee's scheduled hours divided by the employer's hours (of a full-time work schedule). Again, the analysis includes 25 countries. As shown in Figure 5, from 2018 to 2019, we registered a higher rate of employment in the EGSS with growth of 20,59% for Bulgaria, 17,54% for Luxembourg, and 12,65% for Poland. On the other side, from 2019 to 2020 we registered a decrease in FTE numbers as the highest FTE was 14,39% for Estonia and 9 of 25 countries (Romania, Italy, Lithuania, Finland) registered an overall lower FTE in 2020 compared to 2019 data. Again, all of these data are constantly updated, and numbers are available on the Eurostat database.

To respond to the fourth point of the methodology, we have decided to realize a SWOT analysis (focusing specifically on strengths and weaknesses) about the topic of the green transition. A SWOT analysis represents a strategic planning tool used to evaluate four points: Strengths, weaknesses, opportunities, and threats of a project, or topic, or for planning and understanding the ongoing process of a business or organisation. With the following SWOT analysis, we analyse the main elements of moving toward a green transition process in the EU context and underline the importance of the EGSS sector and its influence on the European economic systems.

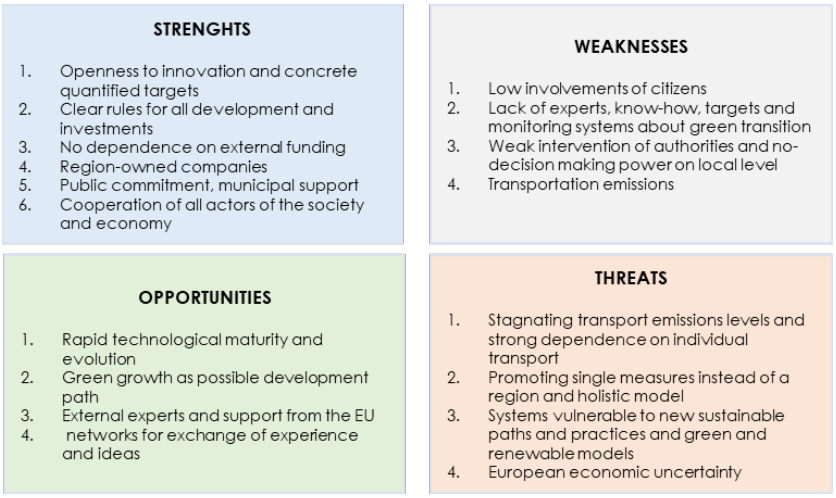


Figure 6. SWOT Analysis on the Green Transition Process

Source: Author's own creation.

Support for investments in the green economy is a high priority for EU development policy and a major challenge, for enterprises to invest on the unsustainable use of economic transformation, this is not only a need for polluting sectors, for example through government and financial institutions, or awareness raising and advocacy, but for the entire economy (European Commission and Directorate-General for International Cooperation and Development, 2018).

The main strengths of the SWOT analysis previously illustrated consist of the resources that a country can use successfully to achieve their objectives or actions implemented or under development in the different segments of the industry, in this case also applicable for the EGSS. The opportunities are possible results after implementing green paths or new openings for something positive to happen. Finally, threats include anything that can negatively affect the industry from the outside, such as shifts in market requirements, negative externalities, national economic uncertainties etc.

The strengths of this paper's SWOT analysis consist of the idea of openness to innovation and state support, the opportunities are rapid technological maturity and the new green economic model, the presence of external experts and different networking developing around green and EGSS topics. On the other hand, the weakness and threats regard the negative results that an economy can have such as low involvement of citizens, emissions, vulnerable social and economic systems regarding new and sustainable models, etc.

Conclusion

This paper has aimed to understand how the environmental economy is going for the EU countries, how it helps exports, employment, economic results, and finally which are the main advantages and obstacles of the green transition considering the importance of the Green Deal and the different ongoing situation of the EU countries. This study focuses on a small part of the data regarding the environmental economy and the green transition, since these are very broad topics. Moreover, we consider it challenging for governments, academics, or institutes to collect, analyse, and define unique studies or regulations since they must find a common framework for all realities of countries members of the European Union.

A path of sustainability and green transition is not only a goal for governments or researchers, but more than that, it should turn into a way of living and providing future generations

with a more sustainable environment and a greener economy. This paper underlines that the future of economies is going through environmentally and green paths. As illustrated in Figure 4 not only big economies of Europe are contributing to the EGSS exports, but e.g., Romania also contributed more than 6% in 2018, and its results are comparable with Austria and Denmark. Furthermore, countries such as Italy and Germany have -2% of the Romanian score, which means that the sustainable models of economy can for sure be successfully implemented also in developing economic systems. However, there are also challenges associated with the trade of environmental goods and services, including the potential for environmental dumping, which occurs when products that do not meet the environmental standards of the importing country are exported to that country. Plus, some countries may use environmental regulations as a non-tariff barrier to protect domestic industries, which can limit the growth of the environmental goods and services sector.

To revive regional economies, it is essential to expand them with investments in environmental and sustainable practices, new technologies, a green economy, renewable resources, and green energy. Access to EGSS and sustainability practices brings diversity to the economy and prepares governments to compete with the strongest European and world realities.

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