



Sustainable Development Economy and the Development of Green Economy in the European Union

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This study aims to explain the policies implemented by the European Union in the process of transitioning to a green economy. To achieve this goal, the period from the adoption of sustainable development within the union to the present has been examined. The study reveals that the European Union has taken into account the environmental problems and impacts of climate change since the 1990s and has developed long-term strategies in the axis of sustainable development and green economy. Adversely affected by the global crisis in 2008, the European Union has focused on turning the crisis into an opportunity and building a dynamic, low-carbon, resource-efficient, knowledge-based, and socially inclusive society. In this regard, it has included green investments in its rescue plan and initiated the green transformation. Firstly, the concepts of sustainable development, green economy, and green growth are explained in the study. In the second part of the study, how the European Union realized its green transformation is discussed, and the European Green Deal is examined. In the final section of the study, developments regarding climate change and the green economy within the scope of the European 2020 strategy are examined.

Keywords: Sustainable Development, Green Economy, European Green Deal.

Introduction

The Industrial Revolution, which emerged in the eighteenth century from a historical perspective, holds an important place in terms of the environment. In this century, the world population increased significantly, and the abundance of natural resources led people to a situation where they could not think about it. With the increasing production and consumption accompanying the Industrial Revolution, social life began to change, cities became crowded as a result of rural-urban migrations, new business lines and sections of society emerged (Aşıcı, 2017, p. 37). This situation led to an increase in production and the rapid satisfaction of human needs. However, the changing forms of production and consumption with the Industrial Revolution

accelerated the emergence of environmental problems. Moreover, environmental problems, which were previously perceived at the local level, have now reached global dimensions, and the developments experienced have led to the spread of the idea of nature conservation. Especially in Europe, the increasing deforestation activities have led scientists to take action to protect nature with the idea that it will pose a danger to future generations (Pisani, 2006, p. 85).

While these developments led to the development of sustainability thinking, they also contributed to the development of the idea of global sustainability among many ecological thinkers. One of these thinkers is Rachel Carson, who caused a sensation worldwide with her book "Silent Spring," published in 1962. In her book, published in 1962, Carson drew attention to the negative effects of industrialization on the environment and emphasized that humanity's intervention in natural life creates environmental problems. She also argued that the adverse effects of chemical products on agricultural areas caused many plant and animal species to start to become extinct and that the use of chemical pesticides would lead to an excessive increase in harmful insect species (Carson, 2011).

With the addition of environmental issues and the rise in oil and other commodity prices, debates regarding the natural limits of economic growth have gained momentum in this period. One concrete example of this is the Club of Rome, founded in 1968 to assess problems threatening humanity's future. Under the leadership of Donella H. Meadows, the Club of Rome published the "Limits to Growth" report in 1972 (Klarin, 2018, p.71). In the report, Meadows, Meadows, Randers, and Behrens (1978) focused on topics such as the widening gap between rich and poor caused by economic growth, the limited availability of land and water crucial for food production, the complete depletion of many minerals in the next century, the environmental pollution caused by increasing energy use through industrialization, and the ongoing effects of the use of non-renewable resources on economic development.

By the 1980s, the negative consequences of environmental issues on human development and well-being had become apparent, and this played a significant role in the development of sustainable development and its transformation into a fundamental objective (Munasingle, 2009, p.21). Sachs (2019) has highlighted the environmental crisis faced by our planet, the massive world economy that has created it, and the threat that the crisis poses to billions of people and species. Thus, the concept of sustainability has evolved in light of all these issues and has given way to sustainable development.

Sustainable Development, Green Economy, And Green Growth

Sustainable Development

Sustainable development has been defined in various ways throughout history. The most commonly used definition is found in the report "Our Common Future," published in 1987 by the World Commission on Environment and Development. This report, which has played an important role in the development and global-level discussion of sustainable development, defines sustainable development as "meeting the needs of the present without compromising the ability of future generations to meet their own needs." This definition emphasizes two

fundamental principles. The first is the prioritization of meeting the basic needs of the poor, while the second highlights the need to maintain the ability of the environment to meet both present and future needs through the use of technology and social organization (World Commission on Environment and Development, *Our Common Future*, 1987, p. 43). This limitation idea of sustainability highlights intergenerational interaction, emphasizing that equity is a fundamental principle. The term "basic needs" includes the combination of a healthy environment, a just society, and a functioning economy (Diesendorf, 2000, p. 3), while the need for global justice is emphasized to integrate intergenerational justice (Mengi and Algan, 2003, p. 20).

Green Economy and Green Growth

The green economy and green growth are often mentioned as key elements of sustainable development. The green economy refers to an economic system that takes into account environmental sustainability and social welfare, while green growth refers to economic growth that is both environmentally sustainable and socially inclusive. Both concepts aim to promote a shift towards more sustainable production and consumption patterns, while also considering social equity and environmental sustainability. The implementation of green economy and green growth policies can contribute to achieving sustainable development goals, while also creating new job opportunities and improving the well-being of society (UNEP, 2011).

The fulfillment of basic needs presents us with the challenge of achieving full growth potential. However, achieving full growth potential can endanger sustainability by bringing about environmental problems. What is intended to be conveyed here is that economic growth alone is not sufficient, and there is a need for sustainable economic growth. With sustainable development, the productive potential of societies can be increased, and basic human needs can be met by providing equal opportunities for everyone (WCED, 1987, p.44). Therefore, it is not possible to talk only about sustainable development from an economic perspective. Sustainable development encompasses environmental, economic, and social dimensions. One of the most important issues it emphasizes is poverty. In this sense, it has adopted the reduction of poverty as a primary goal by reducing the depletion of resources, environmental and cultural damage, and social instability (Barbier, 1987, p.103).

Green Economy has been one of the important developments in the world since the 1970s, considering the environmental issues and developments that have been taking place globally. The internalization of environmental externalities and the polluter-pays principle have been proposed as solutions to environmental problems within the framework of sustainability, which brought an environmentally conscious and green perspective to capitalism (Purkis, 2020, pp. 83-84). Puppim de Oliveira (2012) states that the polluter-pays principle has paved the way for the sparks of green economy thinking, bringing sustainable development to further levels (Puppim de Oliveira, 2012, p. 12). As a concept, Green Economy first appeared in the "Green Economy

Plan" report prepared for the UK government by Pearce, Markandya, and Barbier (1989) (Georgeson, Maslin, & Poessinouw, 2017, p. 3; Kanianska, 2017, p. 24; Pearce, Markandya, & Barbier, 1989). The report was presented to measure progress in sustainable development and evaluate policies, but it did not refer to green economy in general. Therefore, it can be said that the concept of green economy is used to give a green perspective to the economy (Kasztelan, 2017, p. 490; Kanianska, 2017, p. 24). The fact that the concept of green economy is new and there is no agreed definition yet, creates some difficulties in understanding the concept. Especially when used with the concept of green growth, it appears as complementary concepts to each other, but different from sustainable development. United Nations Environment Programme (UNEP, 2011) refers to a green economy that reduces environmental risks and ecological scarcities, enhances human well-being, and is based on social equity. Therefore, green economy is defined as a low-carbon, resource-efficient, and socially inclusive economy (United Nations Environment Programme [UNEP], 2011, p. 1).

In a green economy, as in sustainable development, environmental, social, and economic inclusivity must be ensured. Therefore, green economy policies should prioritize human well-being and social equity, as well as the rational use of natural and human resources, and be central to economic development (United Nations Environment Management Group [UNEMG], 2011, p. 15). In short, the integration of green policies should take into account the three dimensions of sustainable development.

Green Growth

Green growth is a strategy aimed at promoting the green economy and changing the growth paradigm while addressing all three dimensions of sustainable development. Since its emergence, it has aimed to achieve sustainable growth. The concept was first introduced as a term in the Fifth Ministerial Conference on Environment and Development held in Seoul in March 2005. At this conference, attended by 52 governments and stakeholders from Asia and the Pacific, the necessity of a green growth policy beyond sustainable development was put forward (Kanianska, 2017, p. 19; United Nations Economic and Social Commission for Asia and the Pacific, 2012).

The development of green growth as a strategy occurred in 2008. This was due to the inadequacy of countries' economic policies to emerge from the global crisis, in terms of the consequences it revealed after the crisis. As a result of the crisis, it was understood that there was no single key to recovering, and the fuel and financial sectors were affected negatively. While these developments were taking place, the necessity of bringing a green perspective to the economy emerged, and countries began to implement green policies. In particular, the United Nations Environment Programme (UNEP) and the Organisation for Economic Co-operation and Development (OECD) conducted studies on different growth and economic strategies. This led to the emergence of the concepts of green economy and green growth, while giving sustainable

development a different dimension. The most widely accepted definition of green growth, made by the OECD, describes it as a system that encourages economic growth and innovation while ensuring that natural assets and environmental services continue to preserve human well-being ([OECD], 2011, Organisation for Economic Cooperation and Development, p. 4). Green growth is a growth paradigm aimed at preventing environmental problems, identifying new economic development areas, and employment opportunities. At the same time, it argues against other growth models and suggests that economic growth should be addressed with a green policy (Yalçın, 2017, p. 106). Kasztelan (2017) argues that the concepts of green economy and green growth essentially seek to identify ways to improve the results of existing economic activities by considering the efficiency of resource and energy from a technological advancement perspective, taking into account climate problems and decreases in natural resources (Kasztelan, 2017, p. 491).

The Green Transformation of the European Union and the European Green Deal

The crisis that began in 2008 as a result of the problems in the housing market in the United States (US) affected many countries, including the US, the United Kingdom, and the European Union (EU). The global growth rates decreased, the world trade volume decreased, unemployment and public debt increased, and heavy pressures were imposed on poor people. The destructive effects of the crisis were felt not only economically, but also socially and environmentally, deeply affecting countries. Following the crisis, countries turned to green policies and incentives, preparing comprehensive studies for achieving economic growth without harming the environment or with less harm. In this sense, the EU has based its future strategies on sustainable development and green economy, taking lessons from the crisis.

Developments Prior To The Crisis On The Path Towards The Green Transformation

One of the causes of climate change is greenhouse gases. These gases, which increase due to natural processes and human activities, cause an increase in temperatures by causing the greenhouse effect. Therefore, it is necessary to reduce these emissions and to carry out human activities without harming the environment for the future of the planet. The EU has focused on reducing these gases since the 1990s, and after the global crisis, it aimed to build a carbon-free and sustainable economic model while giving place to green incentives. The Rio Conference organized by the United Nations in 1992 is an important conference for taking sustainable development to further levels and combating climate change globally. The "Framework Convention on Climate Change" adopted at this conference led to the declaration of the Kyoto Protocol in 1997, aiming to reduce greenhouse gas emissions and eliminate the negative effects of climate change. The Kyoto Protocol includes a 5% reduction in greenhouse gas emissions between 2008 and 2012 compared to the 1990s in developed countries. The protocol, which came into effect in 2005, was adopted by the EU in 1997. Under the Kyoto Protocol, the EU pledged to reduce greenhouse gas emissions by 8% for the period 2008-2012. (Commission, 2004, p. 2).

At the European Council held in Helsinki in 1999, it was argued that it was necessary to develop a long-term strategy that would regulate and unify sustainable development policies in economic, social, and environmental terms across Europe. In this regard, the European Commission called on to prepare a proposal for these goals at the European Council to be held in June 2001 (Commission of The European Communities, 2001, p.2). By the year 2000, the European Council had met again in Portugal with the participation of the leaders of the 15 member countries. At this meeting, it was suggested that growth and employment rates should be focused on in order to support the social cohesion and environmental sustainability of the EU. The aim was to establish a sustainable economic growth that does not neglect good jobs, social cohesion, and the environment within the EU in the coming decade (Kok, 2004, p.8). These goals were accepted within the framework of the plan called the Lisbon Strategy, which aimed to improve the economic and social structure of the EU. However, this strategy, which was primarily adopted for the development of the EU in economic terms, contains some deficiencies in terms of climate and sustainable development goals.

In May 2001, the European Commission adopted a document entitled "European Union Sustainable Development Strategy". In this document, goals were established that included climate change, biodiversity conservation, and coordinated implementation of environmental and health policies, as well as dangerous chemical substances. Subsequently, a proposal titled "A Sustainable Europe for a Better World: A European Union Strategy for Sustainable Development" was presented by the Commission at the Gothenburg Summit on June 15-16, which aimed to determine the EU's sustainable development strategy and expand the Lisbon Strategy to cover climate change and environmental issues (Talu, 2019, p. 30; Akses, 2014, p. 22). The Gothenburg Summit has thus directed the initiation and creation of the EU's first sustainable development strategy and policies. In addition, the following targets have been added to the Lisbon Strategy in line with the decisions made at Gothenburg: (Kok, 2004, p. 35)

- i. Progress in achieving the targets set out in the Kyoto Protocol by addressing the problem of climate change;
- ii. Obtaining 12% of primary energy consumption and 22% of final electricity consumption from renewable sources;
- iii. Determining the social and environmental costs of increasing traffic, noise, crowds, and pollution and addressing these issues;
- iv. Strengthening transport infrastructure and developing a regulatory framework for the taxation system;
- v. Ensuring the sustainable use of natural resources and waste levels;
- vi. Designing a taxation directive in the energy sector and adopting environmental action programs.

In order to achieve the targets it committed to under the Kyoto Protocol on climate change, the EU decided to establish the Emissions Trading System (ETS) with Directive 2003/87/EC in

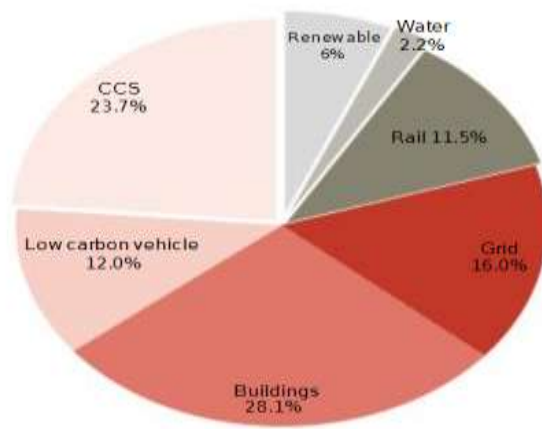
2003. The ETS, implemented in 2005, involves the buying and selling of emission credits allocated to businesses, thus enabling the economically efficient reduction or limitation of greenhouse gas emissions. The ETS has been developed for four periods, covering 2005-2007, 2008-2012, 2013-2020, and 2021-2030, respectively. During the first period of the ETS, particularly high carbon dioxide emitting industries such as energy and heat production and some energy-intensive facilities were selected, with a total of 10,500 facilities included in the ETS for the EU-27. The system was extended to include aviation emissions between 2008 and 2012, and Iceland, Liechtenstein, and Norway were included in the system, which would cover a total of 11,500 facilities. The EU aims to expand its emission targets for future years within the scope of the ETS. Thus, in the third period of the ETS, covering the years 2013-2020, with the condition that developed countries also commit to it, the EU set its 2020 emission reduction target to be 21% less than the levels in 2005 for the areas covered by the ETS. In addition to the ETS, the Effort Sharing Decision (ESD) has been presented to share the responsibility for emission reductions among countries in areas not covered by the ETS.

In 2005, the Council of Europe began working on identifying principles that are important for achieving sustainable development. These principles include the promotion of social cohesion and the creation of a competitive and eco-efficient union that protects and improves environmental quality, while fostering economic development and ensuring its global implications. In this context, a revised sustainable development strategy was adopted by the European Commission in June 2006 (Commission of The European Communities, 2007, p. 3). The EU sustainable development strategy is primarily based on the creation of environmentally sustainable societies that efficiently use resources and manage resource utilization well, leading to long-term improvements in quality of life. To this end, seven priority objectives have been identified: combating climate change, achieving sustainable production and consumption, providing sustainable transportation, conserving and managing natural resources, protecting public health, eliminating demographic, social inclusion, and migration-related issues, combating global poverty, and promoting sustainable development (Council Of The European Union, 2006, p. 7).

In 2007, a new report was published by the European Commission to observe progress made towards the principles identified in the Sustainable Development Strategy. According to the report, while progress has been made in the identified areas, the targets have not been achieved to a significant extent (Commission of The European Communities, 2007). Subsequently, in mid-2008, the crisis that emerged in the United States deeply affected the economies of member countries and macroeconomic indicators deteriorated. In response, countries directed their policies towards finding a solution to the crisis and implemented incentive programs for the recovery of their financial systems.

The EU, deeply affected by the crisis, launched the Economic Recovery Plan in November 2008 to stimulate demand, rebuild the shattered confidence, and promote employment. Along with this plan, it also provided smart investment proposals for skills and technologies to enhance long-term economic growth and sustainable prosperity (Commission of The European Communities, 2008, p.2). In this sense, taking into account not only the economic but also the environmental and social dimensions of the crisis, policies and actions for the future of the EU for 2009-2010 were aimed at. While the Economic Development Plan consisted mainly of adopting fiscal policies, emphasis was also placed on innovation and greening of EU investments, and four main objectives were identified. These objectives were to: i) revive declining demand and increase consumer confidence post-crisis, ii) prevent the impact of economic consequences, particularly on the poor, and revitalize the labor market, iii) reduce structural unemployment, promote innovation and create a knowledge economy, and iv) accelerate the transition to a low-carbon economy (Commission of The European Communities, 2008, p.5). The European Commission has identified these goals to increase demand and achieve them quickly, and has allocated approximately 1.5% of the EU's GDP, or about €200 billion, to the budget (Commission of The European Communities, 2008, p.6; Corporation [HSBC], Watt, 2009, p.7; Hongkong and Shanghai Banking Corporation [HSBC], 2009, p.23). 13.2% of the designated budget of €200 billion was allocated to green investments. Within this ratio, 75% of green investments were allocated to energy efficiency in buildings, 20% to railways, and 5% to vehicles (International Labour Organization [ILO], 2010, p.15). The plan emphasized the importance of energy efficiency in buildings and the need for EU institutions and member states to work together to achieve it and increase green products. More than two-thirds of the portion allocated to climate change in the €200 billion stimulus package was allocated to energy efficiency. Accordingly, the most significant investments were made for the development of energy-efficient buildings, while investments in grids and low-carbon vehicles also played an important role. Figure 1 shows the distribution of green incentive spending.

Figure1: Green stimulus spending in the EU



Source: ILO, 2010, p. 15.

Czech Republic has allocated 900 million euros of the 2.7 billion euro renewable energy railway and Low Carbon Vehicles package to green incentives. Despite being significantly affected by the crisis, Belgium has allocated 170 million euros to green incentives. Estonia has allocated approximately 248 million euros, Portugal 305 million euros, and Slovakia approximately 166 million euros to green incentives. The United Kingdom, which left the EU in 2020, is also among the countries allocating a significant share of green incentives. As part of its rescue plan set for the years 2009-2010, which had a total size of 25.3 billion pounds, the UK has allocated 1.31 billion pounds to green investments (Pollitt, 2011, p. 429). France and Germany are seen to allocate the most funds for green incentives among member countries. Germany has announced two incentive packages in November 2008 and January 2009. The packages, totaling 80 billion euros, represent 1.5% of GDP for 2009 and 2% of GDP for 2010. This package, prepared by Germany, is the largest economic recovery program against the crisis among member countries (HSBC, 2009, p. 25-26). The proportion of green investments in the package was realized as 13.3% (Pollitt, 2011, p. 15), and resources were primarily allocated for energy efficiency works. France has also announced an economic recovery package for the years 2009-2010. The package, consisting of 26 billion euros, which corresponds to 1.3% of gross domestic product for 2009. Of the 26 billion euro budget, 11 billion euros were allocated for increasing commercial liquidity flows, another 11 billion euros were allocated for direct government investments, and the remaining 4 billion euros were allocated to public companies for increasing railway infrastructure, postal services, and energy services (HSBC, 2009, p. 27).

Developments after the Crisis

Following the global crisis, the need for a more comprehensive strategy by the EU on climate change and environmental issues has emerged. In this sense, a new strategy was launched by the European Commission in 2010, which will replace the Lisbon Strategy. The strategy, named "Europe 2020," focuses on reducing the negative effects of the crisis and reducing climate change and environmental issues. Additionally, it establishes a vision of achieving smart, sustainable, and inclusive growth. The 20/20/20 Strategy, also known as this strategy, aims to develop a knowledge- and innovation-based economy with smart growth, promote a greener and more competitive economy by sustainable growth that uses resources efficiently, and encourage social and regional cohesion with inclusive growth (European Commission, 2010, p.3). Within the scope of the Europe 2020 Strategy, three main targets related to climate change and the environment have been identified. These targets are reduce greenhouse gas emissions by 20% compared to 1990, increase the share of renewable energy sources in total energy consumption by 20%, and increase energy efficiency by 20% (European Commission, 2010, p.9). Although the targets have been set until 2020, the Union has started to create its goals for after 2020. This is evidenced by the fact that other targets, except for those set under the ETS, have been created for 2020. Therefore, work is needed to determine the Union's post-2020 targets and how they will be established. For this reason, the European Commission has set out to establish the 2030

strategy to create climate and energy policies. In 2013, the Commission published a Green Paper entitled "2030 Framework for Climate and Energy Policies" (Ohlendor Duwe, Umpfenbach, and McFarland, 2014, p.1). After the publication of the Green Paper, the Commission proposed a framework for climate and energy for 2030 on January 22, 2014 (Ohlendorf et al., 2014, p.2). This framework creates new opportunities for affordable energy for consumers, growth, and employment to create a low-carbon economy. This situation leads to ensuring energy supply security and reducing energy imports. With this aim, the Union has put forward a policy framework for 2030 (European Commission, 2014, p.3). This policy framework was adopted by 28 member states on October 24, 2014. Accordingly, the main targets for reducing greenhouse gas emissions, increasing renewable energy use and energy efficiency have been identified. It is aimed to reduce greenhouse gas emissions by 40% by 2030 compared to 1990, increase the use of renewable energy and energy efficiency to 27% (Onsoz, 2014, p.64). Furthermore, emphasizing the importance of ETS in the transition to a low-carbon economy, the goal of establishing a carbon market to create a Market Stability Reserve in 2021 has been put forward (European Commission 2014, p. 8).

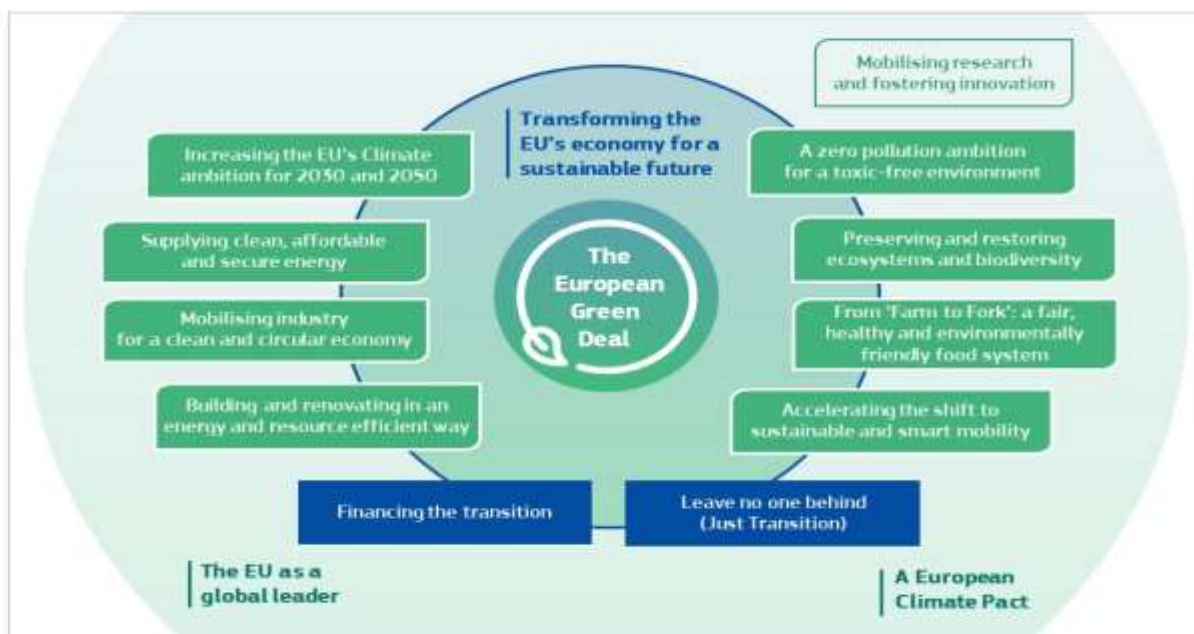
Similarly, the Union has established its vision for what it wants to achieve by 2050 with the 7th Environmental Action Program published in 2014. Covering the years 2014-2020, this program represents a vision for a low-carbon, green, and circular economy with the slogan "Living Well, Within the Limits of Our Planet" (EEA, 2017, p. 15). These goals set by the EU are significant developments in providing global crisis and reducing dependency on energy. Moreover, the 2020 goals have played a crucial role in maintaining economic growth and sustaining employment for approximately 4.2 million people in various industries after the crisis (European Commission, 2014, p. 2). The most cost-effective way to increase energy security and reduce greenhouse gases and other pollutants is to increase energy efficiency. In this sense, the Union focuses on increasing energy efficiency, aiming to reduce costs and create new job opportunities in line with its objectives (Stoyanova, 2017, p. 376). Additionally, the Union, which desires the signing of a global climate agreement, concretely expressed its desire at the "21st Conference of the Parties to the United Nations Framework Convention on Climate Change" held in Paris in 2015 (European Council, 2014, p. 1). This conference, also known as COP 21, was one of the most important conferences of that period in terms of determining global climate goals and creating binding obligations for countries. It paved the way for the establishment of a global framework on climate change after 2020, leading to an agreement between countries, and the "Paris Agreement" was adopted at the conference. The EU played a leading role in addressing the fundamental problems of climate change and in the emergence of global responses in line with the Paris Agreement (European Commission, 2018, p. 4). On April 22, 2016, the EU signed the Paris Agreement and approved it on October 5 of the same year (Talu, 2019, p. 15).

Since the signing of the Paris Agreement in 2016, the EU has been working on long-term strategies to reduce greenhouse gas emissions and has developed a plan called the "European

Green Deal" (EGD) on December 11, 2019, which sets out its long-term goals and roadmap for addressing environmental and climate change issues in all policy areas (TÜSIAD, 2020, p. 8). The announcement of the EGD by the EU coincided with the emergence of the Covid-19 pandemic, which began in late 2019 in Wuhan province, China. The pandemic had a significant negative impact on food, health, and the economy in many countries in 2020. Countries began working on solutions to the problems caused by the pandemic and, like in the 2008 crisis, introduced economic recovery packages. The EU prepared a Recovery Plan to reduce the social and economic impacts of the pandemic in its member states. The EGD is seen as a means for the EU to resist current and future crises, such as Covid-19, by carbon-neutralizing the economy by 2050. The 2008 crisis demonstrated that crises have multiple dimensions, and solving them with unilateral economic policies is no longer feasible. Therefore, the EU believes that the EGD is essential not only for addressing the ecological imbalance but also for recovering from the effects of Covid-19. As such, the EU announced that it would use one-third of the investments in its €1.8 trillion recovery package and its seven-year budget to finance the EGD (European Commission, 2019a).

The European Green Deal (EGD) aims to transform the EU economy with the ultimate goal of creating a sustainable future. It encompasses various elements, as shown in Figure 2.

Figure 2: The figure below illustrates the various elements of the Green Deal.



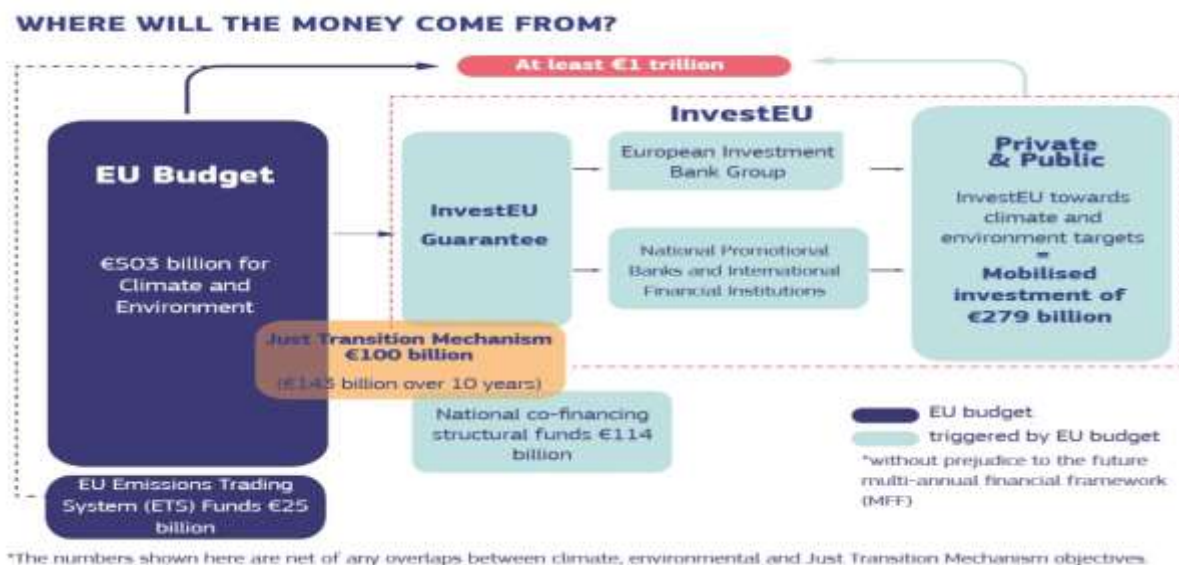
Source: European Commission, 2019b, s.3

This new growth strategy necessitates the integration of environmental, productivity, stability, and equity dimensions at the center of policies and actions by prioritizing sustainability. The EGD seeks to achieve a carbon-neutral continent by 2050 and ensure that the benefits arising from this transition are enjoyed by all. Furthermore, the EGD aims to develop new technologies and sustainable solutions to position Europe at the forefront of economic growth and leadership in the digital world (European Commission, 2019c, p. 1).

To achieve the identified environmental and climate goals, the Commission believes that effective carbon pricing is necessary throughout the economy. This necessitates the introduction of new taxes and non-tariff barriers on trade through the Carbon Border Adjustment Mechanism (CBAM) system, aimed at reducing carbon leakage. The Commission is working towards establishing this system, and through the Green Taxonomy Mechanism, aims to identify investments for climate goals and inject climate finance into these investments (TÜSIAD, 2020, p. 9).

In addition, financing and the creation of mechanisms that address all sectors are necessary to achieve the goals set within the scope of the European Green Deal (EGD). Therefore, it is important to determine financing and use the budget effectively. The EU has announced that it will allocate a portion of its current budget for the EGD and will present the Sustainable Europe Investment Plan for areas that require additional financing. Additionally, the European Investment Fund (InvestEU) program has emphasized that a portion of the allocated budget will be used for green investments. (European Commission, 2019b, p.15). Figure 4 shows the Sustainable Europe Investment Plan, which aims to provide a framework that facilitates and encourages public and private investments necessary for a climate-neutral, green, competitive, and inclusive economy by triggering EU funds. The plan is based on three dimensions, which are financing, enabling, and implementation support (European Commission, 2020b).

Figure 4 : Sustainable European investment plan finance mechanism



Source: European Commission 2020a

- i. The aim is to mobilize sustainable investments worth at least 1 trillion euros within the next 10 years for financing.
- ii. The plan aims to facilitate sustainable investments by encouraging public and private sector investments through activation.
- iii. The objective of implementation support is to encourage public officials and project supporters in planning, designing, and executing sustainable projects.

2020 Targets and Achievements

The European 2020 strategy was primarily established around three objectives: a 20% reduction in greenhouse gas emissions by 2020 compared to 1990 levels, a 20% increase in energy from renewable sources, and a 20% increase in energy efficiency.

Approximately 55% of greenhouse gas emissions in the EU are generated from activities in the transportation, construction, agriculture, and waste sectors. The remaining 45% of emissions are mainly caused by energy power plants and industrial facilities. ESDs were established for the 55% sector responsible for greenhouse gas emissions. As a result, member states have established their own national emission targets and committed to adhering to them. This is expected to result in a 10% reduction in emissions by 2020. In addition, more than 11,000 facilities responsible for 45% of greenhouse gas emissions have been included in the ETS. Under the ETS, companies are allowed to buy and sell emission permits. If a company emits more than the amount allowed by its permit, it will be penalized, whereas if it emits less, it can sell its excess permits to another country. Through the establishment of the ETS, incentives are provided to companies to reduce total emissions values and invest in low-carbon technologies by setting a monetary value on carbon (European Environment Agency, 2021).

The 2005 emissions were taken into consideration in the determination of the ESD and ETS. In this regard, if greenhouse gas emissions under the ETS are reduced by 21% and emissions under the ESD are reduced by 10%, the 20% target can be achieved. Table 1 illustrates the variation of the 20% target for greenhouse gas emissions reduction by year.

Table 1: Greenhouse gas emission values: 2009-2020 (%)

EU-27	2009	2010	2011	2012	2013	2014	2015	2016	2017	2018	2019	2020
European Union (28 countries) (2010=100)	100.0	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7	99.7
Austria	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Belgium	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Bulgaria	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Croatia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Cyprus	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Denmark	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Estonia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Germany (incl. 1990 former territory of the FRG)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Greece	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Hungary	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Ireland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Italy	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Latvia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Lithuania	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Malta	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Netherlands	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Poland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Portugal	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Romania	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Slovakia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Slovenia	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Spain	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Sweden	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Finland	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
France	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
Germany (excl. 1990 former territory of the FRG)	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0
United Kingdom	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0	100.0

Source: Eurostat 2023a

According to Table 1, greenhouse gas emissions for the EU-27 have been decreasing since 2010. By 2013, the 20% reduction target had been achieved. By 2015, emissions had decreased in all sectors except for the refrigeration and cooling industries. The highest reduction was seen in the industrial and energy supply sectors (European Environment Agency, 2021). After 2015, the decrease continued and by 2018, greenhouse gas emissions had decreased by approximately 22% compared to 1990 levels. This indicates that the targets set for 2020 were achieved and is also important for the targets set for 2030 and 2050. According to a report published by the EEA in 2020, emissions within the scope of ETS for the EU-27 could decrease by 33% by 2030. Similarly, emissions within the scope of ESD are estimated to decrease by 18% by 2030. This suggests that with planned policies and measures, there could be a 41% reduction in emissions by 2030 (EEA, 2020, pp. 16-18).

Another target set under the 2020 strategy is to increase the share of renewable energy sources in total energy consumption by 20%. Member states have set their own national plans and targets to achieve this goal. For example, Germany has set its target for 2020 at 18% from renewable sources, Austria at 34%, Spain at 20%, and France at 23%. When countries are examined in terms of their targets, the highest targets are shared among Denmark, Sweden, Finland, Austria, and Latvia. Table 2 shows the targets and achievements set by countries.

Table 2: Share of energy from renewable sources: 2012-2021 (%)

TIME	2012	2013	2014	2015	2016	2017	2018	2019	2020	2021
EU27										
European Union – 27 countries (from 2008)	16.882	16.859	17.418	17.828	17.979	18.411	19.856	19.887	22.659	21.775
Non-ene – 20 countries (from 2003)	14.786	15.333	16.128	16.564	16.745	17.389	17.889	18.568	20.979	
Belgium	7.888	7.871	8.828	8.969	8.764	9.138	9.472	9.829	12.800	13.814
Bulgaria	15.837	16.888	18.858	18.261	18.799	18.995	20.581	21.343	23.319	17.815
Czechia	12.814	13.927	15.874	15.878	14.928	14.798	15.139	16.238	17.385	17.687
Denmark	25.485	27.173	28.318	30.689	31.715	34.387	35.159	27.828	31.681	34.719
Germany (and 1990 former territory of the FRG)	13.349	13.757	14.381	14.881	14.888	15.472	16.868	17.268	18.888	18.368
Estonia	25.586	25.356	26.158	28.887	29.232	29.538	29.978	31.738	30.869	30.818
Ireland	7.809	7.521	8.518	9.893	9.189	10.329	10.942	11.978	16.168	12.548
Greece	13.781	13.228	13.883	13.898	13.388	13.388	18.881	18.823	21.749	21.928
Spain	14.239	15.881	15.879	16.221	17.815	17.118	17.823	17.852	21.228	20.929
France	18.239	18.888	14.382	14.893	15.451	15.847	16.884	17.174	19.189	18.342
Croatia	26.787	28.848	27.817	28.968	28.286	27.388	28.847	28.488	31.823	31.828
Italy	15.441	16.741	17.882	17.528	17.415	18.267	17.798	18.181	20.259	19.823
Cyprus	7.111	8.428	9.144	9.983	9.888	10.478	10.871	10.777	16.879	16.419
Latvia	33.789	37.837	38.828	37.528	37.138	39.988	40.819	40.328	42.132	42.187
Lithuania	31.437	32.889	33.593	33.768	35.813	36.838	34.995	35.474	36.773	38.338
Luxembourg	3.112	3.484	4.471	4.887	5.584	6.184	8.942	7.846	11.899	11.725
Hungary	15.538	16.285	14.818	14.898	14.377	15.358	12.548	12.834	18.858	14.715
Malta	3.882	3.788	4.744	5.119	6.388	7.219	7.914	8.238	18.714	12.185
Netherlands	4.539	4.881	5.415	5.714	5.848	6.987	7.334	8.888	13.959	12.388
Austria	22.734	22.845	23.558	23.897	23.378	23.138	23.784	23.788	26.545	26.483
Poland	18.933	11.452	11.885	11.881	11.598	11.889	14.936	15.377	18.182	18.624
Portugal	24.574	25.899	28.588	30.514	30.884	30.911	30.188	30.423	30.882	30.882
Romania	22.823	23.888	24.845	24.782	25.823	24.454	23.878	24.298	24.478	23.598
Slovenia	21.381	23.188	22.459	22.879	21.975	21.858	21.878	21.948	23.888	23.888
Slovakia	18.433	19.133	11.713	12.882	12.829	11.485	11.886	16.884	17.345	17.412
Finland	34.222	36.839	38.839	39.258	38.845	48.357	41.185	42.887	43.839	43.898
Sweden	49.683	58.153	51.151	52.228	52.587	53.388	53.916	53.785	58.124	62.575
Iceland	72.727	73.787	73.843	71.846	75.329	74.184	77.175	78.812	80.725	80.785
Norway	64.922	66.489	68.488	68.545	69.235	70.836	71.586	74.498	77.358	74.886
Bosnia and Herzegovina			24.873	26.687	25.358	27.341	25.972	27.454	29.635	
Montenegro	41.313	42.836	44.998	43.873	41.329	39.483	38.881	37.722	43.758	38.891
Moldova	24.328	24.819	26.189	26.173	28.888	27.838	27.478	25.843	25.857	25.388
North Macedonia	18.128	18.389	19.339	18.526	18.844	18.838	18.179	17.485	18.222	17.287
Albania	35.182	33.167	31.838	34.813	38.953	35.778	36.372	38.843	45.815	41.389
Serbia	28.788	21.895	22.886	21.889	21.147	20.287	20.329	21.443	26.287	25.288
Kosovo (under United Nations Security Council Resolu...)	18.823	18.923	19.544	18.484	24.472	23.882	24.616	24.215	24.481	22.584
Georgia										18.988

Source: Eurostat 2023b

Since 2011, it has been observed that the target set has been approached every year. By 2019, the target was achieved with 19%, and as of 2020, the target was realized with 22%. According to the EEA (2022), 22% of the energy consumed in 2021 was provided from renewable sources, which is at the same level as in 2020. The increase in electricity production from solar energy contributed to this rate. However, the negative developments experienced after Covid-19 have caused a decrease in the rate of increase. In this regard, the long-term expectations for renewable energy may be negatively affected, and the target of 32% set for 2030 may not be achieved (EEA, 2022).

Another important goal that the EU has taken into account regarding climate change is to increase energy efficiency by 20%, which also means reducing energy consumption by 20%. In this context, the Energy Efficiency Directive No. 2012/27/EU was adopted and came into force

When examining AB27, it is observed that primary energy consumption decreased until 2015, but increased between 2016 and 2018. This increase gave way to a decrease in 2019, and it is seen that the target set was achieved and energy consumption decreased in 2020. In 2018, the transportation and industry sectors experienced the highest increase in energy consumption, while energy consumption in the housing and services sectors decreased. The share of sectors in final energy consumption showed a distribution among the sectors of 34% transportation, 25% industry, 25% housing, 13% services, and 3% agriculture, fisheries, and forestry in the same year (European Commission, 2020c, pp. 3-4). The decrease in production due to the Covid-19 pandemic that started in 2019 had a positive impact on the 2020 data. The pandemic brought about many changes, such as border closures, suspension of production, and implementation of remote work, in many countries. Therefore, energy consumption decreased in most countries.

Looking at the 2020 data, it can be seen that the EU has achieved the goals set. These data, which are quite important in terms of the 2030 and 2050 goals, support the EU's desire and efforts to be a global leader in green economy. However, global developments in recent years have brought about some problems both in the EU and in other countries. In particular, the war that started between Russia and Ukraine in 2022 brought the energy issue to the agenda. Because the EU imports more than half of the energy used. This situation highlights energy supply security and global developments affect energy imports.

The EU's production of energy from renewable sources reduces its dependence on foreign sources and prevents other countries from using energy as an economic and political tool (Demir and Baş, 2020, pp. 825-826). However, it is observed that the war between Russia and Ukraine has turned the EU's energy imports into a global energy crisis. As Russia increased energy prices and made cuts in energy, member countries started energy storage studies and energy-saving studies were carried out. Considering the EU's need for Russian gas, the increasing costs bring economic problems and make it difficult for the EU to implement its green economy goals.

AB's "REPowerEU" plan aims to end the use of Russian fossil fuels by 2030 in response to the energy crisis, with the goal of ensuring a smooth transition to green energy. The plan is based on three main objectives: to promote energy efficiency, produce clean energy, and diversify energy sources (European Commission, 2022b).

The plan includes short- and medium-term targets. In the short term, goals include purchasing gas, LNG, and hydrogen through the AB Energy Platform, establishing new partnerships with reliable suppliers, increasing the production of biogas, and launching new solar and wind energy projects to reduce gas imports. In the medium term, targets include identifying national REPowerEU plans to support investment and reforms worth €300 billion, investing in gas and electricity infrastructure networks, increasing the renewable energy target to 45% by 2030, and

taking regulatory measures to increase energy efficiency in the transportation sector (European Commission, 2022b).

By reducing energy imports and ensuring energy security, AB aims to achieve a green transition and reduce energy imports through this plan, which is aimed at solving the energy crisis caused by the war.

CONCLUSION

The emergence of the concepts of green economy and green growth in the wake of the 2008 global financial crisis enabled the EU to adopt a green approach to the economy in order to mitigate the effects of the crisis. In its rescue plan put forward at the end of 2008, the EU included green incentives, with the aim of addressing economic, social, and environmental issues in its efforts to recover from the crisis. Accordingly, the EU allocated 13% of the budget of its €200 billion rescue plan to green incentives. Many EU member states have also included green incentives in their national policies, aiming to reduce the environmental and social impact of the crisis. Germany and France were the countries that allocated the highest budget to green incentives among member states. In addition, three initiatives were launched to address the construction, automotive, and manufacturing sectors, which were the most affected by the crisis. These initiatives are the Green Vehicle Initiative, the Energy-efficient Buildings Initiative, and the Future Factories Initiative. Through these initiatives, the EU aimed to promote the use of green technologies, increase energy efficiency, and reduce carbon emissions.

Following the crisis, the idea that climate change and environmental issues should be included in the Union's future strategies gained importance. In this context, the Europe 2020 Strategy was launched in 2010. This strategy is a long-term roadmap that focuses on greenhouse gas emissions and aims to fulfill both commitments and the goal of transforming the EU into a sustainable society in the future. Similarly, the orientation towards renewable sources in energy consumption is important in terms of using resources efficiently and ensuring that non-renewable resources do not run out. Increasing energy efficiency means reducing energy consumption.

In 2020, the EU, which determined its strategy, continued its efforts and aimed to be a leader in terms of climate and environment in the global system. To this end, it set targets for 2030 and 2050, aiming to reduce the financial burden caused by energy dependence in economic terms, create new job opportunities, and promote the transition to a low-carbon economy. In 2015, the EU also accepted the Paris Agreement at the COP21 conference, committing to contribute to reducing the effects of climate change and reducing greenhouse gas emissions caused by the EU by 40% by 2030. The Paris Agreement has been an important agreement for the EU to become a global leader and has made significant contributions to the development of long-term strategies.

Especially after the crisis, the EU's efforts to green its economy and establish a long-term roadmap reached its peak by 2019. In December 2019, the AYM was declared with the idea that the EU needed a new growth strategy. With this agreement, it was aimed to decarbonize the economies and become climate-neutral by 2050.

With the Climate Law, the goal of creating a carbon-neutral Europe by 2050, which was determined within the framework of AYM, has become a binding target for member states and the Union. It is evident that the EU is very determined and willing in its long-term climate and environment strategies. However, crises such as Covid-19 and the Russia-Ukraine war, which have emerged and are likely to emerge in the future, may hinder the achievement of the targets set. Therefore, improvement programs need to be determined in a way that is suitable for current crises, and policies to be implemented by member states should be determined in this context. The EU has put forward the REPowerEU plan with this awareness, aiming to overcome the energy crisis and show development in the field of renewable energy.

The EU, which successfully achieved its 2020 targets, can make significant progress towards achieving its targets for 2030 and beyond, particularly for 2050, if it does not increase the use of non-renewable energy sources in the face of the energy crisis and instead focuses its budget on ensuring a green transition. As a result, it can be seen that the EU has directed its policies towards green policies and strategies, particularly after the 2008 crisis, in its transition to sustainable development and a green economy. By determining its long-term strategies based on green policies and strategies, the EU was able to declare the European Green Deal in 2019 and achieve its 2020 targets through the transformations and advancements it has experienced.