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## CHALLENGES OF THE GREEN ECONOMY CONCEPT AND POLICIES IN THE CONTEXT OF EUROPE 2020 STRATEGY. THE CASE OF POLAND

### REALIZACJA WYZWAŃ „ZIELONEJ” GOSPODARKI W KONTEKŚCIE STRATEGII EUROPA 2020. PRZYKŁAD POLSKIEJ GOSPODARKI

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**Streszczenie.** Artykuł dotyczy idei zrównoważonego rozwoju oraz koncepcji „zielonej” gospodarki. Istotnym wkładem w ich urzeczywistnienie jest wdrożenie od 2010 r. strategii „Europa 2020”, która wyznacza główne cele w obszarach inteligentnego, zrównoważonego i sprzyjającego włączeniu społecznemu rozwojowi. W artykule uwagę poświęcono szczególnie ocenie stopnia realizacji głównych wybranych szczegółowych celów w obszarze środowiskowym w Polsce i krajach Unii Europejskiej w latach 2010–2014. Analiza danych statystycznych pozwala ostrożnie, ale optymistycznie wnioskować o poziomie „zazielenienia” polskiej i unijnej gospodarki.

**Key words:** green economy, sustainable growth, Poland, European Union.

**Słowa kluczowe:** zielona gospodarka, zrównoważony rozwój, Polska, Unia Europejska.

## INTRODUCTION

Until recently, ecological demands were perceived as a certain extravagance. Today, the idea of green economy is increasingly becoming an integral part of market economy. The interest in green and resource-efficient economy stems mainly from the long-term global trend of diminishing resources, and the growing prices of energy and raw materials. Such countries as Sweden, the Netherlands, Denmark, Germany, and Finland, have become role models for other countries being on their path to a “new green order”. To support these efforts, new policies and strategies are implemented aiming to facilitate the shift from brown to green economy. The key initiative in this area is the 2020 Europe strategy, in place since 2010, which embraces three mutually reinforcing priorities: smart growth (developing an economy based on knowledge and innovation), sustainable growth (promoting a more resource-efficient, environmentally friendly, and competitive economy), and inclusive growth (fostering a high-employment economy, conducive to territorial and social cohesion) (EUROPE 2020).

The three main priorities involve a number of more specific objectives pursued on national, EU and international levels. One of the overarching aims of Europe 2020, related to the idea of green economy, is the creation of “resource-efficient Europe”. This is understood as efforts to decouple economic growth from resource and energy use, shift towards a low-carbon economy, to rely more on renewable energy sources, modernize transport and promote energy efficiency.

The article aims to present the idea of green economy as an (effective) alternative to the conventional economic model. In order to prevent the concept from being perceived only as a passing fad, its foundations, rooted in economic theories, are discussed. Moreover, the progress in fulfilling the strategy's main priorities is assessed through analyzing how successful was the implementation of environmental targets in Poland as compared to the EU, in the years 2010–2014. The diagnosis is based on the Eurostat statistical database.

## **SUSTAINABLE GROWTH – A NEW ECONOMIC MODEL**

According to the tenets of classical economics, three basic factors of production are involved in the fulfillment of a variety of people's needs – land, labour, and capital. When a new, higher level of equilibrium is reached, especially from a dynamic perspective, the factors of production are shifted along the line of efficiency, that is from low-efficient to highly-efficient. In the classical paradigm, the criterion of efficiency is seen through the micro-economic prism and the formulas of the production function are not, in any way, limited by social or environmental factors. In result, the producer aims for profit maximization irrespective of social and environmental consequences (Rogall 2010). A. Smith argued that individual producers are motivated by their egoistic interests and their self-interest centered actions benefit the entire society. Mandeville, in turn, claimed that the pursuit of one's individual self-interest leads to undesirable social and economic consequences, hence the necessity of government intervention in the economy (Matuszczak 2009; Landreth and Colander 2012).

According to the Keynesian school, on the other hand, a major role in the management of natural resources is played by intergenerational ecological equity, as neither is the market a sufficient regulator in the consumption of non-renewable resources, nor can all environmental costs and benefits be expressed in monetary terms. Representatives of the theory of growth claim that the long-term growth factors are: human capital, endogenous innovation, and positive external effects of knowledge, technology and capital transfers. If the co-play of these factors leads to a productivity increase higher than the private benefits that they generate, we can talk about high sustainable economic growth (Fiedor and Czaja 2007).

The concept of sustainable development was popularized by the Report of the World Commission on Environment and Development "Our Common Future", compiled under the supervision of Gro Harlem Brundtland in the late 1980's. The document introduced a new perspective on the interdependencies between human activity and natural environment. The idea of sustainable development is based on the coexistence of three elements: economy, society, and environment (Brelík 2010). According to one of the definitions, it is a process involving social, economic and environmental changes, ensuring the equilibrium between the costs and profits of growth for the benefit of future generations. In other words, it "is the reflection of the policies and strategies aimed at lasting economic and social development without inflicting harm on the environment and natural resources, the quality of which determines continued human activity and further growth" (Grudzewski et al. 2010; Zrównoważenie polskiego rolnictwa 2013). On a macroeconomic scale, this means that one of the foundations of the growth of enterprises is the combination of corporate objectives (development, increased shareholder value, long-term profits) with purposeful initiatives striving to meet certain

economic, social and environmental rules. Enterprises are aware that being economically competitive is not enough to succeed in today's global economy, but they also should become more active in the areas that, until recently, were beyond the interest of most societies. It is these aspects that tend to influence consumer decisions increasingly often. The stronger is the general public's awareness of sustainable growth related issues, the more companies (for example, Nike, Reebok, Shell, Timberland) submit reports and adopt internal codes of practice that not only present the ecological and social initiatives taken, but also constitute a platform of dialogue (Globalizacja... 2004).

### **Green economy as an element of sustainable growth**

The term "green economy" was first used in the "Blueprint for a Green Economy", a report compiled for the UK government and authored by Pearce, Markandya and Barbiera (1989). The report addressed issues relating to the role of economy in ecological and sustainable growth policies. In the next years, the theme of green economy was raised mainly in the UN agendas, on the OECD forum, and in the EU environmental programmes, to become the leading topic of the Earth Summit 2012, held in Rio de Janeiro (Rio + 20). Currently, it may be perceived as an attempt of a pragmatic implementation of the sustainable growth concept (UNESCAP 2012).

It would be difficult to find one universally accepted definition of a green economy. The concept tends to be referred to in the following contexts (Ryszawska 2013a, b):

- transformation of the economy and the entire economy-society-environment system (ethical, responsible, respectful towards the planet and the man);
- changes to our civilization necessary due to the crossing of planetary boundaries;
- a model combining economic, social and environmental aspects, which is sought after in the process of sustaining growth;
- an alternative to the brown economy – based on unlimited economic growth, fossil fuels, ruthless use of natural resources, harmful to biodiversity, notorious for high emissions of greenhouse gases, global social inequalities, excessive consumption, lack of responsibility, and weakened social trust;
- a specific goal related to current ecological policies and modernizations;
- the result of green growth.

Accordingly, a green economy can be described as economy that contributes to people's well-being and social equality, while reducing threats to the natural environment and shortages in natural resources. A green economy should be low-carbon, resource-efficient and socially inclusive. Higher income and employment should be achieved through (public and private) investments in technologies reducing CO<sub>2</sub> and other pollutants, increased energy and resource efficiency, and the prevention of losses in biodiversity and eco-system services (UNEP 2011). Based on this definition, basic components of the green economy can be identified (Fig. 1).

According to UNEP (2011), a green economy does not replace the concept of sustainable and permanent growth. In the green economy, particular emphasis is placed on the role that retaining natural capital plays in the economic growth. Accordingly, great importance is

attached to structural transformations in the economy based on environmentally friendly technologies, and ensuring more sustainable consumption of energy and natural resources. The production of goods and services that have a negligible or no impact on the man's surroundings is equally important.

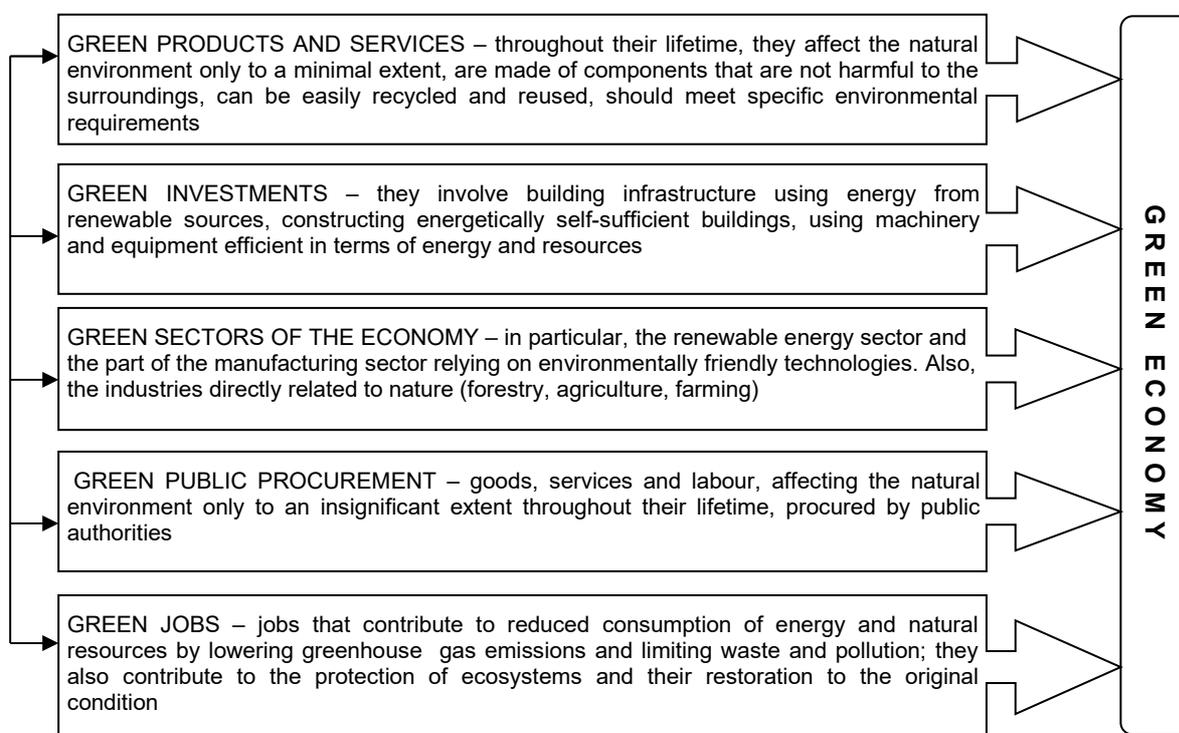


Fig. 1. Basic components of the green economy  
Source: own elaboration based on (Szyja 2015).

## CHALLENGES OF THE GREEN ECONOMY AS OUTLINED IN THE DOCUMENTS OF INTERNATIONAL ORGANIZATIONS

The interest in sustainable growth and green economy has been growing for many years now. Moreover, international initiatives have been undertaken by a number of international organizations (Table 1).

It is worthwhile to mention that the green economy related issues are also part of Poland's legislation, for example, the Constitution of the Republic of Poland and the Environmental Protection Act, and strategic documents on sustainable growth: the "2020 National Development Strategy" and the "Long-term National Development Strategy – Poland 2030. The Third Wave of Modernity" (GUS 2015).

One of the flagship initiatives of the Europe 2020 strategy for smart, sustainable and inclusive growth, concentrates on three mutually linked priorities, which are (Europe 2020):

- smart growth – the development of an economy based on knowledge and innovation;
- sustainable growth – the building of an economy that is resource-efficient, environmentally friendly and more competitive;
- inclusive growth – the building of a high employment economy, which shows economic, social and territorial cohesion.

Table 1. Selected international initiatives relating to the green economy

Organisation	Characteristics
UNEP (2008)	The call for the agreement on the "Global Green New Deal" – recognizing the opportunities to recover from the international economic crisis through the development of green economy industries
UNEP (2009)	The report "Global Green New Deal. Policy Brief" presented the recommendations on investing in the areas crucial for the environment, which have the highest transformational potential in the shift towards the green economy, such as: renewable energy, clean technologies, energy-efficient construction, public transport, waste management and recycling, sustainable management of land, water, forests, and marine fisheries, ecotourism
OECD (2009)	The development of the Green Growth Strategy. It supports green investments and technological innovations in order to achieve the economic recovery in the short term and build environmentally friendly infrastructure in the long run so that the economy accomplishes its green targets
OECD (2011)	A set of indicators was developed in order to provide statistical measures for tracking progress in the implementation of the green growth strategy. Each member state was invited to develop a set of indicators accounting for its socio-economic situation based on the framework created by OECD
EU (2010)	The Europe 2020 strategy for smart, sustainable and inclusive growth
UN (2015)	The 2030 Agenda for Sustainable Development – part of the UN High Level Panel – announced the recommendations for the next global development plan within the framework of the global partnership for eradicating poverty and transforming economies in compliance with sustainable growth tenets

Source: own elaboration based on: UNEP (2008, 2009); OECD (2009, 2011); UE (2015).

The priority of sustainable growth – including environmental issues – embraces the following targets: a 20% reduction in greenhouse gas emissions compared with 1990, or even 30%, if the conditions are right, a 20% increase in energy from renewable sources in the total energy consumption, and a 20% increase in energy efficiency. In order to accomplish these targets, three action areas were identified: competitiveness, preventing climate change, and clean and efficient energy (Table 2).

Table 2. Initiatives for sustainable growth

Area	Initiatives
Competitiveness	Improved competitive position in comparison to the EU's major trading partners achieved through increased productivity and resource efficiency The EU's improved competitive position against China and the US in the area of ecological solutions, i.e. implementing environmentally friendly technologies in the market
Preventing climate change	Reduced greenhouse gas emissions and a more effective use of new technologies, such as carbon capture and sequestration systems More efficient use of resources leading to reduced emissions, savings and stronger economic growth. This should affect all industries, not just the high-emission ones Increased immunity of the EU's economic systems to climate change threats and stronger capacity for preventing and responding to natural disasters
Clean and effective energy	The accomplishment of energy related targets would save EUR 60 bn on oil and gas imports by 2020 and strengthen the EU's energy security. Further integration of the EU's energy market may yield another 0.6%–0.8% increase in GDP A 20% increase in the share of renewable energy in total energy consumption may create over 600,000 jobs throughout the EU. A 20% increase in energy efficiency may bring this figure close to a million

Source: own elaboration based on: Europe 2020 (2010).

The documents mentioned in Tables 1 and 2 contain not only general postulates and guidelines regarding the necessity to develop and implement the elements of the green growth strategy. They also indicate the need to track progress or the lack thereof, and develop sets of indicators that support:

- statistical measurement of the effects of green policies (accounting),
- identification of obstacles preventing the accomplishment of the targets,
- coordination in the application of a variety of procedures, measures and tools used for the above tasks.

### SYNTHETIC EVALUATION OF THE IMPLEMENTATION OF GREEN ECONOMY PRIORITIES IN POLAND AS COMPARED TO THE EU

The evaluation of the implementation of the guidelines relating to the green economy was conducted based on the diagnosis of the environmental objectives pursued under the Europe 2020 strategy (Table 3). Statistical data for Poland and the EU from the Eurostat database were used for this purpose.

Climate protection requires greenhouse gas emissions to be reduced. Poland ranks high among the EU member states in terms of greenhouse gas emissions, together with Germany, the UK, France and Italy. Poland aims to reduce the emissions by approx. 14% by 2020 compared to the base year. Majority of the EU countries have reported reduced greenhouse gas emissions into the atmosphere as compared to the emissions in the base year, which means they are meeting their obligations to support sustainable growth. The lowest emissions, compared to the base year, were reported by Latvia, Romania and Lithuania.

Table 3. Headline environmental indicators, Europe 2020 Strategy, Poland and the EU-28

Indicators	Poland			UE -28		
	2014	target (2020)	progress [%]	2014	target (2020)	progress [%]
Greenhouse gas emissions (1990 = 100)	83.54	86	97	80.2*	80	99
Share of renewable energy in gross final energy consumption [%]	11.4	15	76	16.0	20	80
Primary energy consumption (mln t of oil equivalent TOE)	89.1	96.4	108	1507.1	1483	85
Final energy consumption (mln t of oil equivalent TOE)	61.6	70.4	114	1061.2	1086	102

\* 2013.

Source: own elaboration based on: Eurostat – Database (2016).

Most EU's greenhouse gas emissions – above 80% – are attributed to energy production, manufacturing, agriculture, waste. In Poland, major greenhouse gas emitters, accounting for almost 62%, are the energy sector, the manufacturing sector, contraction, and transport.

The Eurostat data indicate that Poland steadily increases its share of renewable energy. In 2014, this figure amounted to 11.4% and it put Poland on the 19th place in the EU-28, far behind Sweden, Latvia, Finland and Austria. The lowest share of renewable energy was reported in Luxemburg, Malta, the Netherlands and the UK.

In 2013, the breakdown of renewable energy in the final energy consumption in Poland was as follows: solid biofuels (79.8%), water (2.5%), liquid biofuels (8.7%), wind (6.0%), biogas (2.1%), geothermal (0.2%), solar (0.2%), renewable municipal waste (0.4%). The process of producing energy from renewable sources is developing at a slow rate. There is a high level of uncertainty as to Poland's capacity to achieve the 2020 renewable energy

sources (RES) target with current policies and measures in place. Significant additional investments are still required to reach the 2020 targets, as well as legal certainty, predictability and stability of the investment framework.

Another indicator of how effectively the targets of the Europe 2020 strategy are pursued is the energy intensity of the economy. In 2013, the highest energy intensity indicator was reported by Bulgaria, Estonia, Romania and Slovakia. The 2013 figure for Poland was almost twice as high as the average for the EU countries, and several times as high as for Denmark, which is the undisputed leader among the EU member states. A positive sign is the fact that the indicators of primary energy consumption and final energy consumption are steadily falling both in Poland and the entire EU. Enhanced energy efficiency contributes to lower consumption of energy resources and translate into reduced pollution. In economic terms it also implies that, on the one hand, energy-saving technologies, products and services are being developed, and, on the other hand, positive behavioral changes in energy consumption are occurring. In Poland, the indicators of primary energy consumption and final energy consumption are already lower than the 2020 target. It is important, however, to continue the efforts so that the figures can remain at the same level at least, which may be a difficult task due to relatively high economic growth anticipated for the coming years.

In addition to the flagship environmental initiatives of the Europe 2020 strategy, more specific and detailed goals should be mentioned. Since 2015, environmental governance has come to embrace 29 indicators relating to such areas as climate change, energy, biodiversity, marine ecosystems, fresh water resources, land management, air protection, and waste management. The selected indicators should be comparable (within the EU-28), reliable and based on data that can be accessed.

For a more detailed analysis and assessment of meeting the objectives with regard to the natural environment, selected indicators for the areas discussed above were used (Table 4). The choice criterion was the availability of data at the moment of the research. Eventually, Figures for Poland and the European Union (as a whole and for particular member states) were compiled.

Table 4. Selected environmental indicators of the Europe 2020 Strategy

Indicator	Poland			EU		
	2010	2013	change dynamics [%]	2010	2013	change dynamics [%]
Energy intensity of the economy [kgoe/1000euro00]	370.15	333.18	90	166.18	155.19	93
Emission of air pollutants by means of transport per 100 km <sup>2</sup> (Gg), including:						
Carbon dioxide .....	0.223	0.186	83	0.150	0.100	67
Non-methane gaseous organic compounds .....	0.051	0.045	88	0.022	0.019	86
Nitrogen oxides .....	0.089	0.081	91	0.087	0.075	86
Solid particulates .....	0.007	0.006	86	0.005	0.004	80
Non-mineral waste generated per capita [kg]	1775	1883*	106	1770	1828*	103
Municipal waste generated per capita [kg]	316	297	94	503	481	96
Municipal waste treated by landfilling per capita	195	157	80	186	147	79
Recycling of packaging waste [%]	38.9	41.4*	106	63.3	64.6*	102

\* data as of 2012.

Source: own elaboration based on Eurostat – Database (2016).

In accordance with the energy efficiency action plan, an average indicator of energy intensity of the economy for the EU countries has been falling at a 1.8% rate for the last 10 years. In Poland, a steady decrease in energy intensity of the economy at an average annual rate of 3.0% can be observed. Such dynamics of the decrease will ensure a 20% target for energy consumption in the EU countries by 2020.

The emissions of air pollutants by means of transport, in particular road transport, is one of the major sources of air pollution, posing a serious threat to human health and natural assets. In the years 2010–2013, a significant decrease in transport emissions could be observed both in Poland and in other EU countries, with dynamics higher in the EU countries than in Poland. The most significant fall occurred for CO<sub>2</sub> emissions – 33% in the EU countries and 17% in Poland. Notably, the emission levels vary greatly from country to country in terms of the kind and structure. The highest emissions are reported by Malta, the Netherlands and Luxemburg, while the lowest – by Latvia, Finland and Sweden.

As it comes to waste management, the primary goals are: waste prevention, waste recovery, and environmentally safe waste disposal. In 2012, in Poland the amount of non-mineral waste per capita amounted to 1.883 kg, which is 55 kg more than the EU average. The figure was lower by 4.5% compared with 2008, but higher by 6.0% compared with 2010, which is not a favorable trend. In the years 2004–2012, the lowest indicator was reported for 2008 (1,565 kg per capita), while the highest – for 2006 (2.042 kg). In 2012, Croatia recorded the lowest amount of non-mineral waste per capita (620 kg), which was three times as low as the EU average. On the other hand, the highest amounts were recorded in Estonia (8,589 kg), Belgium (4.999 kg), the Netherlands (2.555 kg) and Bulgaria (2.456 kg).

The prerequisite for limiting the negative effect on the natural environment is the reduction in municipal waste, which may be achieved by encouraging desirable consumption models, producing and promoting goods with longer life spans, and improving recycling systems. In the years 2010–2012, the amount of municipal waste, generated in Poland in one year, remained relatively unchanged at the level slightly above 12 m tons. It is estimated that in 2013 Poland produced about 11.3 m tons of municipal waste, which is 6.0% less than in 2010. In the same year, the EU average per capita was 4.0% lower compared with 2010. The highest amount of municipal waste per capita was produced in Denmark, Luxemburg, Cyprus and Germany, while the lowest in Romania, Estonia, Poland and Slovakia.

The key issue in waste management is the adoption of the right hierarchy of waste management practices, prioritizing waste prevention followed by recycling. The least advantageous method of municipal waste management is landfilling. In the years 2004–2013, the amount of landfilled waste in Poland decreased by nearly 35% (from 9 194 000 tons to 5 979 000 tons). Since 2010, a steady fall in the amount of landfilled waste per capita has been observed (with an incidental increase in 2011). In 2013, the indicator reached 157 kg, that is 38 kg less than in 2010. The EU average – 147 kg per capita – was also lower by 39 kg (21%) than in 2010.

Recycling is one of the waste management methods recommended for sustainable development policies. In 2013, the indicator of recycling in Poland reached 41.4% and was 13% higher compared with 2004 and 4% higher than in 2010. The highest recycling rate for packaging waste in the EU was recorded in Belgium, Ireland and Germany. In Poland, it was

the lowest in the EU and its value was 23.2% less than the EU average. Other countries that recorded recycling rates lower than 50% are also Malta and Hungary.

The specific indicators discussed above do not cover the entire list. Many indicators are gathered in national statistical databases (for example, the Central Statistical Office of Poland) of individual EU member states, but they are not fully comparable.

## **CONCLUSION**

As an EU member state, Poland undertakes a number of actions in continued pursuit of the objectives defined in the documents on sustainable growth, including green economy. The selected indicators of Europe 2020 Strategy, discussed in the article, show that Poland is on the right track to fulfill its main priorities. It would be even more beneficial, however, if the dynamics of changes concerning both the flagship initiatives and headline indicators were considerably higher.

Despite moderate progress, Poland is one of the most energy intensive economies in Europe. In recent years, the energy intensity of Poland's manufacturing sector has been decreasing at a faster rate than in other EU countries, but this trend has not embraced households. In response, such initiatives as, among others, insulating buildings, replacing coal-fuelled heating, expanding heating networks, and cogeneration are planned to be implemented until 2020. To cover the scheduled investments, the EU has allocated to Poland funds in the approximate amount of EUR 2 bn. An important issue is also the need to intensify efforts aimed at the diversification of energy sources. The share of coal and lignite in energy production in Poland is still almost 85% and large coal-operated energy plants are being built. The reform of the mining sector is both a critical and difficult problem, as many coal mines are subsidized by the government, which distorts competition within the sector. Moreover, the social aspect of the issue, that is the large number of people employed by coal mines (approx. 130 thousand) make the reorganization of the sector a very delicate and complex task.

An increase in the share of renewable energy sources is a beneficial change in term of environmental protection. Further growth in renewable energy generating capacity will only become possible upon the adoption of a support system, based on auctions and premiums complementing the market price.

Another favorable change is that Poland has met its targets for greenhouse gas emissions. Not only were the targets met, but also the emissions were reduced below the expected limit.

However, air pollution with particulate matter in Polish cities is still one of the highest in the EU. More than 80% of city residents are exposed to air pollution with particulate matter at concentration rates exceeding the EU air quality norms. The major emitters are public transport and household coal-fuelled heating systems. Although the National Air Protection Programme was adopted, it was not equipped with executive competences ensuring effective enforcement of its provisions.

Recycling in Poland still remains low, yet EU co-funded investments have led to significant improvements in waste management. The best example is the shift from waste deposits to incineration, which included 8% of total waste generated in 2013. Additionally, the recycling

rate also grew and stood at 16% in 2013. However, it still remains considerably lower than the EU average of 28%. The major barriers preventing further progress in this area include insufficient waste selection, inadequate infrastructure for alternative waste treatment, and the poor enforcement of extended producer responsibility schemes. Despite an increase in the rate of packaging waste recycling to 41.4% in 2012, the EU guidelines for the following years are: 2020 – 60%, 2025 – 70%, and 2030 – 80%.

In conclusion, the Europe 2020 Strategy strongly highlights the environmental context of sustainable development of the European Union as a supranational entity. The analysis of a number of indicators allows for cautious optimism with respect to the “greenness” of Poland’s and EU economies.

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**Summary.** The article addresses the issues that are particularly important in today's world – the idea of sustainable growth and the concept of green economy. The Europe 2020 strategy constitutes a milestone in the pursuit of these ideals, which are expressed in the strategy's priorities to deliver smart, sustainable and inclusive growth. The main focus of the article is to assess the extent to which the main goals and selected targets regarding natural environment were met in Poland and the EU member states in the years 2010–2014. The analysis of statistical data is reason for cautious in the evaluation of “greenness” of Poland's and the EU's economies.

