

Kuźniak-Król, Elżbieta

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Sustainable Development in the Bottom-Up Approach – Selected Aspects

Elżbieta KUŹNIAK-KRÓL

Oikos Opole, Poland

Abstract: Economy, society, environment and sometimes indicated institutional and political system – on these pillars is based the idea of sustainable development. The necessity for a global balance in these dimensions hinders the multidimensional approach of ideas. These difficulties increase when the attempt is taken on a macro scale. At that time, detailed monitoring of the performance of countries in terms of sustainability was started, which next would allow for some adjustments. These adjustments aim at identifying the achievable level of norms at the lower economic and social levels, thus creating a more matched system. In this paper was presented selected aspects of sustainable development in the form of indicators, which are referring to Poland in comparison with the maximum, minimum and average results achieved in the European Union. Presenting and analyzing data by identifying disparities between regions is to contribute ultimately to achieve the article goal, that is to confirm the need to introduce appropriate levels of standards in a way that is more matched to the situation of the area and not purely from above, covering larger territories.

Keywords: Socio-economic balance, environmental balance, sustainable development indicators, decentralization

JEL codes: E01, E61, H77, J11, J21, O11, O13, O20, O52, Q01, Q43, R11

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1. Introduction

The relatively recently leaders of economically and socially developed countries began to notice the need to look at the future of nations. The current approach purely consumer-oriented and fast enrichment of European countries also caused disturbances in the balance, which is considered in multiple context, including: socio-economic between macro and micro-regions of the world;

environmental or intergenerational. These highly visible disparities have contributed to the necessity for appropriate action strategies respected by most countries.

An attempt to improve the situation has also been made in Europe, which is reflected in the accept the Sustainable Development Strategy of the European Union. Its contents and posed for the Member States with the targets indicated ways to achieve, generally boil down to just meet the challenges of sustainable development. However, recognition of such documents, and more specifically their implementation should be regularly monitored. This is most often served by the relevant statistical offices. For the whole of the Union is a special Working Group of Eurostat, which creates every two years relevant reports, while in Poland it is responsible for this the Central Statistical Office.

The themes of indicators best illustrating the progress of states in implementing sustainable development comes down to: climate change and energy, the issue of sustainable consumption and production, natural resources – their protection and management, sustainable transport, public health, social inclusion, demography and migration, the challenges of global poverty and sustainable development (Central Statistical Office of Poland, 2011: 7).

It should therefore look at some of these measurable aspects of sustainable development in Polish – comparing selected indicators with their values achieved in the European Union. This will allow identification of the need for bottom-up setting standards and targets for Member States.

2. Methodology

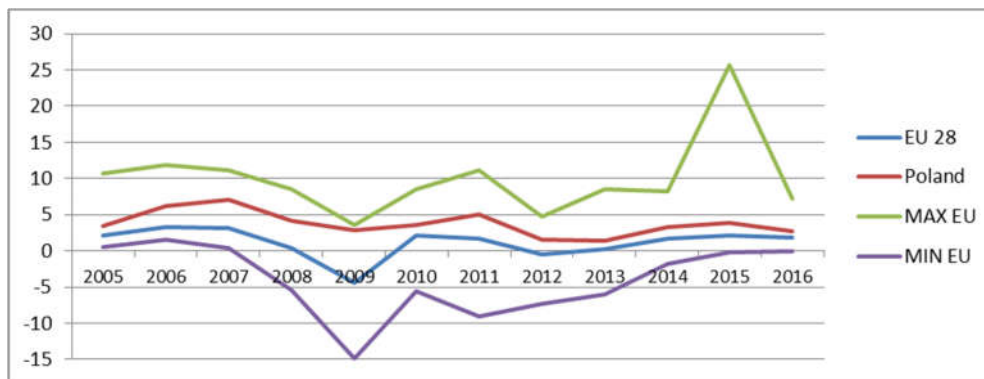
The idea of sustainable development implies achieving equilibrium both within and between the areas of functioning of nations. Thus, for the full presentation of the need for bottom-up standards, it is necessary to demonstrate the diversity of regions within each of the economic, social and environmental field. Due to the availability of statistical data, their corresponding update frequency and the possibility of their subsequent compilation, the analyzes were included current data published in Eurostat databases, which relate to EU statistics. Own calculations based on published aggregate data allowed to indicate the minimum, average and maximum results of EU indicators. The results obtained in the dynamic cross-section have been enhanced by comparison with the exact data of one of the members of the European Union – Poland. Data from this country were available both on the Eurostat platforms and the Central Statistical Office in Poland.

Within each area they were presented indicators for which complete data were available for dynamic cross-section. They are also the most commonly reported in the scientific work, because they contain data on the basis of which can be read the most general picture of the economy and the environment and the social situation of the regions.

Mindful of the guidelines, economic analysis has made a summary of one of the most common indicators – changes in real gross domestic product growth rates in the years 2005-2016 (for the period in which full, sufficient statistics were collected). The next presented indicator, which directly represents the state of the economy, has become the unemployment rates – for the same period. Social balance were analyzed based on the overall state of demography statistics – the actual growth rate of the population in the year 2004-2015 (for the period with full data available). Also presented indicator containing data from the increasingly discussed at the scientific forum area of social exclusion – indicator of people at risk of poverty or social exclusion in percentage of total population. The following two indicators: renewable energy consumption and consumption of electrical energy – refer to the consumption of society, and more specific the consumption of energy, which is directly related to the environmental balance. In the context of environmental sustainability, reference is made to one of the popular indicators – total greenhouse gas emissions in relation to the 1990 base year under the Kyoto Protocol. The last set of data from the European Union and Poland is an indicator of the environment, closely related to the economic development of countries and the aspects of consumption of the population was total waste generated by households.

3. Economic equilibrium

As mentioned, sustainable development consists of three basic pillars – economic, social and environmental – and often mentioned institutional and political order. It is worthwhile to first look at the general economic situation, comparing the state of Poland's economy with the levels of development in the European Union. The measure most often used for this type of analysis reflects the same time extent the social situation is the real gross domestic product (GDP) growth rate. Its long-term growth, which is reflected in comparative statistics to the previous year, is considered as one of the main objectives of economic policies of states. In Figure 1, is shown a collective summary of the results achieved by the Polish economy in the indicated range, compared to the results of the Member States of the European Union at the turn of 2005-2016.

Figure 1. Changes of real gross domestic product growth rate in the years 2005-2016

Source: Author's own elaboration based on the Eurostat Database.

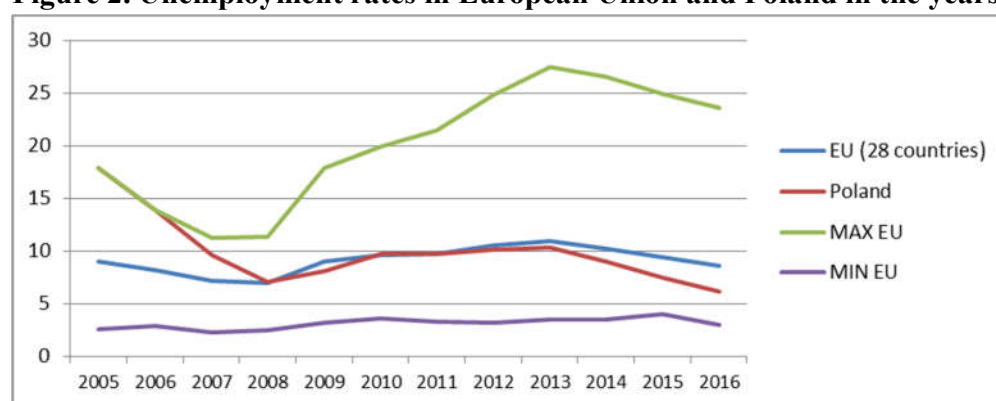
The Polish economy on the background of the whole European Union is characterized by relatively good results in terms of economic growth. Over the 11-year period, there was a continuous positive level of real gross domestic product growth rate without significant fluctuations, which means stable economic growth. Even during the global economic crisis was reached growth rate of 2.8%, as compared to the whole of Europe, which then struggled with a back-up (negative value of the average index) means a stable economic situation and follow the idea of sustainable development. Throughout the period presented the results of the Polish economy were not only higher than the minimum, but also than the average results achieved in the Union. Low fluctuations and continued steady growth in gross domestic product may contribute to building a less susceptible economy to shocks and crises.

From the graph shown in Figure 1 can also be read another issue - strong differentiation between EU countries. This is particularly evident in the differences between maximum and minimum values, whose amplitude reaches more than 20 percentage points. This condition can lead to unreality to balance the economies of Europe and achieve the objective described the idea. Differentiation particularly economic, but also cultural is a serious barrier to the introduction of a uniform strategy for all Member States. This therefore means the need for a more bottom-up view on the normalization of values and the setting of individual objectives for the Union's states. The state of the economy and its development in individual countries depends on many factors. In determining the standards for all members need to remember to aspects outside the purely economic factors, for example, geographical, social or cultural. For example, by stabilizing the environmental pillar of sustainable development, it is important to remember that continuous economic growth (without the large amplitude of intermittent

fluctuations) should also be fixed with appropriate transformations, even consumption of natural resources and energy. A more detailed example would be Poland, which is a country rich coal deposits and enhanced mining industry. This causes the problem of fully respecting the assumptions of the European Union Energy Strategy and the issue of reducing air pollution, which in recent years has raised concerns about the health of the public. However, the sudden introduction of the idea of sustainable development in the case of Polish power industry could have serious negative economic consequences. Attempts to quickly achieve environmental governance could be reflected in high levels of unemployment in mining areas. As a consequence, the reduced living standards of the local population from the mining areas could be exacerbated by social problems. This would be felt by the whole economy of Poland, which results from a strong interdependence between sectors of the economy and between the spheres of functioning of the states, which are at the same time the pillars of consideration of the idea of sustainable development.

Staying in the sphere of socio-economic development of the states and the mentioned problem of unemployment, it is worth looking at the size of this phenomenon observed in the European Union. The aggregate data is shown in Figure 2, which presents the unemployment rate, calculated as the percentage of the unemployed in the total number of people aged 15-74.

Figure 2. Unemployment rates in European Union and Poland in the years 2005-2016



Source: Author's own elaboration based on the Database of Central Statistical Office of Poland.

The unemployment rate reflects the overall state of the labor market of the area. Depicted over 11 years in Poland can be observed a general decreasing trend of this measure, which can be marked as positive. However it is not yet a synonymous with good situation of people of working age.

There is a problem of insufficient number of posts for people capable of working and structural unemployment, manifested by mismatches in education, knowledge and skills of human capital to the existing needs of employers. The average unemployment rate in Poland has approached the average European rate since 2009, and after 2012 it is lower. The level of unemployment gradually decreases to the so-called natural level of unemployment. The continuation of positive trends in Poland in the coming years can contribute to the continuous improvement of living standards of society. As a consequence, the nation with increased financial capacity will be more likely to respect the idea of sustainable development by investing in the correct management of waste or using expensive renewable energy.

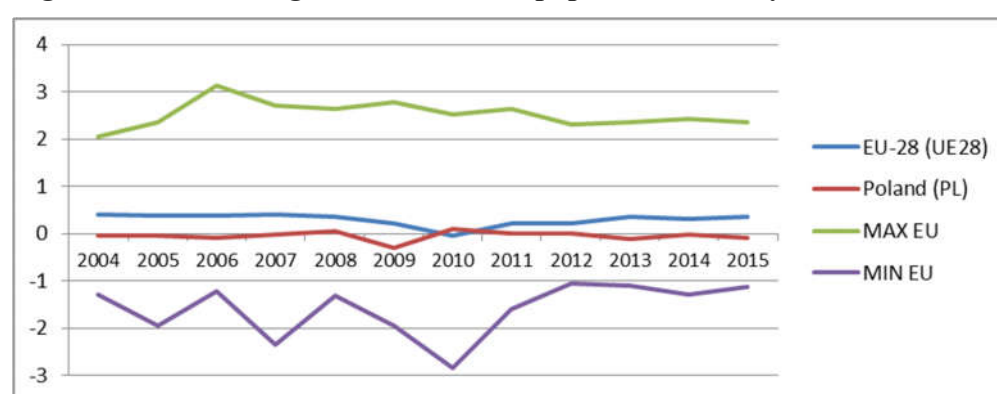
Again, there is a strong imbalance in the labor market situation between regions of the European Union (differences in minimum and maximum unemployment rates). Disparities are also visible in even smaller scale - for example at the level of voivodships in Poland. This could be a serious problem for authorities trying to achieve sustainable development goals, especially at the macro level. The example of the barrier can be described as an attempt to transform the structure of the Polish power industry, where the mining industry plays an important role, as it would involve deepening unemployment instead of pursuing a natural unemployment rate. On a macro scale, for the needs of this article - the EU, barriers to introducing even changes in the energy structure may turn out to be finances of states. Favorable climatic and geographical conditions are often insufficient for the construction of renewable power plants. The construction of such power plants supplying energy in a given region or even the installation of appropriate equipment at the household level, is often associated with higher costs. These costs to society may prove to be impossible. The problem of financial nature occurs mainly in countries where the level of unemployment is high. According to Figure 2, only in the European Union, the variation in unemployment and consequently the financial capacity of the public, is an important factor in decision-making by the authorities seeking to achieve environmental sustainability at macro and micro levels.

4. Social balance

Another mentioned in the introduction pillar of sustainable development is the social balance. A wide range of thematic sub-groups from the area of the functioning of society causes will be

analyzed in some aspects. The future of nations and achieve a balance between the pillars is contained not only in the activities of the government, but also in the same population. Sustainable development of countries may be provided primarily at ensuring proper demographic structure. Not without significance it is affected migration, the number of births and life expectancy. It reflects, for example, medical progress or access to health care. The index that most accurately represents the demographic determinants is the rate of increase or real loss. The results achieved in the European Union in the years 2004-2015 are shown in figure 3.

Figure 3. The actual growth rate of the population in the year 2004-2015 in European Union



Source: Author's own elaboration based on the Eurostat Database.

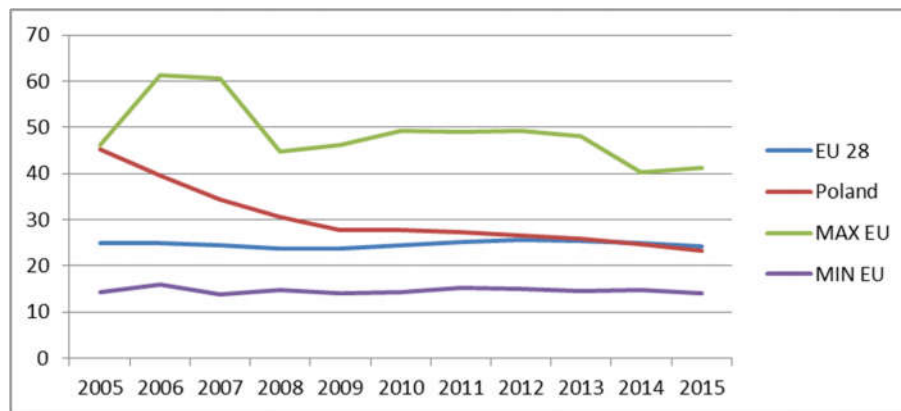
The achieved values of the actual growth rate of the population both in the Union as well as in Poland in the presented period are not optimistic. States should aim for stable growth of the size of this indicator. It is also maintaining a certain level, after reaching sufficient for the state and society of natural increase - resulting mainly from achieving the surplus of births over deaths and a positive migration balance. A serious problem for the future of nations and states is noted in the magnitude of near zero or even negative values recorded in particular countries in times of economic, social or political crisis (Figure 3). Low real growth is mainly a result of persistent demographic decline. As a rule, they are in Europe due to a change in lifestyle for more consumption, problems in the settlement of young people in countries with high levels of unemployment and consequently the postponement of the decision to establish or enlarge a family. The problem of increased emigration and nothing can replace generations can lead to trouble especially economic and social states. Among the most commonly mentioned effects in the social context is the likely problem of caring for older people. In turn, the economic context, the difficulty occurs adequacy of future pensions.

This in turn may contribute in the future to the lack of interest of the public in investing in improving the state of the environment.

Noticeable are strong disparities in the data in Figure 3. There are a substantial positive growth rate in the Union, with no generational replacement problem or positive migration balance (such as Ireland or Cyprus) and a negative annual rate (like Latvia, reaching even -2.84% in 2010). Bearing in mind the links between thematic blocks of sustainable development and strong disparities, it is extremely important to introduce such regulations that take account of the country's demographic situation. Not without significance are also any demographic forecasts projecting the mentality of societies and expected to maintain the overall balance of socio-economic and environmental.

Being in the sphere of social equilibrium, but more closely related to the economic sphere and consequently the environment, poverty and social exclusion are extremely important. Figure 4 contains data on the percentage of people at risk of poverty or social exclusion in general population in the European Union.

Figure 4. People at risk of poverty or social exclusion in percentage of total population



Source: Author's own elaboration based on the Eurostat Database.

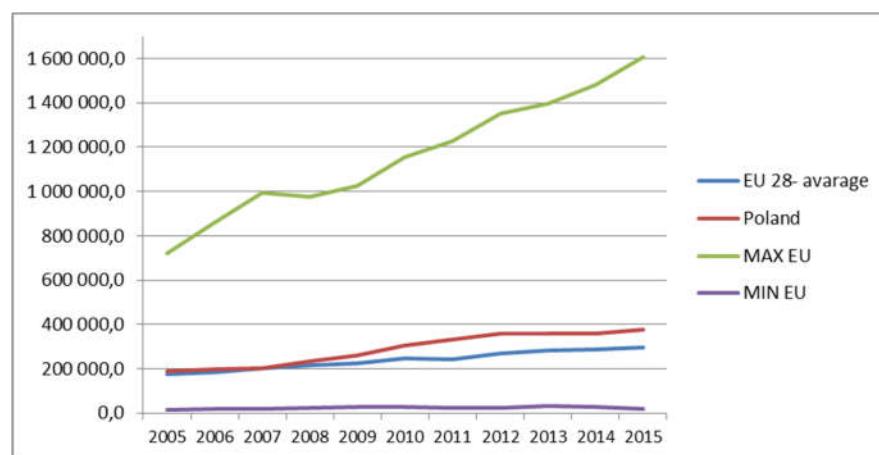
Social exclusion or poverty are extremely dangerous phenomena not only for social entities, but also for the whole society and economy or, consequently, the environment. In Poland, the probability of being affected by the phenomenon is reduced systematically from 45.3% in the first shown year to less than 23% in the last year, when the index was lower than the EU average by 1 percentage point. The first reason is to improve the material situation of society and at the same time reducing disparities within the European Union. The second reason may be the reduction

mainly of material and income disparities within the Polish society itself. The smaller the differences in the wealth of households, the less likely the social exclusion caused by a material situation. Changes in labor law provisions or minimum wage rates and changes in social policy in Poland are reflected in the reduction of the poverty risk indicator. Trends taking place in Poland can be positively evaluated. It remains only to believe that the level indicator and presented realistically the consequent effects, soon to equal standards of the leading EU countries, which have reached the minimum value indicated.

However, there are still strong differences between societies. Their expression can even mean the difference between maximum and minimum values throughout the period shown waist up 34,11 percentage points. Sustainable development requires in essence that all nations strive for social equality at their own pace and strive to achieve levels of exclusion or poverty at least as low as in the leading states. Reduced disparities between countries will, in effect, contribute to achieving all general goals of sustainability at the same time.

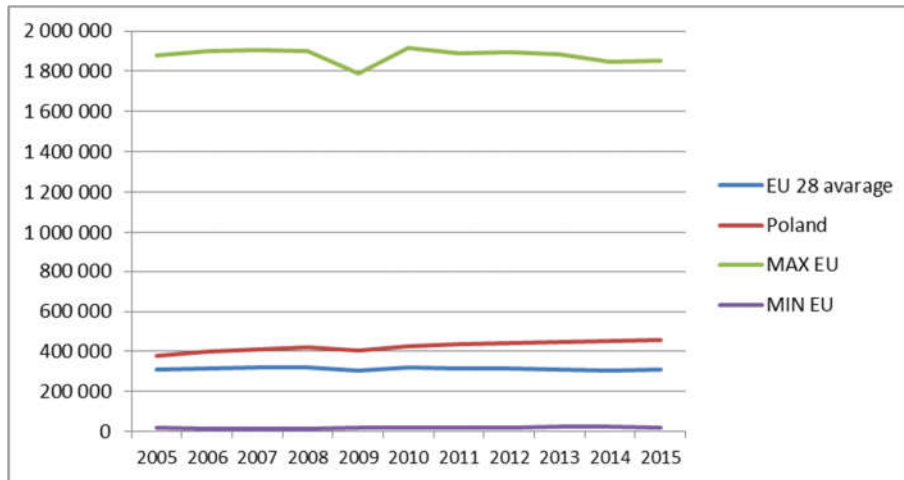
Staying in the socio-economic sphere, it is also worth looking at the consumption of society. Due to its broad scope, figures 5 and 6 will show a more detailed area, which contributes to the potential for environmental sustainability.

Figure 5. Renewable energy consumption in European Union in terajoules



Source: Author's own elaboration based on the Eurostat Database.

Figure 6. Consumption of electrical energy in terajoules



Source: Author's own elaboration based on the Eurostat Database.

As can be read from the shown in figure 5 and 6, data relating to the consumption of renewable energy and the overall consumption of electric power, are noticeable significant differences between societies the consumption of each type of energy. Not without significance in this matter stay the size of individual societies and economies of size. The smaller the state, the less electricity and renewable energy it generates, in addition to electricity, also heat. Less consumption of any kind of energy is less of an issue with air pollution. Reduced demand for energy is associated with a greater ability to build a power station or installation of systems using renewable energy sources, as will be any less capital expenditures. For example, more real will to incur less expenditure needed for investments in renewable energy in Estonia and Latvia, where electricity consumption was as shown in the decade at an average of 25 000 TJ (apart from the financial aspects of the capabilities of countries and geographical).

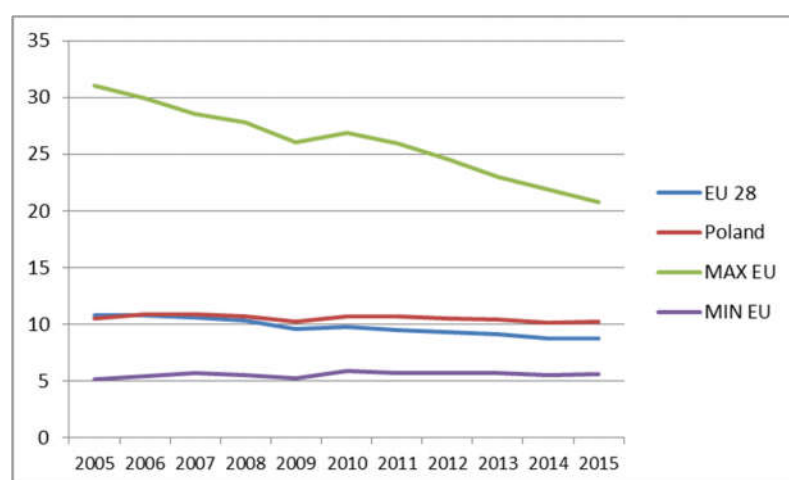
To achieve environmental sustainability are extremely optimistic data shown in figure 5. In general, the observed growth trends are the use of energy from renewable sources. The dynamic growth of this kind of consumption was noted especially in highly developed countries, which is directly related to their financial capabilities. In the years 2005-2015 in Germany, this increase was more than double - from 720,000 tJ to 1,600,000 tJ. Similarly in Italy to the value of 1.100.000 tJ. In other countries, these increases were even several times, but not on such a large scale. In Poland more than doubled the use of renewable energy sources - from 187,000 tJ to 360,000 tJ. Strong noticeable variation in the conditions of financial and climatic regions creates difficulties

in implementing the concept of sustainable development in terms of energy and as a consequence and environmental protection.

5. Environmental balance

Possible to measure the diversity of regions within the European Union, the third pillar necessary for the proper sustainable development is awakening a lot of controversy in recent times the sphere of environmental protection. It directly translates into ensuring the right quality of life for the next generations. The same conditions and dependencies of the environmental balance with the other pillars of the described idea were indicated in the earlier parts. It is also worthwhile to present some of the strict indicators related to the environment and also to show strong disparities between the countries of the Union. The first one is the average gas emission by the resident of a given country. The data are shown in figure 7 and contain a summary list of greenhouse gases, which belong to the so-called "basket of Kyoto", that is contributing to global warming.

Figure 7. Total greenhouse gas emissions in relation to the 1990 base year under the Kyoto Protocol- in tones units equivalents CO2 per capita



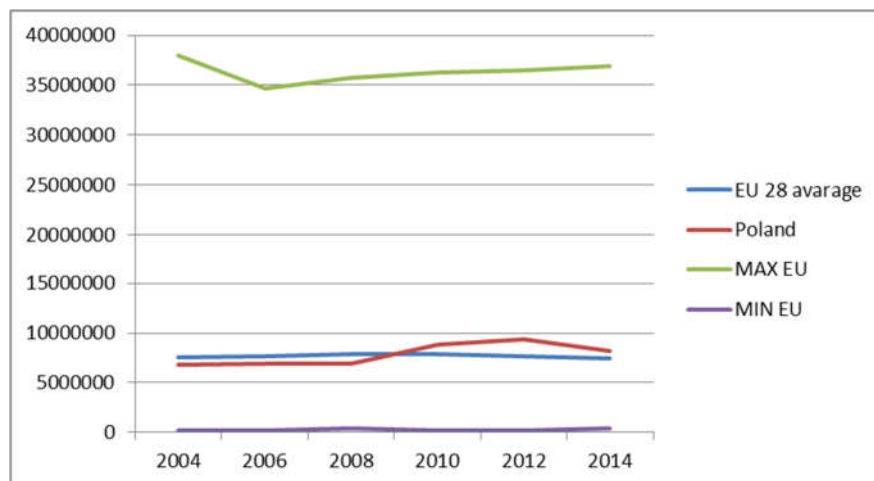
Source: Author's own elaboration based on the Eurostat Database.

In Poland, almost the entire period depicted reported higher than the EU average greenhouse gas emissions, although it was not as high as in the case of countries with the highest values increase emissions compared to the base year 1990. The highest emissions per capita were recorded in Luxembourg – the smallest EU country, although these values decreased – from 31 to 20.75 tons per capita. Such high results are due to the size of the country, its small population and a high level

of economic development. In general, it is desirable to decrease the value of the indicator, which makes the majority of EU countries. However kind of barrier can be modern life and the generally high level of economic development of Europe. Functioning production technologies and scale of consumption do not allow complete decontamination of harmful gases. The solution may be used by companies for example by filters. An integrated international policy can be an alternative, which will contribute to the neutralization of already produced gases through the restoration of forest ecosystems. The need to apply from above policies internationally is, in this case, explicitly required, because the negative effects are concerned not only in the one country. In addition to the impact area, there is also a period of influence that reaches even future generations, so it is more necessary a wise and supra-regional approach.

Another important issue for achieving a balance environment and the need to re-direct the action bottom of society and economy is the problem of generation of waste. Again, it may be useful to show disparities between regions, which necessitate a more suited to the area of action, mainly due to the scale of the problem. Thus in figure 8 were included the aggregated available data on the volume of waste generated in tons in the European Union in 2004-2014.

Figure 8. Total waste generated by households- in tones



Source: Author's own elaboration based on the Eurostat Database.

In principle, it is desirable to decrease the size of generated waste, regardless of their origin. As was the case with the described electricity consumption, the formation of the volume of generated waste in the figure 8 available statistics depends on the size of the country and in particular the size of the population. With a relatively similar level of economic development of European countries,

the size of nations is a major factor controlling the amount of waste generated in households. Following the size of societies, the largest amount of waste was generated by households in 2014 year in Germany in 36,887,634 tons, in Italy 29,660,116 tons, in France 28,374,300 tons and 27,714,656 tons in the United Kingdom. In the same year was generated in Poland are more than three times less than in the UK. This is probably due to a different national culture and the consumption of other types of products, after which consumption (especially food) remains less waste. Nevertheless, such significant differences in the scale of the problem contributes to the need for standards that are more suited to the possibility of achieving them by the society.

The waste generation may not be a fully negative process. It is possible to introduce enough rational waste management to stop mass production. An exemplary solution is the re-use, the production of products with reduced packaging, or the use of packaging that is easily decomposed and does not harm the environment. Then the real problem of waste accumulation can be controlled. Consequently, disturbed environmental balance should slowly return to optimal state.

6. Conclusion

The rightness of nations to achieve sustainable development goals is unquestionable. However this is not equivalent to easy to implement the theory of this idea in a global scale. The analysis carried out in this study made it possible to achieve the purpose of the article, which was to confirm the need to setting standards in a bottom-up, more suited to the regions. Showing the need for a dual approach to sustainable development, both top-down and bottom-up, was evident in maintaining a balance between the pillars of ideas and the disproportions within the European Union. On the one hand, the multidimensional approach and the strong correlation between the areas of functioning of the states, that is, mainly between economic, social and environmental aspects, requires the introduction of an integrated system. In addition to the macro approach is not without significance is the issue of the environment in which the actions of individual countries have implications on a global scale. On the other hand, the introduction of uniform, from above, standards for all nations may not be possible in individual areas. For example can be used indicated general multidimensional problem, where top-downs of world norms, which dictate the restrictions of mineral resource extraction, can contribute to increased unemployment in countries with economies heavily anchored in the mining industry. The strong disproportions in each of presented

the statistics from the European Union confirm the need to set goals at a lower level than the global or continental. For confirmation can be presented examples of disproportions: a high unemployment rate compared to the lowest in the EU, although significantly lower than the highest in the Member States; lower the actual growth rate in Poland compared to the highest EU rates; much lower risk of poverty in Poland than in some Member States; strong disparities in overall energy consumption and renewable energy consumption, as well as high rates for some countries in the greenhouse gas emissions and waste generation. The less rapid changes (matched to the possibilities) in particular economies and societies will allow for create to a strong and stable foundation for not only long-term environmental protection, but also for the proper functioning and sustainable development in all aspects of the idea.

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Zrównoważony rozwój w podejściu oddolnym – wybrane aspekty

Streszczenie

Gospodarka, społeczeństwo, środowisko, a czasem nawet i ustrój instytucjonalno-polityczny – to na tych filarach oparta została idea zrównoważonego rozwoju. Potrzeba wprowadzenia równowagi globalnej na tych płaszczyznach utrudnia wielowymiarowe podejście idei. Trudności te powiększają się, gdy próba zostaje podjęta w skali makro. Wówczas to zaczęto szczegółowego monitorować efektywności działania krajów w aspekcie zrównoważonego rozwoju, co w następstwie pozwolić powinno na wprowadzanie pewnych korekt. Korekty te mają na celu określenie osiągalnego poziomu norm na niższych szczeblach gospodarczo-społecznych, a więc stworzenie bardziej dopasowanego systemu. W niniejszym opracowaniu przedstawione zostały niektóre aspekty zrównoważonego rozwoju w formie wskaźnikowej, jakie kształtują się na obszarze Polski w zestawieniu z wynikami maksymalnymi, minimalnymi i średnimi osiąganymi w Unii Europejskiej. Prezentacja i analiza danych poprzez wskazanie dysproporcji między regionami ma przyczynić się w efekcie do osiągnięcia celu opracowania, jakim jest potwierdzenie potrzeby wprowadzania poziomów odpowiednich norm w sposób bardziej dopasowany do sytuacji danego obszaru, nie zaś w sposób czysto odgórny, obejmujący większe terytoria.

Słowa kluczowe: równowaga społeczno-gospodarcza, równowaga środowiskowa, wskaźniki zrównoważonego rozwoju, decentralizacja.

Kody JEL: E01, E61, H77, J11, J21, O11, O13, O20, O52, Q01, Q43, R11

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