

New aspects of sustainable development as a factor of competitiveness in the EU

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Abstract

The process of integration and future developments within the European Union (EU) covers the issues of environmental protection, sustainable development and energy efficiency. These issues are becoming a significant part of economic and social development and appear as a factor for assessing the competitiveness of the EU countries. Therefore, this paper focuses on: the implementation of achieving the climate and energy objectives in line with the Europe 2020 Strategy, the environmental sustainability of EU countries under the Environmental Performance Index (EPI) and the assessment of the competitiveness of the EU countries on the basis of ecological development.

Keywords: sustainable development, environment, competitiveness

JEL Classification: P28, O44, Q56

Introduction

The European Union (EU) strongly promotes action in the field of climate, sustainable development and environmental protection, in the most important program documents: the Lisbon Strategy, the revised Lisbon Strategy, Europe 2020 Strategy, as well as, in a number of directives and regulations. The EU seeks to become the most competitive and dynamic economy in the world by means of innovation and knowledge of the single market, a flexible labour market, strengthening social cohesion and entrepreneurial climate and environmental sustainability. Environmental sustainability, in modern conditions, becomes a factor in competitiveness and sustainable economic development.

Within the EU there are differences between countries in terms of environmental sustainability and meeting the climate-energy goals defined in the Europe 2020 Strategy. Positive examples of practices of individual countries can be used for planning future environmental policy in other EU countries. Comparison progress between the EU and each country individually, considering a clever, sustainable and inclusive growth, according to the strategy, indicates the relationship between the

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increase in productivity, innovation economy and environmental protection, respectively, environmental sustainability.

Environmental sustainability is conditioned by the development and application of eco-management whose holders are energy managers and bond energy management, as well as, the necessary conservation of protected areas and species in the context of ecological networks.

1. Strategic basics of planning of environmental protection in the EU

Strategic planning of the EU has begun with the adoption of the Lisbon Strategy in 2000 whose aim was that the EU becomes the most competitive and dynamic economy in the world by 2010, based on knowledge, capable of achieving sustainable economic growth with more and better working places and stronger social cohesion (European Council, 2000).

In order to continue structural reforms, sustainable development and strengthening social cohesion after 2010 defined a new EU development strategy - "Europe 2020: A strategy for smart, sustainable and inclusive growth" (European Commission, 2010a). The Europe 2020 Strategy is focused on three mutually reinforcing priorities:

1. Smart growth-economic development based on knowledge and innovation (scientific and technological research and development, innovation, education and digital society),
2. Sustainable-growth at the same time to promote competition and manufacture that is efficient applicable to resources and
3. Inclusive growth-greater participation in the labour market, the fight against poverty and social cohesion.

In the new strategy ("Europe 2020") the EU Member States have defined five quantitative targets to reach in 10 years:

1. Increase of the employment of the population aged 20 to 64 years with 69% to 75%;
2. Increase percentage of BDP that is allocated to the research and development from 1.9 to 3%;
3. Exercising "20-20-20" climate-energy target-20% reduction in emissions of greenhouse gases compared to 1990 (or even 30% if conditions permit), 20% increase in the share of renewable energy in final consumption and by 20% increase the energy efficiency;
4. Reduction of the rate of early dropout at below 10% with 15% while simultaneously increasing the proportion of the population aged 30 to 34 years with a university degree from 31% to 40% and
5. Reducing the number of people living below the poverty line by 25% which should be the release of over 20 million people out of poverty.

Analysis of meeting the climate-energy goals

In March 2014 the European Commission published a document that provides an overview of the state-in achieving the set goals the Europe 2020 Strategy (European Commission, 2014c). The following text provides an overview of the progress achieved the third climate-energy goal on the basis of:

6. Reducing the emissions of greenhouse gases by 20%; between 1990 and 2012, the emissions of greenhouse gases, at EU level decreased by 18% due to the contractor's climate and energy policy, but it had a significant impact economic stagnation, which is why this objective will be achieved even exceeded to 24% by 2020;
7. Increasing the share of renewable energy in final consumption by 20%; the share of renewable energy in energy consumption in the EU increased by 5.9% in the period from 2005 to 2012 and in 2012 it was 14.4%. If the trend continues to increase, the EU is on track to reach the set target of 21%.
8. Increasing energy efficiency by 20%; there has been some progress in increasing energy efficiency, but the achievement of the set goal of 20% is needed to reduce primary energy consumption by another 6.3%.

Table 1. Analysis of achieving climate-energy goals (cut-off 2014)

Member States	Reducing emissions CO ₂ %	Renewable energy %	Energy efficiency of energy use reduction in Mtoe
The main objective at the EU level	-20	20	206,9
Austria	-16	34	7.16
Belgium	-15	13	9.80
Bulgaria	20	16	3.20
Cyprus	-5	13	0.46
Czech Republic	9	13	-
Germany	-14	18	38.30
Denmark	-20	30	0.83
Estonia	11	25	0.71
Greece	-4	18	2.70
Spain	-10	20	25.20
Finland	-16	38	4.21
France	-14	23	34
Hungary	10	14.65	2.96
Ireland	-20	16	2.75
Italy	-13	17	27.90
Lithuania	15	23	1.14
Luxembourg	-20	11	0.20
Latvia	17	40	0.67
Malta	5	10	0.24
Netherlands	-16	14	-

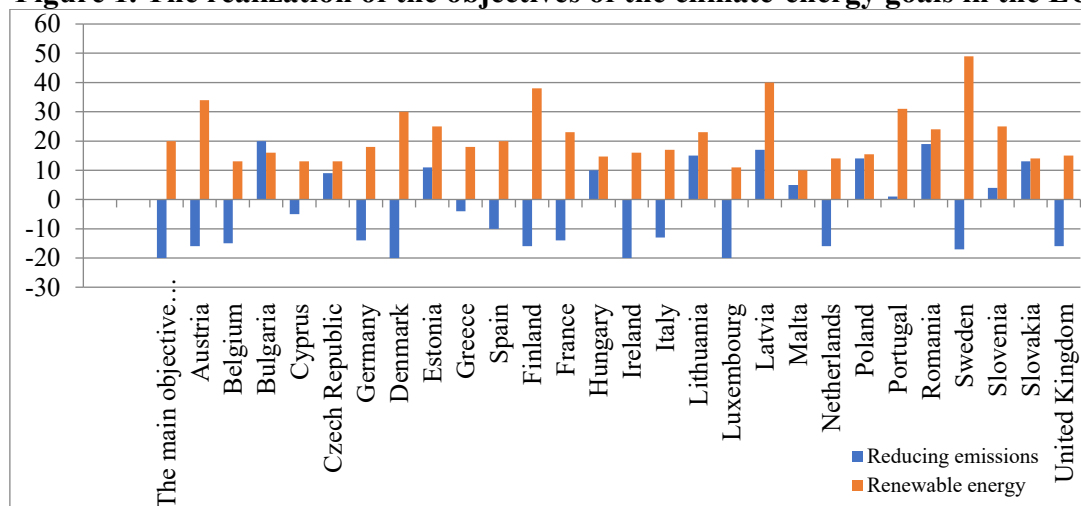
Poland	14	15.48	14.00
Portugal	1	31	6.00
Romania	19	24	10.00
Sweden	-17	49	12.80
Slovenia	4	25	-
Slovakia	13	14	1.65
United Kingdom	-16	15	-

Source: Europe 2020 four years later guide, 2015.

Analysis of the climate-energy objectives shows that CO₂ emissions were below the national targets foreseen for 2020 in 15 Member States (Cyprus, Hungary, Italy, Greece, Spain, Portugal, Czech Republic, Romania, Slovakia, Lithuania, Slovenia, Malta, Latvia, Bulgaria and Poland) while the best results realized in Luxembourg, Denmark and Sweden.

The EU is currently the world leader in investing in renewable energy, especially, in the development of wind energy and solar energy. Although, in general we can speak of progress in most Member States additional efforts are needed to achieve this objective. National targets for increasing the share of renewable energy in final consumption ranged from 10% in Malta to 49% in Sweden. The level of primary energy consumption in Cyprus, Estonia, Greece, Finland, Croatia, Hungary, Ireland, Latvia, Lithuania, Portugal, Romania, Slovakia, Luxembourg, Poland, Spain, Italy and Slovenia was below their national indicative targets (Figure 1).

Figure 1. The realization of the objectives of the climate-energy goals in the EU



Source: author's representation using Europe 2020 four years later guide, 2015

These variations in national targets in relation to setting goals are influenced by the following reasons:

- the impact of the economic crisis and the stagnation of the temporary progress in achieving the goals,

- implementation of instruments from the category of resource efficient Europe and complementary regulations from the Climate and Energy package and
- reduction of carbon intensity and use of appropriate structural and other funds in order to improve the production and consumption model "the establishment of a vision of structural and technological changes" for the transition (by 2050) to a low-carbon economy (European Commission, 2009b).

In 2012 the European economy was almost twice less carbon intensive (the amount of emissions per unit of GDP) (European Commission, 2014a). If the achieved results measure in relation to the obligations arising from the Kyoto Protocol (8% in the period 2008-2012 compared to 1990), it is estimated that the EU-15 has decreased its emissions already in 2011 in excess of the envisaged commitments (14.6%) (EU, Sustainable Development in the European Union, 2013). The policy proposal for climate change and energy for the period from 2020 to 2030 aim to make the EU's economy more competitive, safer and sustainable (European Commission, 2014b). However, it should be borne in mind that in the current and future development of the member states, the overall position of, first of all, the energy sector, the existing international and other obligations and the real opportunities of the economy and society for achieving the reduction of CO₂ emissions as one of the climate and energy goals.

In 2009, the EU economy suffered great damage and a fall of 4.5%. The temporary suspension of the economic decline in 2010 was short and the negative trends continued in 2011 and 2012. The gradual recovery started in 2013, with a realistic expected GDP growth of 1.5% in 2014 and 2.0% at the EU level in 2015 with significant differences between member states. Progress is the result of valid climate and energy policies, but economic stagnation has had a significant impact.

In order to achieve the climate and energy goal related to reducing CO₂ emissions, instruments are divided into two groups: industrial policy for the globalization era and resource efficient Europe (European Commission, 2010b, 2011). The first group of instruments is related to a precise analysis of new regulations that will be made from the point of view of their impact on competitiveness. The second group of instruments is related to the mobilization of financial instruments (rural development, structural funds, research and development programs, etc.), strengthening the framework for the use of market based instruments (trade in emissions, compensation in the energy sector, state aid policy, public procurement), modernization of the transport sector (network infrastructure, intelligent traffic management, better logistics, new technologies in the road, air and maritime sectors to reduce CO₂ emissions, including green initiatives in the automotive sector), promotion of renewable energy in the single market, European networks (including trans-European energy network, "smart grids" and

interconnection of renewable energy sources on the network, improvement of infrastructure projects of strategic importance for the EU in the Baltic, the Balkans, the Mediterranean and the Eurasian region), the adoption and revision of the Energy Action Plan efficiency (support to small and medium enterprises and households).

The reasons for the different achieving the climate and energy goal should also be sought in the instruments defined in four groups of complementary regulations (Decision No 406/2009 /EC) under the Climate and Energy Package (European Commission, 2009a):

- regulations relating to the revision and strengthening of the trade system for emission allowances, which is a key EU tool for effectively reducing the cost of emissions;
- a decision on the "sharing effort" that regulates emissions from sectors not covered by the EU ETS, such as transport, housing, agriculture, waste;
- binding national targets for renewable energy-related decision-making, which regulates emissions from sectors not covered by the EU ETS, such as transport, housing, agriculture, waste and
- binding national targets for renewable energy sources, whose goal is to jointly increase the share of renewable energy sources in the EU by 20% by 2020 and improving the development and safe use of carbon capture and storage techniques.

The reduction in CO₂ emissions has also been influenced by the use of appropriate structural and other funds, and in order to improve the production and consumption model, "establishing a vision of structural and technological changes" for the transition (by 2050) to a low carbon economy. Within the framework of this initiative, the planned activities at Member State level include the following:

- the abolition of subsidies that are harmful to the environment, other than those relating to persons with disabilities,
- changes in market instruments such as fiscal incentives and acquisitions in order to adapt to production and consumption methods, development,
- improving and fully linking transport and energy infrastructure, ensuring coordinated implementation of infrastructure projects, which should contribute to the effectiveness of the overall transport system of the EU and
- the use of regulations, the construction of performance standards and market instruments, subsidies, public procurement to reduce the use of energy and resources.

2. Environmental sustainability as a factor of economic progress of EU countries

Environmental sustainability in EU countries is assessed on the basis of Environmental Performance Index (EPI). EPI ranks countries' performance on high-priority environmental issues in two areas: the protection of human health and the protection of ecosystems. Among the top ten best eco-ranking country among 180 countries in 2016, according to the EPI index there are 9 countries from the EU: Finland, Sweden, Denmark, Slovenia, Spain, Portugal, Estonia, Malta and France (elsewhere the Island). In relation to the measurement of the EPI index in 2014 in the top five environmental states there are countries that have not been in these positions in the previous year, and the first place Iceland was taken from Finland (Table 2).

Table 2. EPI Rankings 2016

Rank	Country	Score	GDP per capita \$
1	Finland	90.68	41.813
3	Sweden	90.43	49.678
4	Denmark	89.21	46.603
5	Slovenia	88.96	32.028
6	Spain	88.91	36.451
7	Portugal	88.63	28.515
8	Estonia	88.59	29.502
9	Malta	88.48	37.891
10	France	88.2	42.384
12	United Kingdom	87.38	42.514
15	Croatia	86.98	22.415
17	Norway	86.9	69.296
18	Austria	86.64	47.856
19	Ireland	86.6	69.375
20	Luxembourg	86.58	101.936
21	Greece	85.81	26.809
22	Latvia	85.71	25.740
23	Lithuania	85.49	29.882
27	Czech Republic	84.67	33.223
28	Hungary	84.6	27.211
29	Italy	84.48	36.313
30	Germany	84.26	48.190
33	Bulgaria	83.4	20.116
34	Romania	83.24	22.319
36	Netherlands	82.03	50.846
38	Poland	81.26	27.715
40	Cyprus	80.24	34.387
41	Belgium	80.15	44.881

Source: Report Global metrics for the environment, 2016, p. 18.

Countries have achieved a high rank because of the production of electricity from renewable sources, the use of alternative sources of energy production which increases the energy productivity,

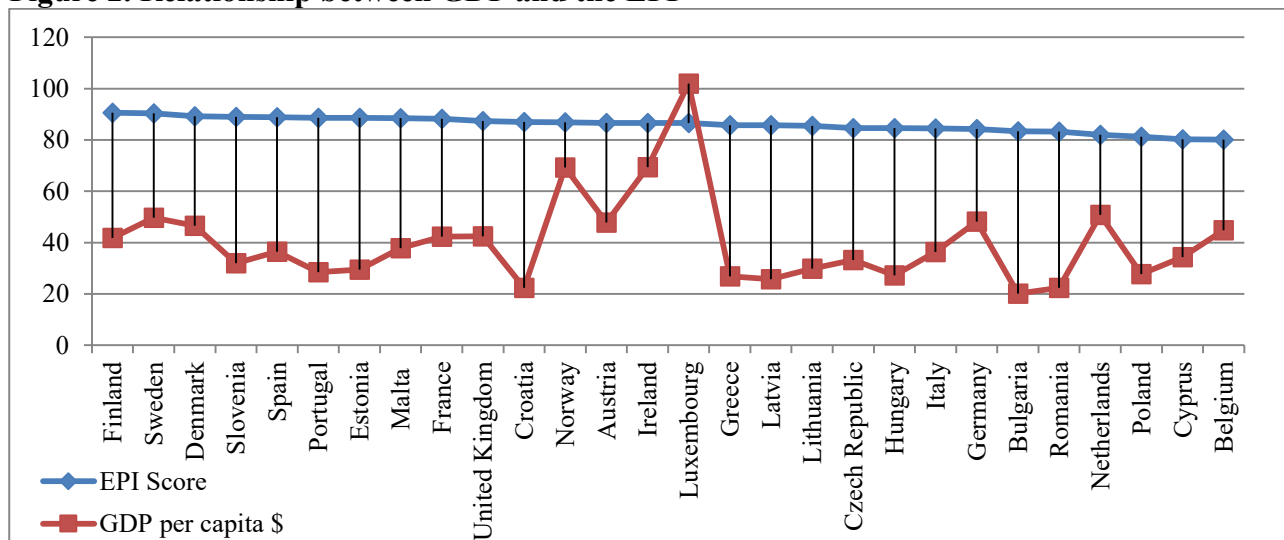
waste recycling, organic agriculture development and other measures that promote the sustainability of the economy.

Relationship between GDP and the EPI in EU countries

Countries in the EU tend to have higher scores EPI index in relation to their GDP. This tendency means that countries with greater financial resources can better implement regulations to protect human health and the environment. The objectives of the development of EU member states should show a positive relationship between EPI and GDP, and that the growth in national wealth improves environmental impact.

The relationship between higher values of EPI index and higher GDP is achieved in the case of Sweden, Finland, Germany, Denmark, Spain and Slovenia. Luxembourg has the highest GDP but per EPI score is at position 20 (Figure 2).

Figure 2. Relationship between GDP and the EPI



Source: author's representation using Report Global metrics for the environment

3. Environmental sustainability EU countries as a factor of competitiveness

The analysis of the competitive advantages of national economies has dealt with a number of studies in terms of urban competitiveness (Ni *et al.*, 2014, Huggins and Clifton, 2011; Martin and Simmie, 2008), sustainable development (Van and Handy, 2016; McCabe, 2012; Grant and Barton, 2013; Wheeler and Beatley, 2004; Satterthwaite, 1999, etc.) and sustainable competition (Balkyte and

Tvaronavičiene, 2010; Wysokińska, 2003; Tukker and Tischner, 2006; Davoudi, 2003; Glachant, Schucht and Bültmann, 2002; Testa *et al.*, 2014, etc.).

Comparison progress between the EU, globally, and each country individually considering a clever, sustainable and inclusive growth according to the 2020 Strategy, indicates the relationship between the increase in productivity, innovation economy and environmental protection, and environmental sustainability. In EU countries using environment funds are developed for economic activity and innovative framework for the contribution of fundamental research to increase value-added products. The gap in the developed countries is caused by application of the European digital agenda, competitiveness, growth rates, in particular the youth unemployment.

Similar problems exist at the regional level where there is a difference in the more prosperous north and north-west European part, in relation to the Southern and south-eastern part. The increase in productivity should take into account the comparative and competitive advantages of the EU Member States.

The Index Environmental sustainability analysis shows that 14 countries have a lower score than the EU average. Regionally, this ratio is higher in Northern Europe and North-western Europe as compared to Southern Europe and Central and Eastern Europe (Table 3).

Countries with high scores and rank (the highest in Sweden and Finland) innovate, develop digital economy and entrepreneurship, foster cooperation of universities and the private sector in research, have developed and applicable institutional framework related to environmental protection and development of the economy which is environmentally friendly.

In countries whose score is below the EU average there are problems related to the quality of the environment, low capacity to implement environmental legislation, the gap between competitiveness and European targets, low energy efficiency, high CO₂ emissions, financing and development efforts for the preservation of the environment.

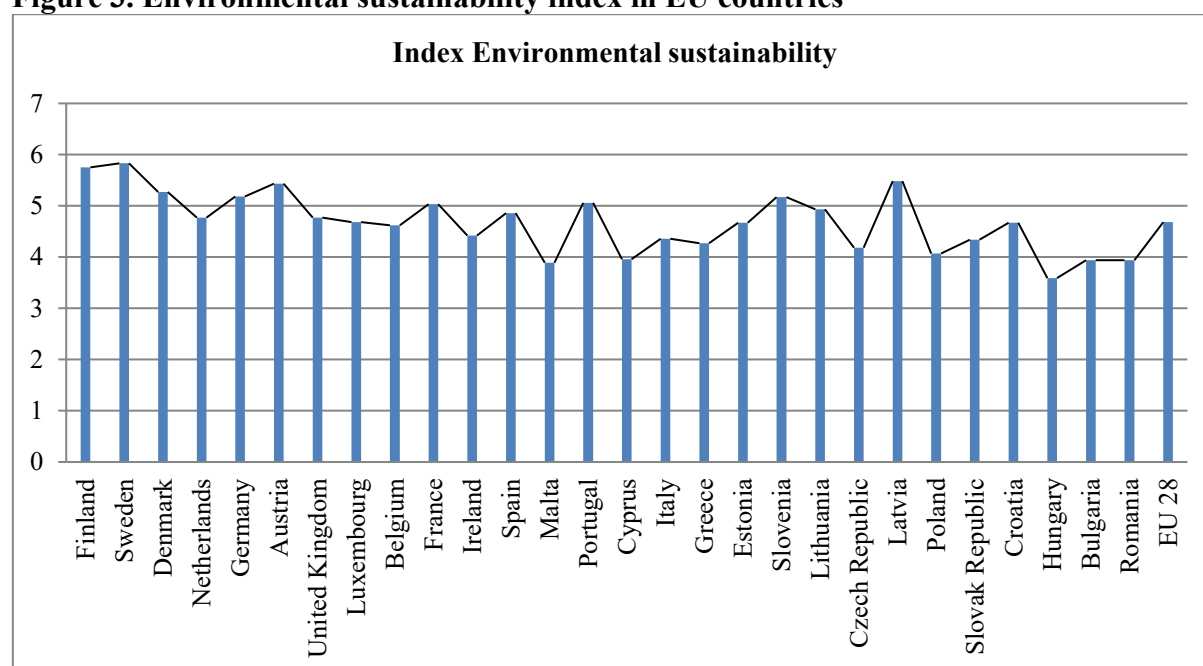
Table 3. Environmental sustainability index

Europe	Country/economy	Rank (1-28)	Score (1-7)
Northern Europe	Finland	2	5.75
	Sweden	1	5.83
	Denmark	5	5.27
North-Western Europe	Netherlands	13	4.77
	Germany	6	5.18
	Austria	4	5.43
	United Kingdom	12	4.77
	Luxembourg	14	4.68
	Belgium	17	4.62
	France	9	5.03
	Ireland	18	4.42
	Spain	11	4.86

Southern Europe	Malta	27	3.89
	Portugal	8	5.06
	Cyprus	24	3.96
	Italy	19	4.36
	Greece	21	4.27
Central and Eastern Europe	Estonia	16	4.67
	Slovenia	7	5.17
	Lithuania	10	4.93
	Czech Republic	22	4.18
	Latvia	3	5.48
	Poland	23	4.07
	Slovak Republic	20	4.34
	Croatia	15	4.67
	Hungary	28	3.59
	Bulgaria	25	3.94
	Romania	26	3.94
	EU28		4.68

Source: The Europe 2020 Competitiveness Report, World Economic Forum, 2014, p. 15

Figure 3. Environmental sustainability index in EU countries



Source: The Europe 2020 Competitiveness Report, World Economic Forum, 2014, p. 15

Total ranking in the EU countries is based on several indicators: basic requirements (sub index: institutions, infrastructure, macroeconomic environment and health and primary education), efficiency enhancers (sub index: higher education and training, goods market efficiency, labour market efficiency, financial market development, technological readiness and market size) and innovation and sophistication factors (sub index: business sophistication and innovation).

Analysis of the relationship between the total of the rank and the rank on the basis of environmental sustainability shows positive deviations (the country in which the rank environmental sustainability > total rank) in 13 EU countries: Sweden, Austria, France, Portugal, Italy, Greece, Slovenia, Lithuania, Latvia, Slovak Republic, Croatia, Bulgaria and Romania. The biggest difference between this two rankings were recorded in Latvia, on the basis of, so it can be concluded that within the EU there are countries which are not highly ranked according to the total ranking, but take care of the environmental sustainability (Table 4).

Table 4. The relationship between the total rank and rank-environmental sustainability

Country/economy	Total rank	Rank-environmental sustainability	Deviation (+/-)
Finland	1	2	-
Sweden	2	1	+1
Denmark	4	5	-
Netherlands	3	13	-
Germany	5	6	-
Austria	6	4	+2
United Kingdom	7	12	-
Luxembourg	8	14	-
Belgium	9	17	-
France	10	9	+1
Ireland	11	18	-
Spain	13	11	+
Malta	14	27	-
Portugal	15	8	+7
Cyprus	20	24	-
Italy	21	19	+2
Greece	26	21	+5
Estonia	12	16	-
Slovenia	16	7	+9
Lithuania	17	10	+7
Czech Republic	18	22	-
Latvia	19	3	+16
Poland	22	23	-
Slovak Republic	23	20	+3
Croatia	24	15	+9
Hungary	25	28	-
Bulgaria	27	25	+2
Romania	28	26	+2

Source: author's calculation based on The Europe 2020 Competitiveness Report

4. The EU legislation to increase energy efficiency and environmental protection

The development of cleaner technologies, increasing energy efficiency and reducing waste will affect the reduction of environmental pollution in the EU by 2020. Most important legal instruments for the sector of industrial pollution control and risk management in the EU are Directives for the prevention of major accidents involving hazardous materials, prevention and control pollution, improving energy efficiency in final consumption and energy services, energy performance of buildings, the labelling of the energy efficiency level of technical devices and equipment, the establishment of the register of release and transfer of pollutants and other.

For the successful implementation of EU directives and regulations in the field of environmental protection and energy efficiency it is important to carry out the harmonization of national legislation with the EU in the field of environmental protection which contributes to a more efficient achievement of the objectives (Figure 4).

Figure 4. The harmonization of regulations in the field of environmental protection



Source: author's representation

4.1. The EMAS system as a function of increasing environmental quality

The EMAS (Eco-Management and Audit Scheme) is the EU instrument which gives the opportunity to organizations on a voluntary basis to introduce and promote eco-management. In this system organizations from different sectors (business, education, public administration, etc.) are included. Companies registered in the EMAS have an obligation to define environmental policy which continuously applies, to implement environmental protection measures and to report regularly on state environment and environmental measures. The EMAS scheme includes the EU Member States, the Member States EEU-European Economic Area (Norway, Iceland and Liechtenstein) and the countries candidates for accession to the EU.

According to statistics from the European Commission over 3.600 enterprises have registered in the system and they have the right to use the EMAS logo which is a guarantee of their quality of environmental management.

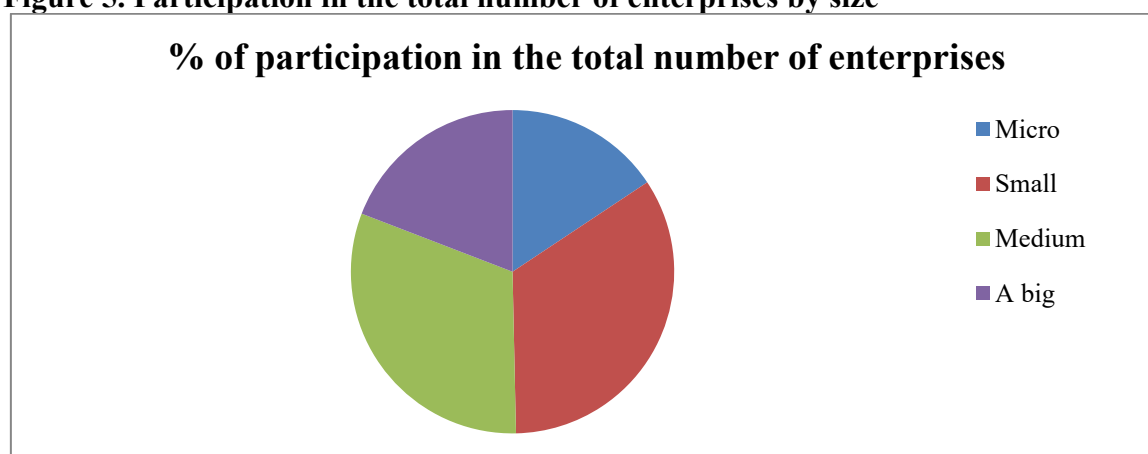
The analysis size enterprises within EMAS system, according to the number of employees in accordance with the international classification, shows dominated participation by small (33.99%) and medium enterprises (31.19%) (Table 5, Figure 5). Accordingly, about two-thirds of companies in the EMAS system are small and medium-sized enterprises, and it is not negligible also the participation of large companies with around 20%. Among the big companies there are 12 companies with over 10,000 employees. The largest number of employees in the company is 44,725 is in the Italian company from Lombardy, which deals with the activity expressed by code 64.11-Central banking.

Table 5. Analysis by the size enterprises in the EMAS system

Enterprises by size	Number of enterprises	Participation in the total number of enterprises (%)
Micro	381	15.67
Small	826	33.99
Medium	758	31.19
A big	465	19.15
In total	2430	100

Source: EMAS registrar, European Commission

Figure 5. Participation in the total number of enterprises by size



Source: own representation using EMAS registrar

The countries with the largest number of enterprises in EMAS system are Italy (901) and Spain (840) with 72% of all registered enterprises account from these two countries. The majority of companies in the Spain are small (35.31) and medium-sized enterprises (29.85%). In Italy, a similar

situation because dominated small and medium-sized enterprises with a slightly higher share of small enterprises than in Spain (27.93 medium and 39.67 small enterprises).

The analysis of the enterprises structure according to the NACE code (Table 6) shows that the largest number of enterprises are registered within the group 30.00-39.99 (25.39%) and the groups 80.00-89.99 (20.04%). Within the first group, the largest number of enterprises deals with the Collection of non-hazardous waste, and within the second group with General public administration activities. The NACE codes indicate the diversification of the prevailing activity of companies that are in the EMAS system. The registration of registered companies is within the group 01.00-09.99 (2.22%).

Table 6. Analysis of the structure of enterprises of EMAS according to the NACE code

NACE code	Number of enterprises	%	Number of enterprises with the highest NACE codes in the group
01.00-09.99	54	2.22	08.11-Quarrying of ornamental
10.00-19.99	267	10.99	10.11-Processing and preserving of meat
20.00-29.99	378	15.55	25.61-Treatment and coating of metals
30.00-39.99	617	25.39	38.11-Collection of non-hazardous waste
40.00-49.99	232	9.55	45.20-Maintenance and repair of motor vehicles
50.00-59.99	158	6.50	55.10-Hotels and similar accommodation
60.00-69.99	43	1.77	62.01-Computer programming activities
70.00-79.99	93	3.83	71.12-Engineering activities and related technical consultancy
80.00-89.99	487	20.04	84.11-General public administration activities
90.00-99.99	101	4.16	91.04-Botanical and zoological gardens and nature reserves activities

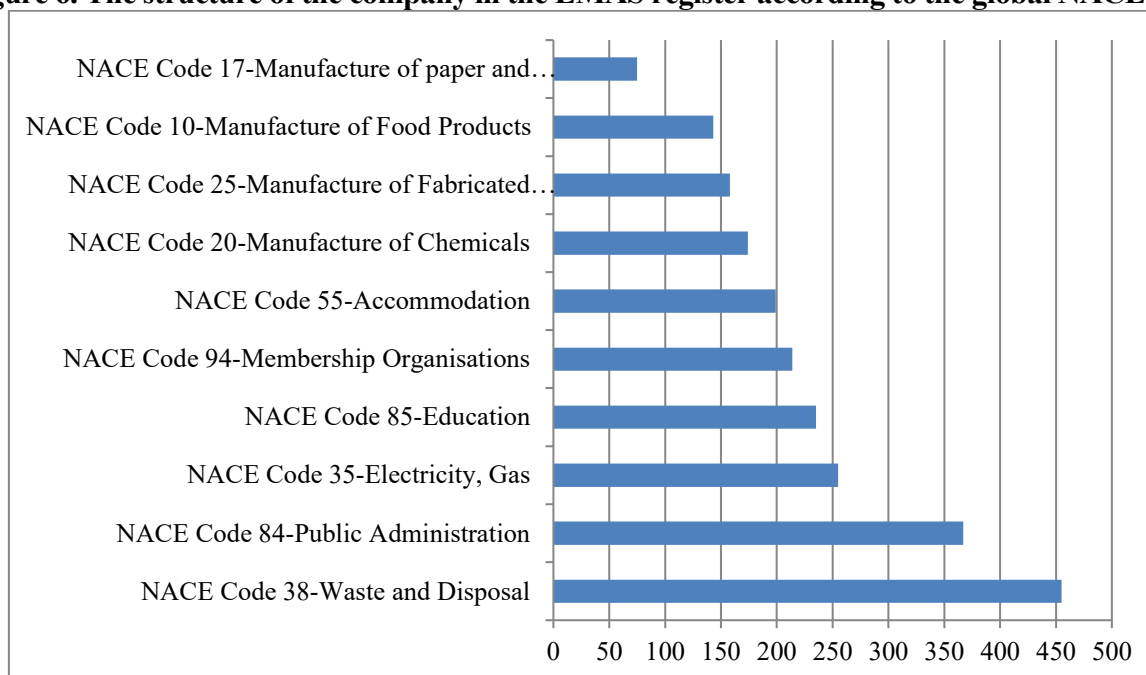
Source: authors' calculation based on EMAS registrar, European Commission

The analysis of the NACE code which is not divided into groups shows that there is a coincidence for the previous analysis according to which the largest number of registered enterprises is between code 30-40 and 80-90. The previous analysis has more precisely identified the NACE codes, divided into groups and subgroups, however, the conclusion is that companies with Waste and Disposal and Public Administration have the largest share in the EMAS register (Table 7 and Figure 6).

Table 7. The structure of the enterprises in the EMAS registered according to the global NACE code

NACE code	Number of enterprises	%
NACE Code 38-Waste and Disposal	455	20
NACE Code 84-Public Administration	367	16.13
NACE Code 35-Electricity, Gas	255	11.21
NACE Code 85-Education	235	10.33
NACE Code 94-Membership organizations	214	9.41
NACE Code 55-Accommodation	199	8.75
NACE Code 20-Manufacture of Chemicals	174	7.65
NACE Code 25-Manufacture of Fabricated Metal Products	158	6.94
NACE Code 10-Manufacture of Food Products	143	6.28
NACE Code 17-Manufacture of paper and paper products	75	3.30

Source: EMAS registrar, European Commission

Figure 6. The structure of the company in the EMAS register according to the global NACE code

Source: EMAS registrar, European Commission

Previous analysis of the enterprises in the EMAS register points to the existence of differences in the number of companies per country, their size and the prevailing NACE code. These differences can be explained by the existence and development of personal and collective responsibility for the environment of enterprises, citizens and the state. The development of corporate social responsibility combines three main areas: production (improvement in efficiency and organization of production), social relations (workplace conditions, health and safety at work) and the environment (cleaner production, more rational use of raw materials and reduction of waste generation, and emission). Appropriate knowledge of the state of the ecosystem and their ability to deliver services (and how human activities affect this ability) is a prerequisite for the -good management of nature. Countries like Ireland, Norway and the Netherlands encourage in various ways the development of responsibility not only of enterprises, but also of individuals. A large number of countries are implementing measures that meet both personal and collective responsibility for environmental problems. Thus, responsibility for the protection and management of the environment in Ireland represents a shared responsibility involving all citizens (mobilizing more than 4.5 million citizens to ensure that the environment is part of their everyday decisions and procedures). In Norway there is an increased awareness of the value of ecosystem services and their connection to sustainability. The government of the Netherlands announced in 2014 that it will modernize its environmental policy to include the public, enterprises and other bodies in the field of environment and sustainable development. This policy focuses on public health, as well as the formulation of an approach that

emphasizes the benefits of new ecological products and the emergence of health problems related to environmental pollution.

The registration of enterprises in the EMAS system affected the possibility of financing the EMAS system whereby Member States provide individual support mechanisms for those interested in implementing this system. There are many schemes in different EU member states that place special emphasis on supporting the participation of small and medium-sized enterprises (SMEs) in the EMAS. The European Commission encourages individual Member States to provide support mechanisms for organizations, especially SMEs wishing to implement EMAS. Local authorities, chambers of commerce and stakeholders can provide assistance to small and medium-sized enterprises in identifying significant environmental impacts, which SMEs can use to define an environmental protection program and EMAS.

Financial support is provided for broader activities through tenders, for submission of project proposals, especially for support of SMEs. Financing can also be provided by the European Commission through the LIFE-Environment - program, run by the European Commission's Directorate-General for Environmental Protection, for projects that meet the requirements of the program. The costs of implementing EMAS are divided into external and internal ones.

4.2. Future challenges eco-management

The development and application of eco-management in the EU leads to importance of energy managers and energy management taxpayers. The presence of energy managers is necessary in companies with a predominant activity in the manufacturing sector (industrial plants) whose energy consumption is above the level prescribed by law, as well as, in the municipalities with more than 20.000 buildings and other facilities in public ownership. Taxpayers energy management are obliged to implement energy efficiency measures, increase energy efficiency, appoint the required number of energy managers or energy officers and to submit annual reports on energy efficiency.

The candidate countries for accession to the EU have an obligation to harmonize national legislation with legislation, regulations and directives EU in the field of environmental protection. For the Republic of Serbia, as a candidate for accession to the EU, progress in this area is analysed in Chapter 27: Environment and climate change. Eco-management is achieved by forming eco register for environmental information in electronic form, participating in the European network of environmental information and observation of the environment (EIONET) and other grids.

The development of eco-management should be accompanied by the introduction of incentives and credit lines based on the system of obligatory reporting on energy consumption and measures taken, as well as, by discouraging the consumption of energy through additional taxation of excessive and inefficient spending. Also, it is necessary to establish standards for energy efficiency, the introduction of mandatory energy audits, the introduction of energy buildings and mandatory energy management for large energy consumers and local governments.

5. Ecological network in the function of preserving the environment

One of the most important parameters in the future development of the countries of Southeast Europe in the process integration into the EU is the protection and conservation of nature. For this purpose, there are several ecological networks: Natura2000, Emerald and Pan-European networks.

Natura2000 is a network of core breeding for rare and threatened species, and some rare natural habitat types which are protected in their own right. It stretches across all 28 EU countries, both on land and at sea. The aim of the network is to ensure the long-term survival of Europe's most valuable and threatened species and habitats, both listed under the Birds Directive and the Habitats Directive.

Emerald is an ecological network made up of areas of special importance for the protection of nature (Special Areas of Conservation Importance-ASCI) or spatial entities and habitats that are of special national and international importance in terms of preserving biodiversity. This network, which is built on the same principles as Natura2000, established by the Council of Europe for countries that are in the process of joining the EU, it is activity part of in the implementation of the Bern Convention on the Conservation of European Wildlife and Natural Habitats.

The Pan-European Ecological Network (PEEN) was established with the aim of long-term preservation of ecosystems, habitats and species of protection at European level. The PEEN network predicts the existence of the central zone, which would form the Natura2000 and Emerald areas, then routes that connect the central zone and enable the migration and dispersal of species, and transitional zones and restoration areas, with a lower degree of protection from the central zone.

Information about the network Natura2000 in the EU countries show stretches over 18% of the EU's land area and almost 6% of its marine territory. Countries with the largest share in the total area networks (over 30%) are Croatia, Slovenia and Bulgaria. The largest number of protected sites within the network is in Germany, Sweden and Italy (Table 6).

Table 6. Natura2000 in the EU

Member States	Natura2000		TERRESTRIAL			
	Total N° Natura2000 Sites	Total area Natura2000 km ²	SCI area (km ²)	SPA area (km ²)	Natura2000 network area (km ²)	% land area covered
Austria	294	12691	9191	10169	12691	15.13
Belgium	310	5158	3277	3181	3887	12.73
Bulgaria	340	41048	33258	25226	38222	34.46
Cyprus	63	1784	752	1534	1653	28.82
Czech Republic	1116	11061	7856	7035	11061	14.03
Germany	5206	80773	33514	40248	55170	15.45
Denmark	350	22647	3178	2605	3594	8.34
Estonia	568	14837	7785	6182	8083	17.87
Spain	1863	222142	117395	100972	137757	27.29
Finland	1863	55988	48556	24655	48847	14.45
France	1756	111677	47666	43544	69974	12.74
Greece	419	42946	21388	27622	35747	27.09
Croatia	779	25690	16040	17034	20704	36.58
Hungary	525	19949	14442	13747	19949	21.44
Ireland	595	19486	7164	4312	9227	13.13
Italy	2589	63965	42827	40108	57172	18.97
Lithuania	485	9248	6138	5529	7938	12.16
Luxembourg	66	702	416	418	702	27.03
Latvia	333	11833	7421	6609	7446	11.53
Malta	39	234	41	13	41	12.97
Netherlands	194	17315	3135	4766	5518	13.29
Poland	987	68401	34187	48394	61165	19.56
Portugal	165	50895	15680	9204	19010	20.67
Romania	531	55674	39765	35348	53781	22.56
Sweden	4082	64578	54745	25330	55250	13.32
Slovenia	354	7684	6636	5068	7674	37.85
Slovakia	514	14442	5837	13106	14442	29.57
United Kingdom	924	95106	13103	16022	20901	8.54
EU28	27312	1147956	601393	537981	787606	18.12

Source: Nature and Biodiversity Newsletter, Natura 2000, European Commission 2016. no. 39, p. 8

The Implementation of projects and programs under the Natura2000 network is important for the conservation of biodiversity:

1. WWF Danube-Carpathian Program Bulgaria is a project undertaken with the intention of creating new jobs in a country that belongs to the poorest among the communities. Four innovative programs influenced an increase in sales of agricultural products, but also the protection of biodiversity.

2. Programs in Belgium and France around Natura2000 sites related to the testing of alternative methods for keeping the land around the power lines and the creation of green corridors in the wooded areas.
3. The Government of Andalusia since 2002 has been implementing projects that encourage the protection of Natura2000. The Iberian lynx is a protected species which is threatened with extinction, but on the basis of projects and initiatives for preserve the lynx, with the cooperation of all relevant public and private parties, came to the recovery of this species. Stewardship agreements and voluntary contracts have been signed with 132 private owners, managers and hunting clubs in six Natura2000 sites.
4. Projects with the support of the EU LIFE program and the Norwegian Environment Fund are being implemented simultaneously in seven Natura2000 sites across Europe and key actions include the introduction of a standardized monitoring program and habitat restoration work in core areas such as, the Evros Delta National Park in Greece and the Hortobágy National Park in Hungary.

Conclusion

The paper emphasizes the importance of preserving the environment, both in terms of sustainable development, but also in terms of competitiveness and a better economic situation of the national economy. The imperative of the development of modern economy is sustainable growth-green growth and innovative economy. The EU has recognized the importance of environmental protection and has implemented this question in the most important programmatic document. Each state has an obligation to adapt national legislation of the EU Directive in this area.

Objective of the analysis in this paper is to demonstrate the existence of the correlation between economic development and environmental sustainability, but also the existence of differences within the individual parts of Europe and countries in terms of environmental preservation. The adoption of climate and energy targets is also a good example of targets that are binding for the country in terms of finding mechanisms for achieving the objectives.

Examples of positive practice ecological development show an increase in energy efficiency, sustainable use of resources, the establishment of ecological networks and further development of eco-management.

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References

- Balkyte, A. and Tvaronavičiene, M. (2010), Perception of Competitiveness in the Context of Sustainable Development: Facets of “Sustainable Competitiveness”, *Journal of Business Economics and Management*, 11 (2), pp. 341–365.
- Davoudi, S. (2003), European Briefing: Polycentricity in European spatial planning: from an analytical tool to a normative agenda, *European Planning Studies*, 11(8), pp. 979-999.
- European Commission (2009a), *Decision No 406/2009/EC of the European Parliament and of the Council of 23 April 2009 on the effort of Member States to reduce their greenhouse gas emissions to meet the Community’s greenhouse gas emission reduction commitments up to 2020*, Brussels, retrieved from http://eur-lex.europa.eu/legal_content/EN/TXT/?uri=uriserv:OJ.L_.2009.140.01.0136.01.ENG
- European Commission (2009b), *The EU climate and energy package*, Brussels, retrieved from: http://ec.europa.eu/clima/policies/brief/eu/package_en.htm
- European Commission (2010a), *Europe 2020, Strategy for smart, sustainable and inclusive growth*, Brussels, 3.3.2010 COM(2010) 2020 final, retrieved from <http://eur-lex.europa.eu/LexUriServ/LexUriServ.do?uri=COM:2010:2020:FIN:EN:PDF>
- European Commission (2010b), *An Integrated Industrial Policy for the Globalization Era Putting Competitiveness and Sustainability at Centre Stage*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, {SEC(2010)1272}, {SEC(2010) 1276}, COM(2010) 614, Brussels.
- European Commission (2011), *A resource-efficient Europe-Flagship initiative under the Europe 2020 Strategy*, Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, COM(2011) 21 final, Brussels.
- European Commission (2014a), *A policy framework for climate and energy in the period from 2020 to 2030*, COM(2014) 15 final, 22. 1. 2014. Brussels, retrieved from http://ec.europa.eu/smart_regulation/impact/ia_carried_out/docs/ia_2014/swd_2014_0015_en.pdf

- European Commission (2014b), *Annexes to the Communication from the Commission to the European Parliament, the Council, the European Economic and Social Committee and the Committee of the Regions, Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM(2014) 130 final, Brussels.
- European Commission (2014c), *Taking stock of the Europe 2020 strategy for smart, sustainable and inclusive growth*, COM (2014) 130 final/2, Brussels, 19. 3. 2014, retrieved from http://ec.europa.eu/europe2020/pdf/europe2020stocktaking_en.pdf
- European Commission (2016), *Nature and Biodiversity Newsletter*, Natura 2000, no. 39/2016.
- European Commission, *Register, Reports & Statistics*, EMAS register, retrieved from <http://ec.europa.eu/environment/emas/register/reports/reports.do>
- European Commission, *Register, Reports & Statistics*, EMAS publications, retrieved from http://ec.europa.eu/environment/emas/emas_publications/publications_studies_en.htm
- European Council (2000), *Presidency Conclusions*, Lisbon, 23–24 March, retrieved from http://www.consilium.europa.eu/fr/uedocs/cms_data/docs/pressdata/en/ec/00100-r1.en0.htm
- Eurostat (2013), *Sustainable development in the European Union – 2013 monitoring report of the EU sustainable development strategy*, Statistical book. European Union.
- Evropski pokret (2015), *Europe 2020 four years later guide*, Beograd, retrieved from http://europa.rs/images/publikacije/29-Evropa_2020.pdf
- Glachant, M., Schucht, S. and Bültmann, A. (2002), Companies' participation in EMAS: the influence of the public regulator, *Business Strategy and the Environment*, 11 (4), pp. 254-266.
- Grant, M. and Barton, H. (2013) No weighting for healthy sustainable local planning: evaluation of a participatory appraisal tool for rationality and inclusivity, *Journal of Environmental Planning and Management*, 56 (9), pp. 1267-1289.
- Huggins, R. and Clifton, N. (2011), Competitiveness, creativity, and place-based development, *Environment and Planning A*, 43 (6), pp. 1341-1362.
- International Energy Agency (2013), *CO2 Emissions from Fuel Combustion – 2013 Edition*, Paris.
- International Monetary Fund (2016), *World Economic Outlook October 2016*, List of European countries by GDP per capita, retrieved from <http://www.imf.org/external/pubs/ft/weo/2016/02/weodata/weorept.aspx>
- Ni, P., Kresl, P. and Li, X. (2014), China urban competitiveness in industrialization: Based on the panel data of 25 cities in China from 1990 to 2009, *Urban Studies*, 51, pp. 2787–2805.
- Martin, R. and Simmie, J. (2008), The theoretical bases of urban competitiveness: Does proximity matter? *Revue d'economie Regionale et Urbaine* octobre, 3, pp. 333-351.

- McCabe, V. (2012). Developing and sustaining a quality workforce: lessons from the convention and exhibition Industry, *Journal of Convention & Event Tourism*, 13 (2), pp. 121-134.
- Satterthwaite, D. (1999), *The Earthscan reader in sustainable cities*, Earthscan, London.
- Testa, F., Rizzi, F., Daddi, T., Gusmerotti, N.M., Frey, M. and Iraldo, F. (2014), EMAS and ISO 14001: The differences in effectively improving environmental performance, *Journal of Cleaner Production*, 68, pp. 165–173.
- Tukker, A. and Tischner, U. (2006), *New business for old Europe: product-service development competitiveness and sustainability*, Sheffield: Greenleaf Publishing.
- Yale University (2016), *Report Global metrics for the environment, Environmental Performance Index*, CT: Yale Center for Environmental Law & Policy, retrieved from http://archive.epi.yale.edu/files/2014_epi_report.pdf
- Van Wee, B. and Handy, S. (2016), Key research themes on urban space, scale, and sustainable urban mobility, *International Journal of Sustainable Transportation*, 10(1), pp. 18–24.
- World Economic Forum (2014), *The Europe 2020 Competitiveness Report*, Geneva, retrieved from http://www3.weforum.org/docs/WEF_Europe2020_CompetitivenessReport_2014.pdf
- Wheeler, S. M. and Beatley, T. (2004), *The Sustainable Urban Development Reader*, Abingdon, UK and New York, NY. USA: Routledge.
- Wysokińska, Z. (2003), Competitiveness and Its Relationships with Productivity and Sustainable Development, *FIBRES & TEXTILES in Eastern Europe*, 11(3), pp. 11-14.