

## **POLICY OF THE EUROPEAN UNION IN THE FIELD OF RENEWABLE ENERGY RESOURCES IN THE CONTEXT OF COMMON POWER INDUSTRY POLICY**

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### **Abstract**

Policy of the European Union (hereinafter – the EU) in the field of renewable energy resources (hereinafter – RES) is relatively fresh. The first strategic goal concerning use of RES was defined by the EU just in 1997 suggesting that the share of RES in the total balance of primary energy resources should increase from 6% in 1997 to 12% in 2010. However, this so called ‘primary’ EU policy regarding RES was incomplete as attention was devoted to facilitating the application of RES with indicative objectives defined only in electric power supply and transport sectors. Lack of progress in achieving the indicative objectives and the need to promote the use of RES in all of the member states, not just some, served as a reason for developing a broader and more strict regulation in the EU policy for the field of RES, covering the prospect till the year 2020 so that the EU would achieve the renewable energy share of 20% by the year 2020. Here it is essential to recognize and understand, that the EU’s strategic objective for the use of RES does not imply, that with such an approach the use of non-renewable energy resources would be limited in the foreseeable future. Namely, the EU’s common power industry policy direction, which is focused on an integrated energy and climate change policy, in the foreseeable future, does not exclude the use of any energy resource. By supporting the use of non-renewable resources in the foreseeable future, preconditions are created for the promotion of a new industrial revolution to encourage the development of environmental technologies. It is important, because new and innovative environmental technologies can stimulate economic growth in various ways, while improving environmental indicators and conserving natural resources (it essentially helps to distinguish or separate economic growth from the impact on the environment).

**Key words:** power sector, energy resources.

### **Introduction**

In the era of information technology, the use of energy resources has become an integral part of everyday life. For example, the European Environmental Agency states: ‘Energy gives personal comfort and mobility to people and is essential for the generation of industrial, commercial and societal wealth’. But all of this has also negative features – energy production and consumption creates a significant strain on the environment. These impacts include the greenhouse gas (hereinafter – GHG) and air pollutant emissions, land use, waste generation and oil spills. This strain affects climate change, damages natural ecosystems and man-made environment, and has an adverse affect on human health (European Environmental Agency, 2011).

To a large extent, the negative characteristics of energy production and consumption stressed above are formed because in the result of various historical event interactions, the situation has evolved so that in the era of information technology the production processes of energy necessary for public purposes on a global scale is dominated by the use of fossil fuels (coal, oil, natural gas, etc.). For example, the European Environment Agency indicated that about 79% of the energy needs of the average European are met by fossil fuels. Around 13% comes from nuclear power and the remaining 8% comes from rapidly increasing renewable energy sources (especially wind, biomass and solar energy) (European Environmental Agency, 2011).

In this context, it is important to realize that the International Energy Agency predicts that in the foreseeable future the global energy demand will only grow. Consequently, regarding its terms, a situation emerges, in which mankind is simply forced to develop environmental technologies (including all technologies which are less environmentally harmful than respective alternatives) and the wider use of renewable energy resources (hereinafter – RES) (which are more environmentally ‘friendly’ than fossil fuels) in power generation systems, and introduce energy-saving measures. In addition, it is related not only to GHG emissions, which, by the intensive use of fossil fuels, can form in large quantities, but also to the commercial, legal and price uncertainty associated with the use of fossil fuels. Namely, the global demand for fossil fuels is growing, but its supply becomes less (at least the available relatively cheap supply), its extraction is becoming more expensive and more complicated because of troublesome geographical and geological conditions, hence the availability of energy production – more limited. Not of secondary importance is the fact that in the world the reserves of fossil fuel are distributed very unevenly – large amounts of the reserves are located in geopolitically unstable regions, and in most cases they are owned by state-run enterprises, which may not always react appropriately to free market forces (International Energy Agency, 2011).

In this particular research, the EU renewable energy policy in the field of RES, in the context of common power industry policy, is selected as the **research object**. In other words, the object of research covers the mutual evaluation of the EU policy's direction in the field of RES and common power industry policy, where on the one hand it is the use of RES, but on the other – the use of non-renewable energy resources. This outlines the **research subject** – the study is delimited by focusing on the assessment of EU policy in the field of RES in the context of common power industry policy, mainly from a viewpoint covering the use of energy resources (renewable and non-renewable) for the prospect of a low-carbon dioxide emissions economy<sup>1</sup> by the year 2020.

**The research aim:** to evaluate European Union policy in the field of renewable resources in the context of common power industry policy.

**The research tasks:**

1. to analyse the European Union's policy in the field of renewable resources;
2. to describe the position of the European Union's power industry policy concerning the prospect use of non-renewable energy resource in a low-level carbon dioxide emissions economy.

### Materials and Methods

The research is theoretical, developed in the year 2011, and the description of the object under research, both overall and between object parts, includes **research methods** such as analysis, synthesis and the monographic method. The research was done on the basis of research analysis carried out by academic and scientific staff (professional researchers), the European Union documents on power industry, as well as some Internet sources.

### Results and Discussion

#### 1. The European Union's policy in the field of renewable energy resources

Ever since the begging of the 1990's the European Commission (hereinafter – the EC) sought to introduce quantitative objectives on the European Union (hereinafter – the EU) level in order to increase RES in the final energy consumption of the EU. As an example, the ALTENER program can be pointed out, under which in the year of 1993 the EC proposed to double RES in the final energy consumption of the EU from 4% in the year 1991 to 8% in the year 2005. In later years, the established objective was ambitiously increased and in the year of 1997 'Energy for the Future: Renewable Sources of Energy. White Paper for Community Strategy and Action Plan' (COM (1997) 599 final) the first strategic objective concerning the use of RES in the EU was defined. This objective stated

that the proportion of RES use in the EU's primary energy balance has to increase from 6% in the year 1997 to 12% in the year 2020. This decision was mainly due to the need to reduce the carbon dioxide emissions created by the energy sector, to support the promotion of a sustainable development concept in the EU, and to reduce the EU's growing dependence on fossil fuels, which was being imported from politically unstable regions outside the EU (European Commission, 2011).

The next planning document of EU power industry policy strategic direction, which was significant from the use of RES point of view, was developed in the year 2000. It was the 'Green Paper - Towards a European Strategy for the Security of Energy Supply' (COM (2000) 769 final). This policy's planning document specifically highlighted the EU's dependence on energy resource import. Recognizing the EU's large potential of RES, the 'Green Paper - Towards a European Strategy for the Security of Energy Supply' proposed the increase in the use of RES as the main policy's objective. At the same time, it was stressed that for the wider use of RES it was necessary to implement financial support and tax incentives because, compared to fossil fuels, RES is at a disadvantageous so-called 'start position' (Adelle, et al., 2011).

Strategic objectives for the use of RES in the 'Energy for the Future: Renewable Sources of Energy. White Paper for Community Strategy and Action Plan' was taken over by the EU with 'Directive 2001/77/EC on the Promotion of Electricity Produced from Renewable Energy Sources in the Internal Electricity Market'. Its objective anticipated to increase the proportion of RES generated electricity in the final energy consumption of the EU to 22.1% by the year 2010. A similar objective, to the use of RES in the sector of electric power supply, was promoted in the year 2003 with regard to the transport sector – at least 5.75% of final fuel consumption of the EU in the year 2010 should be biofuel. This objective was included in 'Directive 2003/30/EC on the Promotion of the Use of Biofuels or Other Renewable Fuels for Transport' (Adelle, et al., 2011).

In the view of the 'Green Paper - Towards a European Strategy for the Security of Energy Supply' conclusions, that in the year of 1998 the cogeneration cycle had produced only 11% of the electricity consumed in the EU and set a goal to increase this figure to 18% by the year 2010, and one of the high-efficiency cogeneration criteria is the possibility to use RES, in the year 2004 'Directive 2004/8/EC on the Promotion of Cogeneration Based on a Useful Heat Demand in the Internal Energy Market and Amending Directive 92/42/EEC' was accepted (Adelle, et al., 2011).

The so-called 'primary' EU policy, with an emphasis focused on defining quantitative objectives for the use

<sup>1</sup> A 'low-level carbon emissions economy' is called an economy that produces only minimum greenhouse gas emissions in the atmosphere (especially concerning carbon dioxide). In the particular research this economy is examined from the power sectors view – use of energy resources to ensure low greenhouse gas emissions.

of RES, in the field of RES described above had to major drawbacks. First of all, the objectives for the use of RES in the member states were defined as indicative and not mandatory. Secondly, the indicative objectives for the use RES were only defined for the electric power supply and transport sectors. It resulted in a situation, where in the influence from the directives on cogeneration and energy efficiency, a gradual development of the market for heating and cooling sector was occurring. However, the use of RES in this sector grew relatively slowly, and at the same time the necessary progress towards achieving the use of indicative objectives for RES in the electric power supply and transport sector was not provided. Thus, for example, in the year 2004 in 'The Share of Renewable Energy in the EU' (COM (2004) 366 final) the EC concluded that even under the condition, when a reduction in electricity used by a building was achieved, defined by the requirements established in the field of energy efficiency, the final energy consumption of RES produced energy by the EU in the year 2010 would only comprise of about 18% to 19% (the strategic objective was 22.1%). In the statement 'The Share of Renewable Energy in the EU' (made by the EC) the amount of biomass use for electricity production was pointed out as the main reason for the significant deviation from the originally planned figures (European Commission, 2004).

To increase the use of biomass in the EU, in the year 2005 the EC developed one of the first action plans for the promotion of RES use – 'Biomass Action Plan' (COM (2005) 628 final). It defined the main activities focused on the development of bioenergy market (mainly on the establishment of market-based initiative for the use of biomass and the removal of market development obstacles) in order to increase biomass energy extraction from wood, waste and agricultural crops. This approach clearly demonstrated the important role of biomass in the EU power industry policy (European Commission, 2005).

In the result of the political and economic conflict between Russia and Ukraine, in January 2006, when Russia terminated their natural gas supply for the large part of the EU member states, the EU energy market suffered the most significant impact after the second oil crisis. An overall situation in the EU energy market in the year 2006 was very tense, emphasizing the need for an effective solution to the further development of EU power industry policy. Under these circumstances, in the year 2006 the EC published 'Green Paper. A European Strategy for Sustainable, Competitive and Secure Energy' (COM (2006) 105 final). In this policy document, the EC stressed that the EU has entered a new era of power generation, where RES will have an important role. It was noted that the EU would only achieve its full RES potential if there will be a long-term commitment to develop and use renewable energy (Adelle, et al., 2011).

As a reiterative confirmation that the EU's power sector has a need for a new policy that would focus on achieving the strategic objectives faster was the conflict between Russia and Belarus in January 2007. As a result, Russia had terminated the natural gas supply to a part of EU member states again. In the influence of this event, the European Council activated an attitude that there is a need for a more integrated and more legally binding power industry policy. The position of the European Council was based on two major considerations. First of all, if a member state does not address the common power industry problems of the EU, it affects other member states. Secondly, if problems arise outside of the EU, it can affect the EU as a whole. The new EU power industry policy was primarily related to such objectives as increasing the security of energy resource supply; ensuring the competitiveness of the EU economy; access to energy that the EU can afford financially; promotion of environmental sustainability and combating climate change (European Commission, 2008).

In January 2007, the EC published a comprehensive proposal complex dedicated to the power sector with the so-called EU 'Climate and Energy Package'. This package consisted of three ambitious initiatives which provided for the year 2020:

- a reduction in EU greenhouse gas emissions of at least 20% below 1990 levels;
- 20% of EU energy consumption to come from renewable resources;
- a 20% reduction in primary energy use, compared with projected levels, to be achieved by improving energy efficiency.

The initiatives, under the name of '20-20-20', were approved by the leaders of EU countries in March 2007. It should be pointed out that, having regard to all three so-called '20-20-20' initiatives, in March 2007 the country leaders of the EU had confirmed an integrated approach to climate and energy policy, based on specific and measurable objectives. By doing this, the EU committed itself to transferring to an economy characterized by low levels of carbon dioxide emissions and energy saving (Gubb and Hatton, 2011).

In January 2008, the EC published mandatory normative legal acts for the achievement of the so-called '20-20-20' initiative, and already in December of the same year the European Parliament (hereinafter – the EP) approved the EU's so-called 'Climate and Energy Package' in the first reading. The legislation for EU member states included in the package became legally binding in June 2009, when a set of legal texts for implementing the adopted measures by the EP in April 2009 were published in the Official Journal of the European Union (European Commission, 2010a).

With regard to the use of RES, the so-called EU 'Climate and Energy Package' include 'Directive 2009/28/EC on the Promotion of the Use of Energy from

Renewable Sources and Amending and Subsequently Repealing Directive 2001/77/EC and 2003/30/EC'. This EU directive represents legally binding, rather than indicative objectives of the RES produced energy share in 2020 of gross final consumption of energy, and is the first attempt in EU power industry policy to create a comprehensive legal framework for promoting the use of RES in all key energy sectors – heating and cooling, electric power supply and transport sector. As the EC has stressed in the statement in 'Renewable Energy: Progressing Towards the 2020 Target' (COM (2011) 31 final), that the main reasons to change the political approach to field of RES use, were exactly the lack of progress in achieving the strategic objectives regarding the use of RES in the year 2010, and the need to promote the development of RES use in all member states, not just some (European Commission, 2011).

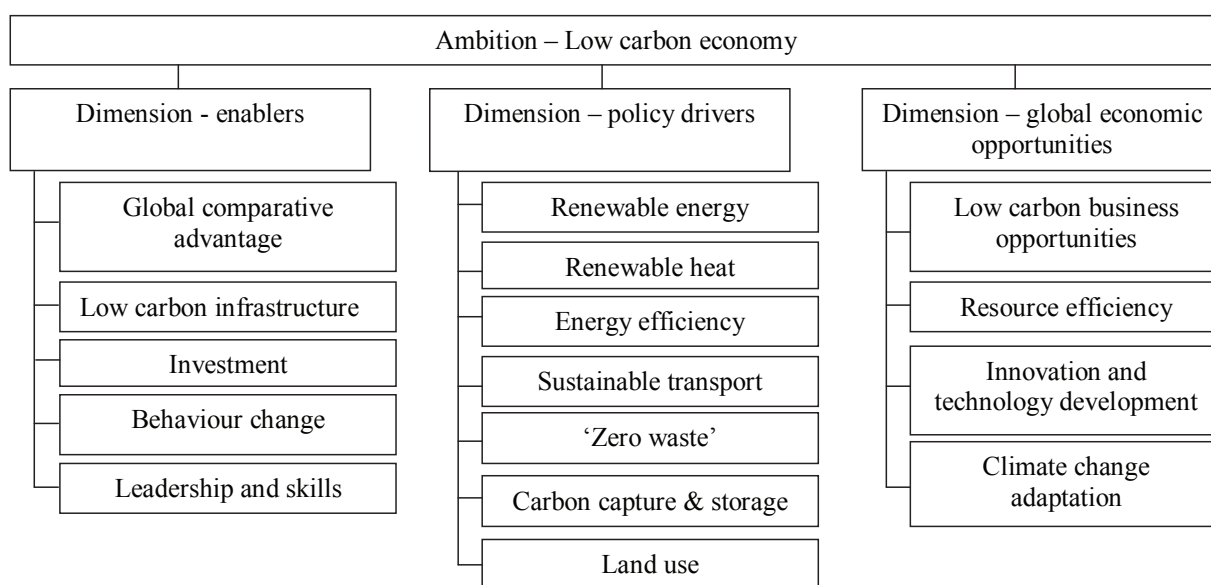
From the view of its terms, the position of the EC, in relation to the use of RES by 2020, can be seen as rational and reasonable. Namely, the only available fossil energy source of the EU that can limit the increasing dependence on oil and natural gas imports from unsafe third world countries is coal, so to some extent the EU is highly dependent on relations with energy resource suppliers. It follows that the interests of the EU as a whole cannot be realized in the markets of these countries and elsewhere in their areas of interest, while allowing other country's energy resource suppliers to profit in EU markets, which results in a major loss of business opportunities for EU companies. This applies particularly to the Russian gas concern JSC 'Gazprom', which provides a part of the necessary supply of natural gas for the EU. For example, in the EP session document 'European Parliament Resolution on the EU-Russia Summit in Nizhny Novgorod on 9-10 June' the EP has stressed that the main instrument of Russian foreign policy is power industry and that it is exactly power industry that continues to have the central and decisive role in the relations between Russia and the EU. In this document, the EP predicts that the dialogue between Russia and the EU on energy issues in the foreseeable future may become more exacerbated because in the field of energy the competition of the EU and Russia concerning common interest areas such as Central Asia and South Caucasus is becoming more exacerbated. In recognition of this, it is impossible to deny the claim that the strategic objectives of the EU for the use of RES by the year 2020, associated with energy supply, energy security and climate change issues attains another rational argument – it addresses the major geopolitical issues of the EU and creates new business opportunities in the EU. Here it is possible to affirm, that in such a way the contingent, but 'business' of the EU. The emphasis in this context is focused on maximizing the opportunities of its own national economy, so that the newly created assets (equipment, technology, technical supply, etc.), which will be required to achieve the strategic

objectives for the use of RES in the EU by 2020, would be created in the EU itself as much as possible and would even find an opportunity to market them outside the EU. Consequently, so that it would be a contingent, but still the 'business' of the EU. By implementing this approach, new jobs and opportunities to invest not only in the power sector, but in all of the related areas of this process, are created. This can be explained by the fact that an investment in the power sector is only the final step in the whole process, through which the investments and expenses made, for example, in science, education, technologies, manufacturing and service sectors, which ensure the progress towards the realization of the strategic objective for the use of RES, are recovered. Considering the subject of the economic interests point of view (the limit for the raise of energy cost, with the increasing use of RES), it is a considerable opportunity to simultaneously improve indicators of economy, environment and society, contributing towards the further development of the economy (Adelle, et al., 2011 and the European Parliament, 2011).

## **2. The use on non-renewable energy resources in the perspective of low-carbon dioxide emissions economy**

EU strategic power industry policy, the so-called '20-20-20' initiatives (or objectives) are included in 'Europe 2020: A Strategy for Smart, Sustainable and Inclusive Growth' (COM (2010) 2020 final), approved by the European Council in June 2010, and they are related to the priority of sustainable growth. Sustainable growth means building a resource efficient, sustainable and competitive economy (flagship initiative: 'Resource Efficient Europe'). With this approach, the EU is particularly planning to develop environmental technologies, to succeed in low carbon dioxide emissions and under limited resources condition, and promote employment, productivity and social cohesion (European Commission, 2010b).

The EU power industry policy orientation described above, which is focused on an integrated energy and climate change policy, where the objective is an economy that has a positive impact on the climate and is based on low carbon dioxide emission technologies and energy sources, in the foreseeable future does not exclude the use of any energy resource. Supporting the use of fossil fuels in the foreseeable future, rather than directly limiting (under the condition if the transfer to a low level carbon dioxide emissions economy occurs) a precondition is created for the promotion of a new industrial revolution (Figure 1), to promote the development of environmental technologies. It is important because environmental technology is like a potential for promoting growth, i.e., new and innovative environmental technologies can stimulate the growth of economy in various ways, while improving environmental indicators and conserving



Source: The Scottish Government, 2010

Figure 1. Dimensions of a Low Carbon Strategy

natural resources. Consequently, resources which can be used in other sectors of economy are freed, stimulating the economy as a whole. This in its turn helps to separate environmental pollution and the use of resources from economic growth, creating more opportunities for long-term economic development (Goossens and Meneghini, 2008).

The approach, which exists in the EU regarding questions about the use of fossil fuels in general, can be described by the phrase included in a publication by the EC ‘Combating Climate Change: the EU Leads the Way’ – ‘While curbing the use of fossil fuels may mean we live differently in the future, it does not mean sacrificing our standard of living, now or in the future. Technology can make a major contribution to more efficient use of energy in our everyday lives, in industry, in transport and in sustainable development’. The development of energy technologies of the EU includes renewable energies such as wind, biofuels and solar, as well as sustainable coal and natural gas power plants, including carbon dioxide capture and storage, and fuel cells and hydrogen, advanced fission power and fusion. All this should be done in combination with better use of energy in conversion processes, in buildings, industry and transport. With this approach, the EU addresses the issue related to the renewable energy cost reduction, the promotions of effective energy use and ensuring the leading role of European companies in the field of low carbon dioxide emissions technologies (European Commission, 2007 and the European Commission, 2008).

The central role of an economy with low carbon dioxide emission levels (Figure 1) will play electricity. This nuance justifies yet more the reason why in the foreseeable future the EU power industry policy will

be focused on increasing the use of RES in energy production, but at the same time also focusing on the development and future use of technologies based of fossil fuels. It should be stressed that it is not only related to the projected demand for electricity, but also the preparation of an energy infrastructure, to be able to integrate significant amounts of electricity generated from RES in a single European energy network (European Commission, 2011).

It is expected that from all of the energy resources, natural gas will be the one that will increase its use the most in the EU by 2020. That is, until the year 2020, an insignificant reduction in the use of coal and oil products by the EU is predicted, compensated by the increased use of natural gas. As a result, by the year 2020 natural gas could play the main role of energy resource in electricity production in the EU. As a clear proof of the adequacy for the natural gas consumption forecasts described above is the current trend in the use of natural gas in the EU, when the demand influenced by both the market forces and the preferences of member state policies is increasing rather rapidly. For example, from all of the newly installed electricity generation in the EU in the year 2010, the capacity of approximately 57 GW (gigawatts), just the use of natural gas equipment accounted for about 31 GW (The European Wind ..., 2011).

### Conclusions

The EU policy in the field of RES can be divided into two periods: from the end of 1990’s to the year 2008, when the promotion of RES use with indicative objectives in electric power supply and transport sector was in the focus of attention, and the second period starting from the year 2008, when the emphasis

changed to defining legally binding objectives based on a comprehensive regulation, covering the use of RES in all key energy sectors.

In recent years, the use of RES in the EU is being recognized more and more as an area that cannot only address the issues related to security of energy supply and sustainable development, concerning the limitation of GHG emissions, but also providing new jobs and an incentive for the development of new technologies (employment factors).

EU power industry policy progress focused on an integrated energy and climate change policy, promotes ambitious objectives regarding the use of RES, but at the same time focusing on the development and use of non-renewable energy resources in the foreseeable future.

By supporting the use of non-renewable resources in the foreseeable future, preconditions are created for the promotion of a new industrial revolution to encourage the development of environmental technologies, which in its turn can be the potential for economical growth.

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