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# **SOLUTIONS AND PROSPECTS FOR ENSURING ENERGY SECURITY**

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**Abstract:** The article is an attempt for scientific justification and analysis, which aim to determine the role of energy policy for the decisions and prospects for development of the energy sector in terms of its influence, benefits and disadvantages. Therefore, its subject is the policy implemented in the energy sector, which is used as a tool to guarantee energy security. Its object is the European Union as a whole and our country - the Republic of Bulgaria – as one of its member states. To achieve these objectives, the authors have made a retrospective analysis of the principles of energy policy analysing in detail the use of the regulatory means, frameworks and mechanisms as instruments of the energy policy of the EU and the Republic of Bulgaria, which aim to guarantee their energy security.

The main focus is on the effect and effectiveness of the use of such tools from the point of view of the sectoral energy policy in terms of their implementation and impact on the current energy policy, the prospects for guaranteeing energy security, and the overall development of the energy sector.

**Keywords:** regulatory instruments, regulatory mechanisms, energy policy, energy security, energy sector development.

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## Introduction

The development of the energy sector is determined and regulated exclusively by the policy of the government of the Republic of Bulgaria, which must be consistent with the general policy of the European Union (EU) in the energy sector.

The energy policy should be a goal-oriented activity supporting the sustainable development of the energy sector - in this case we refer to the energy sector of the Republic of Bulgaria and the EU. Energy security should be the primary objective and the main function of the energy sector governance, i.e. it must have a complementary governance function.

Therefore, energy policy has a key role in choosing the development and use of energy sources at regional, national and supranational levels.

Energy policy determines the energy mix of a given region or country (in our case – the EU and the Republic of Bulgaria), which means that energy policy determines the structure of the types of energy source used in the sector.

The development of the energy sector depends entirely on the implemented energy policy and, therefore, the development of the regions and the national economy as a whole also depends on the adopted energy policy.

In this article, we will try to present and analyse the principles of the implemented energy policy and its mechanisms and objectives.

We have to point out that the article was written prior to the beginning of the military conflict in Ukraine, the impact of which will be addressed further in another article in terms of a more detailed and comprehensive analysis of the current developments and a forecast for the energy security prospects in the face of such a threat.

### 1. The EU policy to ensure energy security

In recent years, the problems and tasks of the EU's energy policy have been focused on finding the means and solutions to guarantee (ensure) the security of energy supplies. To resolve this problem, member states should adopt a complex approach, which includes the transposition of the provisions of the main treaties by all member states and, more specifically, of Article 194 of the Treaty on the Functioning of the European Union (TFEU).

Certain energy security aspects are affected by some of the provisions of this treaty, such as:

- Supplies security: Art. 122 of TFEU;
- Energy networks: Articles 170 to 172 of TFEU;

➤ Coal – the topic is particularly sensitive and is subject to constant discussions in the EU governance bodies. It is provided for in Protocol 37 of the TFEU, where the benefits and financial consequences of the expiry of the European Coal and Steel Community (ECSC) Treaty in 2002 are discussed in detail in terms of the future policy of the EU regarding the use of coal a source of energy;

➤ Nuclear energy: The Treaty on the European Atomic Energy Community (Euratom) is the legal basis for most of the EU measures in the nuclear energy sector.

Other laws and regulations in the field of EU's energy policy are:

➤ Internal energy market: Art. 114 of TFEU;

➤ Foreign energy policy: Articles 216 through 218 of TFEU.

The enforcement of the TFEU has actually shown a lack of consolidation and mutual assistance in the energy sector among the member states in terms of supply of energy and energy resources. This was particularly evident during the natural gas energy crisis in the EU in 2009, which was caused by the interruption of gas supplies due to a dispute between Russia (Gazprom) and Ukraine (Naftogaz) (European Parliament, Energy Committee, 2015).

The amended Treaty of Lisbon amending the Treaty on European Union and the Treaty establishing the European Community includes a clause (Article 176A) that clarifies the scope and clarifies that the main aims (objectives) of the EU energy policy are to: ensure the creation and functioning of the single energy market; ensure security of energy supply in the EU; promote energy efficiency and energy saving of production, etc., as well as promote the development the capacity for energy production from renewable energy sources (RE); promote the interconnection of energy networks (Official Journal of the EU, Article 88, 12.2007).

The TFEU also provides for the EU energy sector policy in certain specific areas, such as a policy of shared competence. In fact, this is an indicator that the policy in these areas is for a transition to a common policy in the energy sector of all EU member states. The treaty also clearly states that, despite this common EU energy policy, each member state shall have the right to independently "determine the conditions for exploiting its energy resources, its choice between different energy sources and the general structure of its energy supply." (TFEU, Article 194, paragraph 2).

Compared to the EU Constitution, the Treaty of Lisbon contains essentially the same provisions, but adds a new element - the interconnection of energy networks.

In the amendment to the Treaty of Lisbon, there is also a decision on the actions of the EU member states in a state of energy crisis (paragraph 1 of Art. 100). This paragraph sets out activities aimed at ensuring a normal

economic status of the energy system of the member states. Or, more precisely, it refers to activities in the event of serious difficulties in the supply of certain basic energy resources (products) related to the normal work process of the energy industry. The paragraph limits measures relating to the security of energy supply to emergency situations only (Official Journal of the EU, Article 72, 12.2007).

In fact, the amendment to the Treaty of Lisbon amends the Treaty establishing the European Atomic Energy Community (EAEC). It provides for the continuation of EAEC in order to promote the development of the nuclear energy sector, i.e. the Treaty of Lisbon reflects the strategic objective of the EU energy policy for development of the nuclear energy sector.

It would be wrong to claim that until the entry into force of the new treaty, the EU had not developed an energy policy due to the fact that taking measures in the field of energy has long been set as part of the activity of the European Community.

The amendment of the Treaty of Lisbon expresses the growing importance of energy as a political and economic issue. The Treaty demonstrates that energy market policies and energy efficiency are interrelated.

Common threats to EU energy security require joint response.

Competition for the supply of energy resources among member states will not only have a negative impact on the integration processes, but will also be detrimental to the EU's competitiveness on the global energy markets.

Ensuring the energy future of the EU requires a new consensus of the member states, which should be in line with the adopted energy policy and aim accelerated development of the energy sector. The Treaty of Lisbon is only the beginning. In implementation of the common energy policy of the EU, TFEU sets a large number of objectives that are necessary to achieve efficiency in the energy sector.

The common vision of the EU policy is based on a comprehensive integrated climate and energy policy. It imposes the following ambitious goals for the period until 2030: Reduction of greenhouse gas emissions by about 40% compared to their 1990 levels; Achieving a growth of up to 32% of the relative share of primary energy produced by renewable energy sources of all energy consumption in the EU; Achieving an increase in energy efficiency of 32.5% by 2030; Ensuring a degree of interconnection of at least 15% of all electricity networks (systems) in the EU (Integrated Climate and Energy Policy of the EU, 2018, A).

To achieve these ambitious goals, on February 25, 2015, the European Commission (EC) published a framework strategy for a resilient common energy union. It aims to establish a common energy union of the member states, whose role is to provide households and industry in the EU with secure,

sustainable, competitive and affordable energy supplies. Within the scope of the European common energy policy, on November 30, 2016, the EC published the Clean Energy for all Europeans package. It includes eight legislative acts on the common energy union, the electricity market design, the energy efficiency measures, production of energy from RES, the regulatory framework and the rules for regulating the supply of energy from RES as well as the EU agency for cooperation between regulatory bodies in the energy sector. According to the provisions of this European regulation, EU member states are required to prepare 10-year integrated national plans in the field of energy and climate for the period 2021-2030, to submit a report on their sectoral development every two years, as well as to develop coherent national long-term strategies to achieve the goals of the Paris Agreement (Integrated Climate and Energy Policy, 2018, B).

### **1.1. Development of the internal energy market of the EU**

The creation of a fully integrated and effectively functioning internal energy market of the EU ensures affordable prices for energy services (energy products) and creates prerequisites for increasing the share of investments in green energy, ensures the security of energy supplies and creates an opportunity to offer the cheapest, financially profitable option to achieve neutrality from the point of view of climate change. The regulatory framework for the EU's internal energy market was first introduced in the EU's Third Energy Package (2009–2014). It covers five areas: unbinding; independent national regulators; cooperation; EU Agency for Cooperation of Energy Regulators (ACER); and regulated (fair) retail markets. Other regulations in this field include the Regulation on the integrity and transparency of the wholesale market and the Trans-European Energy Networks (TEN-E) policy based on the Regulation on: Guidelines for trans-European energy infrastructure.

The Fourth Energy Package (2015-2020), entitled "Clean energy for all Europeans" is focused mainly on the structure of the electricity market (Electricity Directive, Risk Preparedness Regulation, ACER). It also provides new regulations for energy storage as well as an incentive for consumers. They aim to contribute to increasing the efficiency of the internal energy market and also address the topic of the UK's exit from the EU (Internal Energy Market and EU Factsheets).

### **1.2. Energy efficiency**

The energy efficiency policy of the EU is implemented through the EU Energy Efficiency Directive. It includes a set of mandatory legal measures that aim to help the EU achieve its goal for 20% energy efficiency by 2030. This Directive also includes targets to increase energy savings as well as many policy

and legal frameworks regarding energy efficiency. It provides for renovations activities that aim to increase energy efficiency, mandatory energy certificates for buildings, minimum energy efficiency standards for different types of products, energy efficiency labels and smart meters. The Energy Efficiency Directive also defines consumer rights. As a result of the implementation of the revised Energy Efficiency Directive (December 2018), the overall EU target for 2030 was increased to 32.5% (compared to the 2007 forecast models for of 20% until 2030). Perhaps the effectiveness of achieving energy efficiency is the reason why the EC proposed a revision of the Energy Efficiency Directive as part of the European Green Deal and published its roadmap for energy efficiency assessment on 3 August 2020 (EU Energy Policy - General Principles, A).

In the amended Directive relating to the energy performance of buildings, roadmaps with indicative milestones for the period up to 2030, 2040 and 2050 are defined. Also long-term strategies for Member States to subsidize the renovation of the national building stock of residential and non-residential buildings (public and private) with an ambitious goal: to achieve a highly energy-efficient and decarbonized building stock by 2050. Furthermore, in October 2020, the EC presented the new strategy for starting a wave of building renovation in the EU. It aims to double the annual rates of energy renovation over the next ten years (EU Energy Policy – General Principles, B).

The European Ecodesign Directive and the Energy Labelling Framework Regulation establish the ecodesign and energy labelling requirements for individual product groups (Energy Efficiency Fact Sheet).

### **1.3. Energy from RES**

A renewable energy source is any means to generate electrical energy derived from wind energy, solar energy, land and sea installations, hydroelectric and ocean energy, geothermal energy as well as biomass and biofuels. The main benefit from RES is that they could reduce the strong energy dependence of the EU. But in reality the effect is still very mild. Energy markets are unable to provide the desired level of renewable electricity in the EU. In order to increase the share of the RE sector, national support grants and EU funding schemes are needed. One of the main priorities is to increase the degree of diversification of the EU's energy supply and to develop local energy resources. EU policy on RE is implemented through the Renewable Energy Directive. It set as a mandatory overall goal to reach at least 32% of electricity produced from renewable sources by 2030. To achieve this goal, the EU implements various strategies to promote the use of RE (Renewable Energy Fact Sheet).

#### **1.4. Guaranteeing the stability of foreign relations in the energy sector of the EU**

In order to ensure the stability of the policy on external relations in the energy sector, the EU has set up an Information Exchange Mechanism.

In practice, this system aims to improve the coordination between the EU member states and non-EU countries, as well as to ensure compliance with EU regulations and regulations. In general, when implementing the Information Exchange Mechanism requires all EU member states to submit to the EC for assessment and analysis all their current international treaties and agreements in the energy sector. In order to carry out the normal operation of the mechanism, a certain level of information exchange between EU member states is required (EU Energy Policy – general principles, B).

The main priority in EU policy in the energy sector is the diversification of energy sources and the guarantee of energy security by applying the principles of solidarity and cooperation between member states and strengthening the diversification of energy supplies, as well as supporting the development and use of local energy resources. The main goal in the implementation of this policy is to ensure the security of energy supplies, which means ensuring the continuity and adequacy of energy supplies from all types of sources and for all consumers.

#### **1.5. Increasing the energy security in the EU**

To achieve this objective, the EU has adopted a policy to increase the energy security, which includes the Clean Energy for All Europeans package and is explicitly provided for in the Regulation on Risk-preparedness in the Electricity Sector.

The implementation of this regulation does not require EU member states to strengthen their cooperation in the energy sector. This normative condition is actually applied as a prevention in the event of an energy crisis, and more specifically a crisis in the supply of electrical energy. In reality, this regulation follows the principle the "electricity is directed where it is most needed". In practice, its implementation ensures that member states introduce and implement the appropriate mechanisms and tools for preparation for, prevention and management of possible crises in the supply of electricity as a sign of solidarity and transparency (EU Energy Policy - General Principles, D).

Considering the exceptional importance of natural gas and oil products for EU energy, the energy policy is largely aimed at securing energy supplies of such products. This policy is implemented through various regulations and measures that are intended to guarantee the EU energy security. They are aimed at ensuring that adequate energy security risk assessments are made and prevention plans are developed in the event of energy security emergencies.



These tasks of energy security are set for implementation in the Gas Supply Security Regulation as guarantees for the security of natural gas supply. It sets higher levels for prevention, solidarity and crisis response mechanisms for the EU member states. The Oil Stocks Directive requires Member States to maintain minimum oil stocks corresponding to the average daily net import over a period of 90 days or the average daily domestic consumption over a period of 61 days. There is also an addendum which refers to the extension of the scope of application of the Natural Gas Directive, so that gas pipelines to and from third countries are now included in the addendum, including both existing and future gas pipelines. The addition of the Natural Gas Directive ensures that the rules governing the EU's internal gas market are applied from the point of view of the gas transmission network between a Member State and a third country with derogations for the existing gas pipeline network. There is also a Directive on Safety of Offshore Oil and Gas Operations. In response to the gas crisis in Ukraine (when natural gas supplies to Ukraine and from there to the EU were discontinued by Russia in 2009), a Regulation was created, which advocated increasing regional cooperation between member states, drawing up regional plans for prevention and for action in emergency situations, as well as a solidarity mechanism to ensure the security of natural gas supplies (EU Energy Policy – general principles, E).

Another important element in the field of energy policy is the part of the European Green Deal (i.e. the proposed Just Transition Mechanism) that provides actual aid to regions with high consumption of coal and high carbon emissions in their energy transition towards a low-carbon economy.

The policy for the development of the energy system infrastructure is another essential point that is of great importance for the sectoral development of the EU's energy sector. Its goal is to establish Trans-European Energy Networks (TEN-E) identifying nine priority corridors (four gas corridors, four electricity corridors and one oil corridor) and three priority thematic areas (electricity highways, smart energy grids, cross-border carbon dioxide grids) to help increase the degree of connectivity and development of EU energy networks (EU Energy Policy – general principles, F).

### **1.5. Scientific research, development and demonstration projects to support the development of EU's energy sector**

This is a very important and essential aspect of energy policy as it is entirely committed to the innovativeness of the energy sector. It is a well-known fact that innovation increases the competitiveness and profitability of the economy.

From this point of view, the energy policy of the EU has drawn up:



The European Strategic Energy Technology Plan (SET Plan) aims to accelerate (i.e. achieve in the shortest possible period) the energy transition, which, together with the introduction of low-carbon technologies, will contribute to a climate-neutral energy system. It defines ten guidelines for scientific research and innovation (renewable technologies, minimization of technology costs, new technologies and services for customers, resilience and security of energy systems, new energy-efficient materials and technologies for buildings, energy efficiency for the industry, competitiveness in the global battery sector and e-mobility, renewable fuels and bioenergy, carbon capture and storage, and nuclear safety), which cover the entire innovation chain, including financing and the regulatory framework, and have a common governance structure (EU Energy Policy - Common Principles, G).

Another point in the energy innovation policy of the EU is that electricity storage devices are defined as key technologies that contribute to building a low-carbon economy. This is why the Strategic Action Plan in the field of batteries aims to build a global integrated, sustainable and competitive industrial base for batteries (EU Energy Policy - General Principles, H).

#### **1.6. The “Fit for 55” Package**

As global processes related to climate change are very dynamic, in recent years, a prerequisite for a key priority in EU policy has emerged, which has given a new impetus to climate policy and action.

This EU policy aims to achieve climate neutrality and is expressed in the launch in December 2019 of the European Green Deal (EU Regulation - 1999/2018).

With the European Green Deal, the EU is working towards revising its legislation in the fields of climate, energy and transport within the framework of the so-called "Fit for 55" package, which aims to bring the current legislation in line with the EU's goals in the field of climate for the period from 2030 to 2050.

The package includes:

- **European Climate Law**

It aims to enforce legislation **aiming to achieve climate neutrality of the EU by 2050**. This is a new EU target to reduce net greenhouse gas emissions by at least 55%, achieve a greater volume of net carbon sinks by 2030 compared to 1990 levels, according to European Council guidelines of 10-11 December 2020 (European Council of the EU, A).

The regulation establishes a European Scientific Advisory Board on Climate Change, which will provide independent scientific opinions and reports on EU climate action. It envisages that in the coming years an intermediate goal

for the year 2040 will be set in relation to the climate (European Council of the EU, B).

- **EU Climate Adaptation Strategy (June 2021)**

The strategy outlines the long-term vision of the EU as a climate-resilient society fully adapted to the inevitable consequences of climate changes by 2050.

The measures provided for in the strategy also include Political guidelines of the Commission for the implementation of the strategy. They also provide guidance on the presentation of an EU communication on adaptation prior to UN's Climate Change Conference. In April 2020, the Council adopted a new regulation to reduce the risk of water shortages for agricultural irrigation. It sets rules that aim to help Europe adapt to the effects of climate change. The regulation, which is fully in line with the circular economy, facilitates the use of treated urban waste water for irrigation in agriculture, **thus** improving water availability and helping to prevent food shortages (Council of the EU, C).

In practice, the EU Climate Change Adaptation Strategy will help the EU to be better prepared to deal with the effects of climate change.

- **CO<sub>2</sub> emissions from transport**

((We include the transport sector in the material because its development as a consumer of energy resources, products and services also refers to the development of the energy sector.)

In April 2019, tougher emission limits for cars and vans were enforced to ensure that, after 2030, all new vehicles shall emit less CO<sub>2</sub> on average compared to 2021.

In June 2019, limit values were adopted for trucks and other heavy transportation vehicles. New rules will require manufacturers to reduce CO<sub>2</sub> emissions of all new trucks compared to the 2019 levels.

- **The EU cap-and-trade of emissions system**

In February 2018, the EU adopted revised rules for the EU cap-and trade of emissions (CTE) system. Established in 2005, it was the world's first major carbon market and remains the largest one. This scheme sets a cap on CO<sub>2</sub> emissions from heavy industry and power stations. The total volume of permissible emissions is distributed among enterprises in the form of tradable permits.

In December 2019, the EU and Switzerland agreed to link their emissions trading schemes. This agreement will be of mutual benefit to the EU and the Swiss Confederation, as the linking of cap-and-trade systems can increase opportunities to reduce emissions and improve the cost-effectiveness of emissions trading (European Council of the EU, D).

Greenhouse gas emissions from sectors outside the scope of the EU CTE System are regulated by the so-called Effort Sharing Regulation, which sets

binding annual greenhouse gas emission reduction targets for member states for the period 2021 – 2030 (European Council of the EU, E).

The regulation aims to ensure that these sectors contribute to reducing greenhouse gas emissions. These include the building stock, agriculture (non-CO<sub>2</sub> emissions), waste management and transport (excluding air and international maritime transport) (European Council of the EU, F).

- **Clean energy**

This part of the Climate Change Regulation aims to have a direct impact on the energy sector transition. In practice, it turns out that three quarters of greenhouse gas emissions in the EU are due to the production and consumption of energy. The EU is working towards the decarbonisation of the energy sector, which is a central element of the environmental transition.

In December 2020, the European Council adopted new measures and regulations regarding the strategies for renewable energy from offshore installations and hydrogen. EU member states are required to submit and regularly update their national energy and climate plans and disclose their contribution to energy efficiency and renewable energy targets and emission reduction targets (European Council of the EU, G).

In relation to the fight against climate change and as part of the European Green Deal strategy, the Council also established additional policy actions. These include the Just Transition Mechanism, the Farm to Fork Strategy, the Biodiversity Strategy and the European Industrial Strategy (European Council of the EU, H).

## **2. Bulgaria's policy for ensuring energy security**

Logically, the energy policy of all member states is harmonized and consistent with that of the EU.

The energy policy in our country (the Republic of Bulgaria) is implemented by the National Assembly (NA) and the Council of Ministers (MC), according to Article 3 of the Energy Act (EA). The energy policy of the state is implemented out by the Minister of Energy. The legal framework of the policy implemented in the energy sector is laid down in the Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030, with a horizon until 2050. The Strategy is adopted by the National Assembly and is fully consistent with the EU Strategy. It is implemented by the government in the person of the Minister of Energy and is specified in the Integrated plan in the field of energy and climate of the Republic of Bulgaria 2021 - 2030" (IPFEC). It complies with the IPFEC of the EU, and was approved by the National Assembly of the Republic of Bulgaria. The regulatory activity of the

energy sector is carried out by the Energy and Water Regulation Commission (EWRC). It is an independent specialized government body that regulates the activities (processes) in the energy sector in accordance with the provisions of the Energy Act (EA) and the Renewable Energy Act (ZEVI), as well as the water supply and sewerage (B and C) services in accordance with the provisions of the Regulation of Water Supply and Sewerage Services Act (RWSSSA). The Management Board of EWRC is appointed by the National Assembly of the Republic of Bulgaria.

The energy policy of our country (the Republic of Bulgaria) over the years has relied heavily on the development of nuclear energy. The development and control of nuclear energy is carried out by the Nuclear Regulatory Agency (NRA) and in fact the state regulation of the safe use of nuclear energy and ionizing radiation and the safe management of radioactive waste and spent nuclear fuel is controlled by the Chairman of the NRA.

For the implementation and control of the energy policy, the "Agency for Sustainable Energy Development" (AUER) was created as an auxiliary body. AUER is an administrative body under the Minister of Energy. It implements the national (state) policy on increasing energy efficiency and stimulating the production and consumption of energy from renewable sources.

The policy of the previous Energy Strategy of the Republic of Bulgaria until 2020 assumed five strategic initiatives in this area: creation of a single EU energy market; construction of the Southern Stream Gas Corridor for transit and supply of natural gas from the Caspian Sea region and the Middle East; liquefied natural gas to ensure diversification and reduce the energy dependence of both the Republic of Bulgaria and the EU; completion of the Mediterranean Energy Ring linking Europe with the Southern Mediterranean; priority construction of transit networks for natural gas and electricity along the North-South axis in Central and South-Eastern Europe. In fact, none of these strategic goals of the implementation of the adopted policy in the energy sector and the energy strategy adopted by the government has not been achieved yet, i.e. the national interest of the Republic of Bulgaria and that of the EU and their citizens is not protected.

The implementation of the energy policy is carried out according to the Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030 with a horizon of 2050. It sets the following main priorities for implementation: Guaranteeing energy security and sustainable development of the energy system; Achieving and developing a competitive energy market in which consumer rights are protected; Increasing energy efficiency along the entire chain of vertical integration of energy (in processes from production to final consumption of energy); Achieving sustainable development of the energy system or achieving the so-called "clean energy" and decarbonization of the

economy; Introduction of innovative technologies to improve the sustainable development of the energy sector (Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030 with a horizon of 2050, A).

With a view to implementing the national priorities in the energy sector by 2030 and with a horizon of 2050 as well as the contribution of the Republic of Bulgaria to the implementation of the common European policy in the energy sector, the current Energy Strategy of the Republic of Bulgaria sets the following goals to be achieved by 2030: Reduction of the primary annual energy consumption by 27.89% from the base forecast value of PRIMES 2007; Reduction of the final annual energy consumption by 31.67% from the base forecast value of PRIMES 2007; Achieving a 27.09% relative share of renewable energy in the gross final annual energy consumption; Achieving a minimum of 15% interconnection of the energy system. Key factors in determining the national priorities and goals for energy development until 2030 are: Implementation of EU policies and objectives in the field of energy and climate; Compilation of a forecast analysis for the country's macroeconomic indicators; Taking into account certain characteristics (energy security, energy structure, dominance of energy sources, etc.) when determining the national energy mix, the provision of local energy resources, guaranteeing energy security, level of competitiveness of the economy, as well as the social impact of the transition to zero-carbon energy; Carrying out a forecast analysis for annual energy production and consumption in the country and the region (Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030 with a horizon until 2050, B).

### **3. Energy security in times of pandemics**

This is a new type of challenge in terms of ensuring global energy security. The pandemic had great negative effects for the global economy and industrial production. It is an example that "a pandemic can bring economies and nations to their knees" (Koev, K, 2020, A).

For an economic system to operate normally, all its structure-determining sectors should operate efficiently, albeit at a slower pace and regardless of the challenges faced by the human factor. This is of primary importance and a major task for ensuring energy, economic, national and international security as well as a top priority for sustainable development. The industries that must function during the pandemic are:..... the energy sector – it must function at 100% (Koev, K, 2020, B).

The policy undertaken by our country in this direction is in line with the EU policy and the global aspiration to guarantee the normal functioning of the

main (key) structure-determining branches of the economy. It is also the topic of the discussion on guaranteeing energy security.

The essence of the national policy to ensure the security of the energy sector during a pandemic includes tax reliefs and support (subsidization) in different forms to the companies in the energy sector. This support is actually based on the economic measures defined by the EC in "Immediate Measures to Protect Consumers and Businesses" (European Commission, 13 Oct. 2021).

#### **4. Solutions and prospects for guaranteeing energy security through the implementation of a policy for the development of the energy market**

How will the implementation of the policy for the development of the energy market in the Republic of Bulgaria contribute to ensuring energy security?

In retrospect, the policy of the Republic of Bulgaria is in line with the EU policy for building a common internal energy market. It is aimed at forming a common liberalized market of energy products and services and complies with the rule that the competition on the market for a given energy product (service) will result in a reduction in its price.

The reduction of the price of energy services (products) will become a prerequisite for increasing the competitiveness and accelerating the development of Bulgaria's economy. Also, the liberalized market aims to eliminate the monopoly on the prices of energy services (products). Everything said so far will be a prerequisite for reducing the risks and ensuring energy security.

On the other hand, the liberalization and development of the energy market, and more specifically the electricity market, will "suggest" which type of electricity generation facilities (TPP, NPP, RES, etc.) will be preferred for the energy mix, i.e. the energy source (type of power plant) offers electricity at a lower price will be more preferred and, accordingly, this type of energy will have a larger share in the energy mix. Accordingly, the energy source that offers the product/service (electricity) at a lower price is more profitable and more preferred.

Moreover, the development of the electricity market is a prerequisite for a "psychological shock" from a boom of the price of electricity prices, due to the largely inefficient production of electricity. The cause of this inefficiency is the implementation of the Climate Changes regulation and the payment of "green quotas" by TPPs as well as the ambiguity in the energy policy for the future type of alternative energy capacities. For example, the use of RS as the main alternative source of energy is absurd. Presently, Photovoltaic Electric

Power Plants (PEPP) cannot ensure a net output of energy 24 hours 365 days a year that would be sufficient to replace the thermal power plants. The net energy capacity of PEPPs is 24.9% and that of TPPs is 40.2% (U.S. Energy Information Administration).

The lack of clarity in the current energy policy also makes it impossible for household consumers to enter the liberalized market. The unpredictable "movement" of electricity and energy product prices does not allow enterprises and industries to draw and implement any sound business plans as well as to forecast the productions cost of their products, which in practice can lead them all to bankruptcy.

In summary, the ambiguity in the energy policy creates risks for the energy security and can result in a bankruptcy of the national economy.

The steps taken by our country to create a common liberalized energy market are through: the establishment of Independent Bulgarian Energy Exchange EAD (IBEX) (a subsidiary of Bulgartransgaz EAD) - a liquid gas exchange on the Balkan Gas Hub of the first private company Bulgarian Energy Trading Platform Ltd.

The effect from the energy market reforms on the prices of energy services (products) will be assessed using the energy poverty indicator.

In general, energy poverty refers to a set of conditions in which "certain citizens or households are unable to heat or cool their homes, or provide energy for other necessary services in their homes at an affordable cost." It is "the inability to realize basic capabilities as a direct or indirect result of a lack of affordable, reliable and safe energy services and taking into account available reasonable alternative means of realizing those capabilities" (Wikipedia, Energy Poverty).

In reality, if the value of the energy poverty indicator decreases, then the policy was correct. Note that the Republic of Bulgaria has the highest energy poverty indicator (20.6% of the country's population) in the EU for 2023. Compared to the previous year, the value has increased by 21.3% (NSI data).

Considering the energy poverty indicator values we can draw the conclusion that the policy in the energy sector is not effective since the energy poverty is the indicator of energy policy efficiency. Therefore, the development of this situation depends on political will and decisions.

Energy poverty affects the standard of living of the population. When the indicator value decreases, the standard of living also decreases.

When analysing the problem, attention should be paid to the national goals set to ensure the energy security in our country. They are defined in the Energy Strategy of the Republic of Bulgaria and are related to:



➤ Measures to reduce energy dependence, which include: Accelerated diversification of energy sources and energy supplies from third countries; Finding ways to increase the capacity to use local resources by developing local natural gas production. In practice, the actions in this direction are related to studies for new deposits of oil and natural gas, including in the Black Sea shelf; another way is to use more efficiently the potential of RS. What is characteristic of the development of renewable energy as a local resource, besides reducing energy dependence, is that it increases the guarantee of energy security as well as improves the environment; Activities to increase the diversification of natural gas supply sources by increasing the connectivity of energy networks with neighbour countries and supplies from the Caspian region through the Southern Gas Corridor, of liquefied natural gas from the Mediterranean region and from other countries through a liquefied natural gas terminal;

➤ Development of the natural gas supply infrastructure;

➤ Increasing the sustainability of the national energy system by preserving the role of "balancer" of local energy resources (coal) to guarantee energy security as well as of the existing production capacities of thermal power plants in accordance with the requirements of environmental legislation; Development of nuclear energy, which is considered a local energy source; Maintenance and development of the transit infrastructure of energy resources, sources and products; Optimization of consumption in the energy system through development of energy markets; Increasing the electricity and natural gas storage capacity by developing existing and building new storage facilities;

➤ Modernisation of the electricity distribution infrastructure, etc.

Retrospectively, the statistical data of the international index of energy security risks for the Republic of Bulgaria according to the OECD show an increase in the degree of assurance of energy security. This means that the implemented energy security policy is correct.

The Republic of Bulgaria is included in the International Energy Security Risks Index. Besides our country, members of this organization are 75 countries. The membership of the Republic of Bulgaria enables the Index of the risks of its energy security to be determined every year (Annual Determination of the Risk Index for Energy Security). It reflects the emergence of important problems in the global energy markets, while at the same time determines how major energy producers and consumers deal with the impact of these emerging changes related to ensuring energy security. In reality, with its membership in the International Energy Security Risks Index the Republic of Bulgaria is able to ensure its awareness of the level of its energy security. This information can be used to develop and implement a pragmatic energy policy that corresponds

to the needs for the development of the energy sector (Energy security in business, Andreev, A. 2021).

## **Conclusion**

The problems and tasks faced by EU energy policy in recent years are related to the search of solutions to ensure energy supply security. To resolve them, member states should use a complex approach. The solution was found in terms of an agreement among the member states expressed in Article 194 of the Treaty on the Functioning of the European Union (TFEU).

The development of the energy sector of our country (the Republic of Bulgaria) is determined by and depends entirely on the policy of the national government and is in line with the general energy policy of the EU.

The national energy policy is implemented by decisions of the National Assembly and the Council of Ministers according to Article 3 of the Energy Act. The country's energy policy is enforced by the Minister of Energy. The legal framework of the policy implemented in the energy sector of the Republic of Bulgaria is provided for in a regulation entitled "Strategy for Sustainable Energy Development of the Republic of Bulgaria until 2030 with a horizon of 2050".

The Strategy is adopted by the National Assembly and is fully compliant with the EU Strategy.

The policy of the Republic of Bulgaria is in line with the EU policy for building a common internal energy market. This policy is aimed at creating a common liberalized market for energy products.

The national goals for increasing the guarantee of energy security are: Increasing the diversification of energy sources and supplies from third countries; Infrastructure development in the gas distribution sector; Increasing the flexibility of the national energy system by preserving the key role of local energy resources (coal) and their use in existing production facilities in accordance with the requirements of environmental legislation; preserving the role of nuclear energy, which is considered a local energy source; maintaining and developing the transmission capacity of electricity and natural gas transmission networks; optimization of consumption in the energy system through the development of energy markets; increasing the storage capacity of electric energy and natural gas by developing existing and building new storage facilities; modernization of electricity infrastructure, etc.

All measures related to the development of the energy sector should be aimed at "clear decisions for the implementation of a targeted and pragmatic energy policy".

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