

## ON SOME ASPECTS OF THE EUROPEAN ENERGY TRANSFORMATION

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**Abstract:** *EU initiatives in the field of energy transformation, climate change, and decarbonization in recent years have often been criticized. The reason is the new evidence that the envisaged measures have many unexpected and unpredictable consequences of different natural - economic, and geopolitical conditions. The article discusses some of the main problems on the way to achieving the goals set after 2020 in the context of realizing the task of ensuring the conditions for the energy transition.*

**Keywords:** *Energy, Transformation, Hydrocarbons, Geopolitics, Renewable Energy Sources, Alternative Energy, Security.*

### **Introduction**

The problem of energy supply is one of the most urgent and discussed topics of our time. In the short term, experts predict an acute shortage of energy resources. The reason for this is the ever-increasing consumption of energy around the world and a sharp decline in global growth in energy production. In addition, as of November 15, 2022, the world population reached 8 billion people. This is evidenced by the data of the United Nations Population Fund (UNFPA)<sup>1</sup>. At the same time, climate change is an existential threat to humanity. These trends affect a number of EU member states and the EU as a whole due to the fact that today there is an increase in the role of the common EU energy policy in international relations. The global measures taken to combat climate change are still insufficient to achieve the long-term goals of the Paris Agreement and the 2030 Agenda for Sustainable Development. The increase in demand for energy resources (gas, oil, uranium, coal, etc.) is becoming natural., which reinforces the need to develop ways to diversify the energy supply. In this context, the EU is working to accelerate the energy

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<sup>1</sup>М. Arslan. Численность населения Земли достигла 8 млрд человек <https://www.aa.com.tr/ru/>

transition, including through the promotion of energy efficiency and renewable technologies.

### ***Research Basis***

Energy topics, being the most relevant today, are of great research interest all over the world. Among foreign experts in this field, one can list such as B. Barton, D. Zillman, T. Kassir, S. Ledgerwood, P. Mantysaari, E. Monaghan, L. Montanaro-Jankowski, C. Regwell, J. Sharples.

Among the experts who directly study the role of renewable energy sources in the global energy sector, one can note the works of such specialists as T. Weyer, A. Wiese, M. Graziani, D. Yergin, M. Calsmith, A. Machulak, J. Twydell, V. Streicher, D. Reicher.

Among Russian scientists dealing with energy issues, it is worth mentioning such experts as Yu. V. Borovsky, O. V. Butorina, V. V. Bushuev, I. V. Gudkov, I. V. Gudkovskaya, N. Yu. Kaveshnikov, L. S. Kosikova, A. A. Kokoshin, A. A. Makarov, I. G. Pashkovskaya, Yu. K. Shafranik, and T. A. Shakleina.

### ***Research Methodology***

In the presented study of transformational processes in the field of energy development of the European Union, methods of comparative analysis were used to identify trends and qualitative characteristics of development, a political-descriptive method that provided systematization and general analysis of primary factual information. Also, methods of systemic, axiological, geopolitical, and civilizational analysis.

### ***Analysis and results***

Analyzing the studies of various experts, one can see a large number of works devoted to the study of the future of traditional, alternative, and other types of energy.

The trend of the current stage of energy processes is the acceleration of the decarbonization of world energy, caused by the activation of climate policy in many countries, which in recent decades has led to a slowdown in the growth of global demand for fossil fuel energy. There are a lot of scenarios for further energy development, and they are very different.

The world energy industry in the 21st century has entered a period of gigantic transformations. Today, the world is going through a period of serious global

changes, caused, among other things, by the COVID-19 pandemic, for which no one was prepared. It has led to major problems with global value chains, resulting in the destruction of existing models of the world economy. This caused an unprecedented economic downturn around the world.

The role of energy resources on the modern international scale is growing exponentially, accounting for a large share in matters of global, regional and national security. Increasingly, the problems of demand for oil, gas and coal are being discussed, which, according to many experts, are losing their positions in the world energy sector. Global oil demand is estimated to have fallen by 9.1 million barrels per day in 2020. The COVID-19 pandemic has negatively impacted global economic activity by offsetting the growth in global demand for hydrocarbons, resulting in an annual decline of 6.4 million barrels per day in the first quarter of 2020 and 17.3 million barrels per day (year-on-year) in the second quarter of 2020 (OPEC estimates). Fossil fuels have taken the brunt of the fall in demand, with coal being the hardest hit source of energy <sup>2</sup>. Restrictions on economic activity led to a decrease in global demand for oil and coal as they stopped production. In addition to limiting economic activity, the reason for these processes lies in the acceleration of the decarbonization of global energy, caused by the activation of climate policy in a growing number of countries and the displacement of fossil fuels by renewable energy sources (RES) in the global energy mix <sup>3</sup>.

For example, Repsol, a Spanish oil and gas company, has created a buzz in the energy industry by vowing to achieve net zero emissions by 2050. Repsol plans increase its low-carbon power generation capacity to 7,500 MW by 2025 , reduce methane leaks, and start implementing special measures such as the introduction of carbon capture technologies. According to Repsol, in this way and using the best available technology, it can cut emissions by up to 70 percent. The remaining 30 percent will have to be offset by reforestation and other "natural sinks"<sup>4</sup>.

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<sup>2</sup> E.Jafarova . World energy markets in the context of the transformation of the world order.

<https://ru.valdaiclub.com/a/highlights/mirovye-energeticheskie-rynki/>

<sup>3</sup> I.A. Stepanov. Global energy transition - how not to get lost and find your place?

<https://roscongress.org/materials/globalnyy-energeticheskiy-perekhod-kak-ne-poteryatsya-i-nayti-svoe-mesto/>

<sup>4</sup> V. Sidorovich. Oil and gas concern Repsol will become a zero-emissions company by 2050.

<https://renen.ru/repsol-will-be-a-net-zero-emissions-company-by-2050/>

Following Repsol, BP (British Petroleum - transnational oil and gas company headquartered in London approx. auth.), recently announced that he intends to become "carbon neutral", to achieve a zero balance of CO<sub>2</sub> emissions (net zero) by 2050 "or earlier". According to BP's calculations, about 415 million tons of emissions will need to be "eliminated" to achieve the stated goal - 55 million tons from operations and 360 million tons contained in produced oil and gas. The company will also aim to reduce the carbon intensity of the products it sells by 50% by 2050<sup>5</sup>.

The Norwegian oil and gas concern Equinor on January 6, 2020, announced its new decarbonization plans. The company will reduce greenhouse gas emissions from its offshore and onshore oil and gas fields in Norway by 40% by 2030 compared to 2005 levels, by 70% by 2040 and to "near zero" by 2050<sup>6</sup>.

This list includes companies such as Eni, Shell, Conoco-Phillips, Occidental, Total (which is increasingly becoming a diversified energy company).

The oil and gas industry is directly and indirectly responsible for approximately 40% of all GHG emissions from human activities. Therefore, it is facing social and political pressure, growing demands for decarbonization from regulators and investors <sup>7</sup>.

Another factor hindering the development of the oil and gas industry is that the hydrocarbon market is very sensitive, and the slightest geopolitical tension affects even a small imbalance in supply and demand, causing destabilization of energy markets, which leads to unpredictable price behavior, the beginning of price wars in the struggle for consumers, redistribution of investments. And often the issue is politicized.

As mentioned above, restrictions on economic activity during the coronavirus pandemic have led to a drop in demand for hydrocarbons. Although according to the International Energy Agency (IEA) Oil 2020 report released in 2020, this impact of the current pandemic is short-term. The agency believes that this drop will be short-lived, and in subsequent years (until 2025 - the horizon of this report), oil demand

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<sup>5</sup>V. Sidorovich. BP promises to be carbon neutral by 2050. <https://renen.ru/bp-promises-to-become-a-carbon-neutral-company-by-2050-or-earlier/>

<sup>6</sup>V. Sidorovich. Equinor планирует достичь нулевого уровня выбросов от своей деятельности в Норвегии к 2050 году <https://renen.ru/equinor-plans-to-achieve-zero-emissions-from-its-operations-in-norway-by-2050/>

<sup>7</sup> Ibidem

will grow, albeit at a low pace, and already in 2021, growth will compensate for the fall in the current (2020) year <sup>8</sup>.

But fluctuations in the oil market began earlier. Turbulence in the global energy markets has been observed since 2014. Therefore, there has been talk for quite a long time about reducing the importance of hydrocarbons as energy sources of the future. The turnover of the oil industry, of course, is huge, but it is only a part of the global energy market, which also includes nuclear and alternative energy. Inter-fuel competition between traditional and non-traditional energy sources is growing. Experts note that energy markets are going through a period of transformation affecting many segments of their development, including the change of market players. Competition today is not only among the main energy resources, but also in the field of transportation: markets and directions of supplies are diversifying. According to Vitaly Bushuev, Director General of the Energy Strategy Institute (Russia), the trend towards the globalization of the world economy has exhausted itself and it has come to an end. This fully affects resource globalization, which is associated with the development of unconventional reserves and the development of renewable energy, which have made energy available in any country and for all consumers <sup>9</sup>.

Thus, global energy markets are rapidly transforming. Renewable energy sources are becoming more and more attractive to the energy systems of states for many reasons.

Undoubtedly, the transition to a low-carbon economy poses serious challenges to the global energy community, but at the same time it also creates new opportunities for economic growth based on renewable energy, hydrogen technologies, deep processing of raw materials and the implementation of green projects.

Measures to decarbonize and stimulate the energy transition are an essential element of public policy, especially in energy-deficient countries and regions of the world, in particular, in the European Union. In addition to concern for the global climate, the EU's decarbonization policy is aimed at solving the most important tasks

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<sup>8</sup>V. Sidorovich. Coronavirus factor. Peak oil consumption. <https://renen.ru/faktor-koronavirusa-pik-potrebleniya-nefti/>

<sup>9</sup> Transformation of the world energy. <http://neftianka.ru/transformaciya-mirovoj-energetiki/>

of ensuring national energy security, diversifying energy sources and technological re-equipment <sup>10</sup>.

The European Union today is on the way to the formation of a common energy space and resource self-sufficiency, mainly on the basis of renewable energy sources.

In December 2019, the European Council approved the European Green Deal, an ambitious long-term socio-economic development strategy developed by the new European Commission. The ambitious goal of achieving climate neutrality by 2050 was set “while improving the quality of life of EU citizens”, “strengthening resilience to external shocks” and “increasing the competitiveness of the entire Union” (The European Green Deal. Communication from the Commission to the European Parliament, the European Council, the Council, the European Economic and Social Committee and the Committee of the Regions. Brussels, 12/11/2019 COM (2019) 640 final, p. 3, p. 23.) <sup>11</sup>.

A few years earlier, in 2014–2020, when the role of ecology in the European energy industry was growing, in 2014–2015. two Framework Documents were adopted - a program on climate and energy for the period up to 2030, and a strategy for the formation of a sustainable Energy Union with a forward-looking policy in the field of climate change. These documents firmly linked the environmental factor with energy efficiency and the decarbonization of the economy. The signing of the 2016 Paris Climate Agreement in November 2016 was followed by the Clean Energy for All Europeans package, which took the form of regulations in 2018-2019. The EU has more ambitious goals until 2030, primarily related to increasing the share of renewable energy in the energy mix, improving energy efficiency and reducing GHG emissions. These documents paved the way for a profound transformation of the EU's energy policy<sup>12</sup>.

The pandemic has not thwarted EU plans for a green energy transition. In July 2020, the EU increased financial allocations for the climate agenda. It was agreed that the overall climate target of 30% would be applied to the total spending under

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<sup>10</sup> I.A. Stepanov. Global energy transition - how not to get lost and find your place?

<https://roscongress.org/materials/globalnyy-energeticheskiy-perekhod-kak-ne-poteryatsya-i-nayti-svoe-mesto/>

<sup>11</sup> Yu.Borovsky, O.Shishkina. PRIORITY OBJECTIVES OF THE EU ENERGY POLICY. Modern Europe, 2021, no. 3, p. 117–127. <http://www.sov-europe.ru/images/pdf/2021/3-2021/Borovsky-3-21.pdf>

<sup>12</sup> Yu.Borovsky, O.Shishkina. PRIORITY OBJECTIVES OF THE EU ENERGY POLICY. Modern Europe, 2021, no. 3, p. 117–127. <http://www.sov-europe.ru/images/pdf/2021/3-2021/Borovsky-3-21.pdf>

both the Multiannual Financial Budget – the EU budget for the period 2021-2027 of almost 1.1 trillion euros – and the recovery plan after the pandemic, with an allocation of 750 million euros <sup>13</sup>.

The energy transition requires a rethinking of many things. The European Union needs to carry out a huge organizational and legislative work. But the possibility of transformation is real, and activities in this direction are underway. For example, the World Economic Forum organized a special platform "CEO Action Group for the European Green Deal" as a means of international cooperation between representatives of governments, industry and business to promote the ideals and goals of the Green Deal <sup>14</sup>.

But the energy transformation also has a socio-economic meaning. We must not forget about the existing huge difference in the levels of energy development of different EU countries. For example, Poland, the Czech Republic and Hungary are heavily oriented towards coal. These countries do not support the Green Pact. In addition, it is not known how the provision of funding for this program will affect the standard of living of the population of the European Union. And this is just one example.

Along with the above factors, there is also a geopolitical factor. The Green Deal adopted by Europe is an attempt to change the European economy and consumption patterns, to strengthen national energy security, to overcome the intensified accumulated contradictions in the economic and energy systems, and many others. The solution of such fundamental tasks requires a radical reform of the European energy system, which, in turn, will affect the EU's relations with its neighbors, that is, deep geopolitical consequences will follow the new foreign policy and foreign economic course. European experts list some of them:

- The European Green Deal will have a number of profound implications that could negatively impact EU partners.

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<sup>13</sup> M. Siddi. European Green Deal and prospects for cooperation between the EU and Russia in the field of energy. <https://ru.valdaiclub.com/a/highlights/evropeyskiy-zelyenyy-kurs-es-rossiya/> 17.03.2021

<sup>14</sup> A.I.Gromov. Is a "blue" transformation of the energy transition possible in the "post-COVID" future of European energy? <https://energypolicy.ru/energoperehod-evropejskij-energitich/energoperehod/2020/13/22/> 09.12.2021



- The EU must prepare to overcome the geopolitical consequences in relations with its neighbors and partners (Russia and Algeria, as well as with global players - USA, China and Saudi Arabia)
- The bloc should work with oil and gas exporting countries to help diversify their economies
- The EU needs to improve the security of supplies of critical raw materials and limit dependence on other countries - primarily on China.
- We need to work with the US and other partners to create a climate club whose members will take similar frontier carbon corrective measures.
- The EU must set global standards for energy transformation, especially in the area of hydrogen and green bonds.
- EU should promote global coalitions on climate change mitigation
- The bloc is to create a global platform for the new economy <sup>15</sup>.

In turn, key participants in the global energy market refuse to speed up decarbonization and green transformation of economies. Saudi Arabia has taken a tough stance on this issue, regarding RES as unreliable. Asian countries have slowed down with the refusal to burn coal in order to switch to more expensive natural gas. The new German government announced an increase in the consumption of fossil hydrocarbons as an energy source, calling into question the ability of the world economy to quickly make an energy transition, and citing numerous obstacles along the way. Total Energies SE CEO Patrick Pouyanne stressed that an extended period of rising prices for fuels such as natural gas "could jeopardize the development" of alternatives <sup>16</sup>.

The Global Commission on Geopolitics in Energy Transformation notes that the geopolitical and socio-economic implications of the new energy age could be as profound as those that accompanied the transition from biomass to fossil fuels two centuries ago. These include changes in the position of states in the international arena, the emergence of new energy leaders, the growing diversity of energy actors, changing trade relations and the emergence of new alliances <sup>17</sup>.

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<sup>15</sup>Mark Leonard, Jean Pisani Ferry, Jeremy Shapiro, Simon Tagliapietra, Guntram Wolf. Geopolitics of the European Green Deal. <https://globalaffairs.ru/articles/geopolitika-zelyonogo-kursa/> 02/17/2021.

<sup>16</sup> O. Solovyova. Global energy is promised increased chaos. [https://www.ng.ru/economics/2021-12-07/1\\_8320\\_strategy.html](https://www.ng.ru/economics/2021-12-07/1_8320_strategy.html) 07.12.2021.

<sup>17</sup>V. Sidorovich. RES development, energy transformation and geopolitics. <https://renen.ru/the-development-of-renewable-energy-energy-transformation-and-geopolitics/>



### **Conclusion**

Thus, we can observe that the global and European energy markets are experiencing new challenges. And the Green Agenda is inevitable. Serious changes are taking place in the world energy system. And in the face of energy transformation, fossil fuel exporting countries need to think about their future today.

Summarizing a brief analysis of the situation with the European energy transformation, it can be noted that reformatting is quite possible. The scale of the tasks set in this direction in such a short time (2020) will still clarify the intentions of the European Union regarding the possible modification of the Green Pact.

Energy transition is a complex and lengthy process. The development of renewable energy sources, their large-scale deployment around the world will take much longer than expected. The transition to renewable energy will require new geopolitics from the European Union due to the fact that energy security has been, is and remains the main factor of economic and national security in global geopolitics and interstate relations. And the stability of energy supply has been and still is an integral element of energy security.

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