CLIMATE CHANGE, ENERGY AND ENVIRONMENT

UKRAINE'S PLACE IN THE COMMON ENERGY POLICY OF THE EU: A RECIPIENT OF PRACTICES OR AN INITIATIVE PARTNER?

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- Current Ukrainian energy challenges – attacks on the electricity supply network, seizing Ukrainian power plants, creating obstacles for gas transit, etc. – are directly connected to Russian aggression. They need a prompt response and can be overcome with a proactive financial and political stance on the part of the EU.
- Ukraine and its EU partners need a concerted search for alternative suppliers of key traditional energy resources to meet the needs of the market before full decarbonisation.

UKRAINIAN PRISM

FRIEDRICH EBERT STIFTUNG

CLIMATE CHANGE, ENERGY
AND ENVIRONMENT

UKRAINE'S PLACE IN THE COMMON ENERGY POLICY OF THE EU: A RECIPIENT OF PRACTICES OR AN INITIATIVE PARTNER?

Contents

INTRODUCTION

The European Union is phasing out reliance on Russian fossil fuels. This process is already posing difficulties for the population of member countries, causing an increase in tariffs and prices for energy and other goods. It comes against the backdrop of other global challenges, such as climate change and growing political instability worldwide. However long and painful the changes may be, this is Europe's price for protecting its freedom and security from Kremlin authoritarianism.

Ukraine, which is fighting against the Russian invaders for its sheer existence and democratic choice, also becomes a participant in the processes of the EU energy market. On the one hand, the aggressive plans of the Kremlin in general and the terror of Ukrainian citizens by Russians through the destruction of electrical facilities and energy networks make work with Western partners an actual matter of survival for Kyiv. On the other hand, Ukraine received the status of a candidate for joining the EU and in recent years has significantly integrated into the European legal field and its energy market.

With the entry of Ukraine into the common European space, the EU and its member-states will receive a partner and ally with significant opportunities in the field of energy. In this context, what exactly can Kyiv offer to Europe? What areas of energy cooperation between Ukraine and the EU are the most promising and important for the new reality? This analytical note is devoted to finding answers to those questions. It provides an overview of the conditions under which the EU and Ukraine enter into the period of energy transformation, as well as an analysis of in-depth interviews with Ukrainian and European experts regarding possible cooperation between Kyiv and Western partners in the relevant field.

Executive summary

- Russian energy supplies to Europe have been a major threat both to European energy resilience and political impartiality.
- The European approach to the role of Russian gas as "intermediate fuel" in the context of the Green Deal proved to be a strategic misstep.
- During 2019 – 2021 Ukraine acquired capabilities to efficiently integrate into ENTSO-E and became a productive partner for the EU in electricity generation. At the same, the country had been playing a crucial role in transiting Russian gas and oil to Central Europe – this condition is currently changing.
- Transfer to green energy and decarbonisation of the economy is a part of acquiring energy independence from Russian fossil fuels and subsequent negative political influence both for the EU and Ukraine.
- Current Ukrainian energy challenges – attacks on the electricity supply network, seizing Ukrainian power plants, creating obstacles for gas transit, etc. – are directly connected to Russian aggression. They need a prompt response and can be overcome with a proactive financial and political stance on the part of the EU.
- The further integration of Ukraine into the single energy market of the EU is the priority task of the country's authorities for the coming years. It will create additional supply options for consumers, development and income opportunities for producers, and sources of revenues for the state.
- Ukraine and its EU partners need a concerted search for alternative suppliers of key traditional energy resources to meet the needs of the market before full decarbonisation.

1

TAKE ENERGY WEAPONS FROM KREMLIN

Russia's full-scale invasion of Ukraine in February 2022 changed the political landscape in Europe and around the world. The Kremlin defied international law, the world order, and the norms of humanity. Moscow's actions threaten the Ukrainian state and nation with destruction, undermine democracy and freedom in EU countries, and create conditions for a food and economic crisis in many regions of the planet. Expecting to capture all of Ukraine in a few days, Russia hoped for a sluggish reaction from Kyiv's international partners, in particular from the European Union. This assumption was based on the system of hybrid influences that Moscow has been building and using in Europe for the past two decades.

The energy was almost key in the Russian strategy of subduing the EU states. By selling relatively cheap oil and gas to Western partners, Moscow ensured their economic growth and guaranteed loyalty to itself, even during aggressive actions against third countries. In addition, having the status of the main supplier of hydrocarbons to some EU states, Russia could use it as a tool to influence the situation within the bloc itself. Thus, as of 2020, more than 40% of all natural gas imported to United Europe came from Gazprom. In addition, Russian suppliers provided almost a third of all crude oil and more than half of all solid fuel imported into the EU from outside its borders[1].

Ukraine and some Central European states became convinced that Moscow uses energy as a weapon as early as the winter of 2008-2009. Then Russia reduced the volume of gas transit to the West through Ukrainian territory, putting Slovakia, Hungary, the Czech Republic, Moldova, and partially Poland, Romania, Austria, and Germany in a difficult position for several weeks. This situation became a signal for some countries in the region about the need to gradually abandon Russian fuel, which Moscow can use for blackmail. However, over the next decade and a half, the EU's energy dependence on the Kremlin only deepened. Its eloquent manifestations were the construction of the Nord Stream 2 gas pipeline, which continued despite constant warnings from Ukraine, Poland, and Lithuania[2], as well as the conclusion of a 15-year gas supply contract between Hungary and Gazprom, which effectively made Budapest hostage to Moscow's fuel pressure in the midst of the energy crisis[3].

Also, in previous decades, Russia strengthened its position in some Central European countries, gaining control over their supply systems or fuel enterprises[4]. In particular, this is relevant for Bulgaria and Romania, where Russian companies own the largest oil refineries. In addition, the Kremlin has exploited climate change for its geopolitical purposes. As part of the EU's Green Deal, gas was declared a transition fuel, which further protected supplies from Russia. Finally, it should be noted that the Russian state corporation Rosatom participated in the construction of capacities and/or maintenance of nuclear power plants in Bulgaria, Finland, and Hungary, and also supplied fuel to similar facilities in a number of European countries.

However, energy dependence on the Kremlin did not prevent the EU from resolutely responding to the Russian invasion of Ukraine. Since February 2022, European institutions and member states have adopted nine packages of sanctions against the Kremlin regime and have also repeatedly provided assistance to Ukrainian partners to maintain the financial stability of the state and defeat invaders. In particular, for the first time, the EU provided lethal weapons to a third country to protect democracy and territorial integrity.

In addition, united Europe embarked on historic transformations in order to protect its freedom and strategic autonomy, particularly in the energy sphere. Thus, in May, the European Commission presented the REPowerEU plan, which announced a course to abandon Russian fossil fuels by 2030. Importantly, Brussels has remained committed to decarbonisation goals even amid the likely energy upheavals of the coming years[5]. In this context, the fifth[6] and

1 https://ec.europa.eu/eurostat/cache/infographs/energy/bloc-2c.html
2 https://www.president.gov.ua/en/news/spilna-zayava-prezidenta-ukrayini-prezidenta-litovskoyi-resp-72173
3 https://www.direkt36.hu/en/orban-a-haboruban/
4 https://niss.gov.ua/news/statti/rosiyska-enerhetychna-polityka-yak-instrument-hibrydnoho-ruynuvannya-demokratychnoho
5 https://eur-lex.europa.eu/resource.html?uri=cellar:fc930f14-d7ae-11ec-a95f-01aa75ed71a1.0001.02/DOC_1&format=PDF
6 https://ec.europa.eu/commission/presscorner/detail/en/ip_22_2332

sixth packages of EU sanctions against Russia should be mentioned separately[7]. By using them, the member states refused to purchase Russian coal and Russian oil arriving by sea. A temporary exception was made for those countries that receive fuel from Russia through pipelines, primarily Hungary, the Czech Republic, and Slovakia, which do not have access to the sea. European operators were also banned from financing and insuring tankers delivering Russian oil to third countries. And during autumn, the EU countries began to discuss the establishment of a price cap for Russian oil prices. The essence of this initiative is that European companies are prohibited from insuring and transporting Russian fuel if it costs more than a certain amount. The most likely scenario is the setting of limits at the level of 65-70 dollars per barrel. However, European governments have not yet reached an agreement on this, and the Hungarian authorities are generally against such an initiative.

Refusal or ban on Russian gas supplies could be a bigger challenge for the EU than similar steps for coal and oil. This will occur primarily due to political reasons. Until now, the European Council and the Council of the EU have not separately brought this issue up for discussion among the representatives of the member states. However, some of the European countries, such as Poland, Lithuania, and Bulgaria[8], actually terminated relations with Gazprom. The unpreparedness of united Europe for radical changes in this area is dictated by infrastructure. Most of the gas from Russia to European consumers came through pipelines, primarily to Central European countries[9]. Reorientation to other suppliers requires reconstruction of the network of gas pipelines, compressor stations, and regasification facilities (in the case of using liquefied natural gas – LNG), which requires additional time and investment. In addition, for six months already, the government of at least one EU country - Hungary - has denied the possibility of imposing an embargo on Russian natural gas[10], which blocks the advancement of initiatives in this matter. What's more, representatives of the official Budapest are increasingly insisting on canceling already introduced restrictions against Russia, explaining this by their unwillingness to cause even temporary damage to their economy.

Meanwhile, the Kremlin continues to use energy to blackmail Europe, even with current restrictions in place. And the main role in this is played by the most painful type of fuel for the EU - natural gas. Since the summer of last year, Russia has been reducing its supply to the West, creating an artificial deficit in the European market. Since then, gas prices in Europe have reached record levels of 1,000 euros per 1,000 cubic meters[11]. Already this summer, after Gazprom stopped the transfer of blue fuel through the territory of Belarus, reduced the volume of transit through Ukraine, and gradually decommissioned the Nord Stream-1 gas pipeline, gas prices on the European market reached 3,300 euros per 1000 cubic meters[12]. Also, as a result of this, electricity prices in the EU began to rise rapidly from the spring of 2022[13], exceeding the indicators of the first half of 2021 by 7-8 times in some countries of the bloc[14]. In the end, Gazprom resorted to the traditional tactic of intimidating citizens of European countries, predicting freezing in winter "even with full gas storages"[15]. These words came after explosions damaged both strands of the Nord Stream 1 pipeline and one of the two strands of the Nord Stream 2 pipeline. These events were beneficial for the Kremlin to justify the refusal of further exploitation of the gas tunnels and the unjustified accusation of Western countries of provocations against themselves.

Russia and its energy blackmail are not the only challenges facing the EU today. But the actions of the Kremlin over the past year have definitely become a key cause of the problems that Europe must deal with in the coming years. Leaving aside threats in the field of «hard» security, we can say that energy is the driver of all mechanisms of Moscow's pressure on the stability of European countries. However, despite all the challenges, the leaders of the EU and many member states by themselves, demonstrate their determination to complete the path of renouncing Russian fuel. Thus, the President of the European Commission, Ursula von der Leyen, stated in her State of the Union address in 2022: "This [restructuring of the energy infrastructure] is expensive. But dependence on Russian fossil fuels is much more expensive. We have to get rid of this addiction across Europe"[16].

The High Representative of the EU for Foreign Affairs and Security Policy, Josep Borrell, in an address to the European ambassadors, drew attention to the fact that cheap Russian gas is not safe, because Moscow uses it to undermine democracy and unity in the EU. Thus, energy contact with Russia should come to an end[17]. It is also

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7 https://ec.europa.eu/commission/presscorner/detail/en/IP_22_2802
8 https://www.dw.com/en/russias-gazprom-halts-gas-supplies-to-poland-bulgaria/a-61602038 https://www.lrt.lt/en/news-in-english/19/1728613/lithuania-bans-russian-gas-leaves-exception-for-transit-to-kaliningrad
9 https://www.reuters.com/business/energy/how-can-europe-get-gas-if-russias-supply-is-disrupted-2022-05-11/
10 https://hungarytoday.hu/viktor-orban-urges-eu-to-revise-the-sanctions/
11 https://edition.cnn.com/2021/09/23/business/europe-uk-energy-crisis/index.html https://www.fitchratings.com/research/corporate-finance/fitch-ratings-increases-gas-price-assumptions-for-2021-2022-02-09-2021
12 https://www.euronews.com/my-europe/2022/08/25/europes-gas-prices-have-broken-a-new-record-how-high-can-they-go
13 https://ec.europa.eu/eurostat/statistics-explained/index.php?title=Electricity_price_statistics#Electricity_prices_for_household_consumers
14 https://www.statista.com/statistics/1267500/eu-monthly-wholesale-electricity-price-country/
15 https://www.bloomberg.com/news/articles/2022-10-12/gazprom-ceo-says-europe-could-freeze-even-with-full-gas-storage?leadSource=uverify%20wall
16 https://ec.europa.eu/commission/presscorner/detail/ov/SPEECH_22_5493
17 https://www.eeas.europa.eu/eeas/eu-ambassadors-annual-conference-2022-opening-speech-high-representative-josep-borrell_en

worth mentioning the speech of the President of the Federal Republic of Germany, Frank-Walter Steinmeier. He addressed his fellow citizens after a trip to Ukraine in October: "It is in our interests to break free from our dependence on a regime that sends tanks against a neighboring country and uses energy as a weapon. <...> Even though we're dealing with inflation, energy prices, and war right now, when this winter is over and we're out of the recession, we just can't go back to the way things were"[18].

As of now, the EU is successfully coping with the remaining energy dependence on Russia, mostly on Russian natural gas. Thus, Ursula von der Leyen reported that the Russian share in imports of blue fuel to united Europe fell to 7.5% in September, although at the beginning of the year it was more than 40%[19]. Moreover, this is not a one-time phenomenon, but a continuation of the trend: Gazprom's share in gas supplies to the EU began to decline in the spring, reaching 9% at the end of the summer of 2022[20]. Russia is no longer a monopolist in the European natural gas market. European countries managed to achieve such a result thanks to the reduction of energy demand and losses[21], the increase of fuel receipts from other third countries, especially LNG from the USA[22]. In particular, this led to the fact that gas prices in the EU began to decline in mid-September and, as of the end of October, reached the lowest figures for 2022[23]. Also, as of October 2022, 92% of all gas storage facilities in the EU were filled, which even exceeded the indicators of 85% agreed by the member states[24]. Finally, at the summit of the European Council in October, the leaders of the EU countries agreed on joint purchases of blue fuel and price restrictions on electricity produced with the help of gas[25].

However, despite these optimistic trends, Europe may still face significant energy challenges in the coming months and years. Growing demand for gas in winter will force Brussels and member states to intensify their search for new sources and capacities for fuel supplies. An important role in guaranteeing the energy security of the EU will be played by the implementation of mechanisms for the efficient use of resources and an increase in the share of renewable sources, which will require additional costs and may create temporary difficulties for industry and business. The entry into force of the embargo on Russian oil may also cause temporary difficulties on the European fuel market, in particular, gasoline prices are likely to rise for a certain period.

In addition, a number of EU countries still do not have a clear plan on how to abandon Russian fuel. For example, the Hungarian government, which is already openly advocating the lifting of sanctions against the Kremlin, has not yet presented proposals for alternatives to oil and gas from Russia. The leaders of the Czech Republic and Slovakia have signed a number of contracts for the supply of LNG through terminals in the North, Baltic and Mediterranean seas, but have not yet found a comprehensive solution to replace Russian oil. Bulgaria faced a blackmail campaign by "Gazprom" together with the delayed launch of the Greek-Bulgarian gas interconnector. Also, the fate of the country's largest oil refinery - owned by the Russian company Lukoil - has not yet been discussed in Sofia. These countries need political and financial assistance from European partners in ensuring fuel independence.

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18 https://www.bundespraesident.de/SharedDocs/Reden/EN/Frank-Walter-Steinmeier/Reden/2022/221028-Strengthening-everything-that-connects-us.html
19 https://ec.europa.eu/commission/presscorner/detail/en/speech_22_5964
20 https://www.icis.com/explore/resources/news/2022/09/05/10802649/ttf-jumps-on-nord-stream-as-new-lng-terminal-prepares/
21 https://www.icis.com/explore/resources/news/2022/10/10/10812901/european-demand-falls-but-greater-savings-needed-this-winter/?group_id=85
22 https://www.icis.com/explore/resources/news/2022/10/28/10733319/topic-page-war-in-ukraine-gas-crisis/
23 https://www.icis.com/explore/resources/news/2022/10/28/10819980/ukraine-moldova-boosting-imports-amid-falling-spot-prices/
24 https://www.consilium.europa.eu/en/infographics/gas-storage-capacity/
25 https://www.politico.eu/article/eu-leaders-progress-energy-price-cap-euco-summit-conclusions-olaf-scholz/

2

UKRAINE'S ENERGY CHALLENGES

Ukraine should be part of the mechanisms for overcoming the challenges indicated in the previous section, as well as the energy transformations of the EU: as a candidate for joining united Europe, as a country with an extensive gas transportation network and numerous storage facilities, as an additional power in guaranteeing the bloc's security. Joining the common European strategy of liberation from fuel dependence and decarbonization is also dictated by the need for the post-war recovery of Ukraine. This process can become a framework for rapid reforms of the country's energy sector, impossible to implement quickly under other conditions. Thus, in October 2022, the Chancellor of Germany, Olaf Scholz, indicated the need not only to rebuild but also to modernize the Ukrainian state: "It could be Ukraine, which is a large producer of "green" energy, a supplier of industrial and agricultural products with high added value, an advanced country in the field of digital technologies, whose IT specialists are among the best in the world, a member of the EU with the appropriate infrastructure and legislative framework"[26].

At the same time, energy cooperation with united Europe in general and with member countries on a bilateral level is critically important for Ukraine these days. Now, when the Armed Forces of Ukraine are successfully defending and liberating the territory of their state from the Russian invaders, Russia is resorting to terror, shelling power plants, and distribution points. By destroying Ukraine's energy capabilities, the Kremlin seeks to cover up its own defeats on the battlefield and push Kyiv to freeze hostilities, which would fix the temporary illegal annexation of Ukrainian territories for a long time. Support from the EU at this time is necessary under such conditions.

It is not the first year that Ukraine is going through an energy transformation. Despite this, the country was not fully prepared for the current energy crisis in Europe. In 2020, Ukraine's dependence on foreign energy sources was 34.1%. Since this share reached 43.1% in 2000, it can be said that the state has made significant progress in this area[27]. The main reason for such changes is the break in relations with the Kremlin. During independence, Ukraine often became a direct object of Russian fuel blackmail; since the end of the 1990s, many negotiations and crises in relations between Kyiv and Moscow have centered around issues of gas procurement and transit. Ukraine began to refuse fuel from its northeastern neighbor when Russian troops first illegally invaded part of Ukrainian territory in 2014. This process took place in different dimensions. In 2022, the severing of economic relations with Russia, particularly in the energy sector, became synonymous with the country's survival and a moral obligation to all its residents who suffered from Russian aggression. In fact, today Kyiv does not buy any energy carriers from Moscow. Thus, the Ukrainian state became the first in Europe to completely abandon Russian fuel.

Over the past three decades, Ukraine has significantly reduced energy consumption: in the 1990s, the average level was 31.5% lower than in the previous ten years; in the early 2000s – by 21.5% less; and in the 2010s - by 24.6% lower[28]. The first two indicators are related to both the general reduction of industrial production and the gradual modernization of infrastructure. In the third decade, new circumstances arose: many capacities in the territory of Ukraine temporarily occupied by Russia ceased to be taken into account in state statistics, despite the fact that some of these areas continued to receive electricity from the free Ukrainian territory. As for the structure of energy consumption, the main trend over the past few years has been the reduction of the country's dependence on natural gas: from 46.8% of total energy consumption in 2000 to 31.2% in 2020. Coal accounted for 28.9%, nuclear power for 20.9%, and oil for 13.3% in 2020. It is important to note that nuclear power has become an insurance policy for Ukraine in the conditions of giving up Russian fuel. During the decade until 2014, their share in the country's final energy consumption was 15-17%; after 2014, it ranged from 19 to 23%. In addition, in 2021,

26 https://www.eurointegration.com.ua/news/2022/10/25/7149343/

27 https://ec.europa.eu/eurostat/databrowser/view/NRG_IND_ID__custom_1851622/bookmark/table?lang=en&bookmarkId=72cae929-3952-46b9-b363-f2a978a1fd64

28 https://ourworldindata.org/grapher/energy-consumption-by-source-and-region?stackMode=absolute&country=~UKR

due to problems with gas purchases (the share of this fuel in consumption was 28.2%), caused by its high price, the share of nuclear power in a total generation increased to a record 23.4%[29].

In 2020, oil and its derivatives accounted for 38.9% of the total volume of energy imports to Ukraine. The remaining shares were distributed to solid fossil fuels (mainly coal) at 35.9%, gas at 24.3%, and electricity at 0.8%[30]. The main suppliers of oil and related products at that time were Russia (33.2% of the total volume of relevant purchases) and Belarus (32.6%). Azerbaijan (7.8%), Lithuania (7.7%), Turkey (3.5%), and Kazakhstan (3.3%) accounted for smaller shares[31]. At the same time, the volume of domestic Ukrainian production of oil and derivatives then reached 93% of the volume of imports[32].

Also in 2020, the largest foreign suppliers of natural gas to Ukraine were companies from Slovakia (35.5% of imports), Switzerland (19.6%), Hungary (16.7%), Germany (9.6%), the USA (9 %) and Poland (6.2%)[33]. In fact, they provided Ukrainian partners with gas that they previously purchased from Russia. Since 2015, Ukraine has not bought natural gas directly from the Russian side. In 2020, the volume of domestic production of natural gas in Ukraine exceeded the volume of import by 2.2 times[34].

If we speak about solid fossil fuels, in 2020, the main sources of Ukrainian imports were Kazakhstan (7.4%), the USA (19.8%), and Russia (69.7%)[35]. At the same time, the volume of Ukrainian own production exceeded the volume purchased by 1.96 times[36].

In addition, in 2020, Ukraine produced 119,332 gigawatt-hours of electricity[37], importing 2,720 gigawatt-hours[38]. The main foreign supplier of this type of energy for Ukrainian consumers was Slovakia (56.1% of the corresponding import), followed by Hungary (27.5%), Belarus (7.5%), Russia (5.1%), and Romania (3.8 %). Nuclear power plants of Ukraine produced 51.9% of electricity in the country in 2020, thermal power plants - 35.9%, hydroelectric power plants - 5.4%, light - 4.1%, and wind - 2.4%[39].

The return of Ukraine's mining and generating capacities, located in the territories temporarily occupied by Russia, was one of the country's biggest energy problems until February 2022. Other challenges were maintaining the transit status of Russian gas in the conditions of the construction of gas pipelines bypassing Ukraine, the signing of a long-term agreement between Hungary and Gazprom, as well as the probable decrease in the volume of fuel transportation from Russia in the Romanian, Slovak and Polish directions. The Kremlin's decision to launch a full-scale invasion eliminated some of these problems while adding more significant ones. At the end of 2021 - the beginning of 2022, Russian suppliers reduced the volume of gas transit through Ukraine by more than 60%[40]. Already after February 2022, these indicators decreased by at least a third[41]. At the same time, the supply of fuel by "Gazprom" to Europe via Belarus and Poland was stopped[42]. After all, at the beginning of September, Russia stopped the operation of Nord Stream 1[43]. Thus, the "Turkish Stream" and, to a lesser extent, pipelines on Ukrainian territory today remain the only means of delivering Russian gas to Europe.

The agreement between Gazprom and Ukraine on the transit of Russian gas is valid until 2024. The EU decided to gradually sever energy relations with the Kremlin, and Russia itself reduced its share in foreign gas supplies to the European market to a record low level. As for energy contacts between Kyiv and Moscow, the Ukrainian side cannot return to them due to security, political and economic reasons. Any contacts in this context are impossible until the Russian troops completely leave the territory of Ukraine, recognize the war crimes committed by them, and compensate for the damage caused. Therefore, the current gas transit agreement between Kyiv and Moscow will most likely be the last. Probably, similar results are waiting for Russian oil, which is transferred to Europe through the territory of Ukraine. Transport through the Druzhba pipeline is currently only a temporary exception for Central European countries, which must find alternative sources of supply by the end of 2023[44], under the EU's sixth package of sanctions. The era of Russian hydrocarbons in Europe is coming to an end. In addition, taking into account active hostilities, Russia's temporary occupation of part of the territory of Ukraine, and frequent provocations by the

29 https://ourworldindata.org/grapher/share-energy-source-sub?country=~UKR
30 https://ec.europa.eu/eurostat/web/energy/data/energy-balances
31 https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_OIL__custom_3302704/default/table?lang=en
32 https://ec.europa.eu/eurostat/databrowser/view/NRG_CB_OIL__custom_3302779/default/table?lang=en
33 https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_GAS__custom_3302775/default/table?lang=en
34 https://ec.europa.eu/eurostat/databrowser/view/NRG_CB_GAS__custom_3302804/default/table?lang=en
35 https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_SFF/default/table?lang=en&category=nrg.nrg_quant.nrg_quanta.nrg_t.nrg_ti
36 https://ec.europa.eu/eurostat/databrowser/view/NRG_CB_SFF__custom_3302839/default/table?lang=en
37 https://ec.europa.eu/eurostat/databrowser/view/NRG_CB_E/default/table?lang=en&category=nrg.nrg_quant.nrg_quanta.nrg_cb
38 https://ec.europa.eu/eurostat/databrowser/view/NRG_TI_EH/default/table?lang=en&category=nrg.nrg_quant.nrg_quanta.nrg_t.nrg_ti
39 https://www.ukrstat.gov.ua/operativ/operativ2018/energ/pve/arh_pve_u.htm
40 https://hromadske.ua/posts/rosiya-u-sichni-zmenshila-tranzit-gazu-cherez-ukrayinu-majzhe-na-60
41 https://tsoua.com/news/pat-gazprom-ne-skorystavsya-mozhlyvistyu-zbilshennya-tranzytu-do-yes-cherez-gvs-sudzha/
42 https://www.bloomberg.com/news/articles/2022-05-12/russia-bans-gas-flows-to-europe-through-key-yamal-pipeline
43 https://www.dw.com/en/nord-stream-1-russias-gazprom-announces-indefinite-shutdown-of-pipeline/a-63006660
44 https://www.reuters.com/markets/commodities/slovakia-expects-eus-solidarity-russian-crude-sanctions-impact-ministry-2022-06-03/

Kremlin, official Kyiv is currently unable to guarantee the safety of oil (or any other fuel) passing through the territory of its country[45].

As a result, Ukraine will cease to be a transitor of Russian gas and, most likely, oil in the coming years. Under these circumstances, the country must occupy a new place in the EU energy system, as well as find new sources of fuel supply. Ukrainian gas storage facilities are the largest on the continent. They can help European partners survive the most difficult periods of the winter season. In addition, Ukraine is already discussing possible options for supplying natural gas and increasing oil imports from the western and southwestern directions. Polish[46], Slovak, and Hungarian[47] natural gas transportation networks are capable of increasing opportunities for the supply of LNG to Ukraine from ports on the Adriatic and Baltic seas. Representatives of the "Gas Transport System Operator of Ukraine" previously announced their intention to start importing gas from Azerbaijan[48], and this year the company's representatives discussed the possibility of receiving LNG from Greek and Turkish ports[49]. However, for this, it is necessary to restore the full operation of the Trans-Balkan Corridor, which requires agreements between Kyiv, Chisinau, Bucharest, and Sofia, as well as interest in the project from the respective capitals[50].

Naturally, the Russian aggression actualized the issue of Ukraine's transition to alternative sources of energy production. Increasing the share of such capacities is one of the ways to ensure the country's energy independence. Ukraine did not fulfill its obligations to the EU, undertaken as part of the implementation of Directive 2009/28/EC and the National Renewable Energy Action Plan until 2020. The share of RES in final energy consumption in 2020 was 5.6%[51], although the planned indicator was 11%[52]. At the same time, the State Agency for Energy Efficiency and Energy Saving carried out its own calculation of the share of renewable sources in the final energy consumption, taking into account the normalization of HPPs and WPPs, the energy of heat pumps and the multiplier of electricity consumed by transport. According to the agency's data, this type of energy accounted for 9.2% of the final consumption, which also does not meet the target indicator[53].

It should be noted, however, that the share of alternative sources in total production and final energy consumption in Ukraine has been steadily increasing since 2012[54]. In 2020, Ukraine entered the top 5 countries in Europe in terms of the rate of development of the sector[55]. The project of the National action plan for the development of renewable energy until 2030 proposes to set a goal of 27% of RES in the energy consumption of Ukraine before that deadline[56]. At the same time, in 2020, the Ukrainian government began negotiations with the EU on joining the European Green Deal[57]. Joining this initiative would additionally stimulate the Ukrainian state to increase the share of alternative sources in energy production and would provide access to investments for the realization of such a goal. Also in 2021, the Cabinet of Ministers adopted and approved the Updated National Determined Contribution of Ukraine to the Paris Agreement (NVV2). The government has set a goal of reducing greenhouse gas emissions by 35% compared to 1990 by 2030[58].

However, the biggest challenge in the field of energy for Ukraine today remains the actual need to resist Russian attacks. The answer to this challenge requires urgent action. The Russian army has temporarily occupied territories where significant power generation facilities and fossil fuel deposits are located. In particular, this is about Europe's largest Zaporizhzhya nuclear power plant, thermal power plants in Donetsk and Luhansk region, and the Kakhovka hydroelectric plant. In addition, the largest alternative energy capacities of Ukraine are concentrated in Dnipro, Mykolaiv, Kherson, and Zaporizhia regions. Some of them are in temporarily occupied territory. About 30-40% of RES-powered power plants in the southern and eastern regions of the country were damaged[59].

During the first stage of the full-fledged war, the invading forces often directed their rocket and artillery attacks on oil and gas-rich facilities and enterprises, in particular in Kremenchuk, Odesa, Zhytomyr, Lviv, and other cities. This created a deficit in the gasoline market in Ukraine.

Since September 2022, Russian forces have resorted to repeated massive attacks on the country's power plants and distribution networks. According to the Ukrainian authorities, as of the end of November, about 50% of Ukraine's energy infrastructure was damaged[60]. Volodymyr Kudrytskyi, head of Ukrenergo, noted that almost every thermal power

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45 https://www.ukrinform.ua/rubric-economy/3480158-ukraina-ne-moze-garantuvati-bezpeku-tranzitu-gazu-okupovanimi-rf-teritoriami-naftogaz.html
46 https://tsoua.com/news/ukrayinskym-trejderam-vidkryvsya-rozshyrenyj-dostup-do-lng-terminaliv-u-polshhi-ta-krayinah-baltiyi/
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60 https://www.unian.ua/economics/energetics/okupanti-poshkodili-vzhe-blizko-50-ukrajinskoji-energetichnoji-infrastrukturi-zelenskiy-12050670.html

plant, hydroelectric power station, and node substation in the country was damaged[61].

Ukrainian energy companies suffered hundreds of millions of dollars in losses. Systematic attacks by Russian forces have depleted their supply of spare parts and repair equipment. At the same time, power outages caused by airstrikes lead not only to disconnection of electricity among the population and businesses but also complicated the supply of water, heating, and communications. In addition, all nuclear power plants in Ukraine are in a dangerous situation, which remains de-energized due to damage to the network. This creates a threat not only to the Ukrainian energy network but also to other countries. It should also not be forgotten that the Russian occupiers are using the captured Zaporizhzhya NPP to blackmail and terrorize the population of Ukraine and all of Europe.

At the same time, Russian air attacks on energy infrastructure create new accompanying challenges. In particular, at the end of November in Ukraine, the demand for gasoline increased sharply, because citizens use it for electric generators during the disconnection of the centralized electricity supply[62]. This circumstance may create a new shortage of fuel at the country's gas stations, as it was in the spring of 2022.

Under such conditions, Ukraine needs operational support from Western partners in supplying additional amounts of energy, repairing capacities (both through financing and through the actual supply of material and technical resources), as well as in providing appropriate weapons to protect its infrastructure. In this sense, one can only welcome the statement of the European Commissioner for Energy, Kadri Simons, that the EU will provide Ukraine with the necessary amounts of energy against the background of constant attacks[63]. We should also welcome the operational steps of European partners in strengthening Ukrainian air defenses, in particular, Germany in providing IRIS-T air defense systems to protect against Russian missile attacks. For its part, the Government of Ukraine should also provide for the provision of necessary finance to national energy companies and improve the market model of electric energy due to an increase in the limit of price restrictions (price cap).

61 https://www.bbc.com/ukrainian/news-63718624

62 https://www.youtube.com/watch?v=yB9Bu8axcEE&ab_channel=%D0%A2%D0%A1%D0%9D

63 https://www.dw.com/uk/rf-poskodila-40-vidsotkiv-energeticnoi-infrastrukturi-ukraini-zelenskij/a-63618841

3

UKRAINE'S PLACE ON THE EU ENERGY MAP (ANALYSIS OF EXPERT INTERVIEWS)

The expert interviews conducted within the framework of this project demonstrated a common understanding by the experts of the complex challenges and threats facing the energy systems of Ukraine and other European countries. At the same time, in the context of potential ways of solving the current crisis, the respondents expressed somewhat different, but complementary positions.

3.1 CHALLENGES FOR ENERGY SYSTEMS

While answering questions about the main challenges for Ukraine in the energy sector as of mid-2022 - both short-term and long-term - all experts put the security factor in the first place. It is definitely caused by the Russian Federation's full-scale war against Ukraine started in February this year. First of all, in this context, all experts paid attention to the physical destruction of Ukraine's energy infrastructure – CHP plants, substations, power lines, gas infrastructure, etc. It is important to note that the interviewed experts pointed to the existence of this problem even before the start of targeted strikes by Russian troops on the energy infrastructure in September-November of this year.

The second security aspect, which became common in the answers of all interviewed experts, is the threat of nuclear and, more generally, energy terrorism. In this context, all respondents mentioned the situation with the occupation of the territory of the Zaporizhzhya NPP by Russian troops and its use as a political and security lever to put pressure on the Ukrainian government and intimidate the population. The president of DiXi Group, Olena Pavlenko, for example, also pointed out that the seizure of the ZNPP also carries absolutely measurable risks for the energy supply system of Ukraine: the plant was one of the key producers of electricity in the Ukrainian system, and the Russians' efforts to connect it exclusively to the Russian system and systems of temporarily occupied territories is a threatening prospect.

In addition to these two aspects, while describing existing threats, the experts cited other situations that constitute a complex of current challenges. For example, energy expert Olena Osmolovska emphasized the change in demand for energy both in industry and among household consumers. In her opinion, such a change made it much more difficult to prepare for the winter period. According to Olena Pavlenko, the current crisis in the supply of oil products to Ukraine is also a problem, which is further complicated by fluctuating prices on the international market. During an interview, Reuven Stubbe, an economic consultant in the energy and climate policy department of the German analytical center "Berlin Economics", noted that in the medium-term perspective, during the economic and infrastructural recovery, the issue of decentralization and reorganization of the energy system and its critical components - the construction of new capacities - will become important for Ukraine. The introduction of a greater share of renewable components and strategic planning for the gradual transition away from coal and nuclear power generation in the 10-20 year perspective is also considered as issues of strategic importance by Stubbe. Olha Bielkova additionally points to the issue of the availability of safe and effective corridors for the import of energy resources - both for natural gas and petroleum products and for the import of electricity as well. In her opinion, a sharp price jump for most basic energy carriers, caused by Russia's aggression and the need for sanctions by Western partners against the aggressor country, is also considered an additional problem.

The head of the "Power" project and the senior program manager of the Polish analytical center "Forum Energii" Aleksandra Gawlikowski-Fyk and Maciej Zaniewicz, assessing the existing risks for the Polish energy sector, pointed firstly to the problems of the heating season and difficulties in finding alternative suppliers of coal and natural gas (before the start of a full-scale invasion of the Russian Federation in Ukraine, Russia was the key exporter of coal to Poland). In the long term, they noted that one of the central problems for Poland, as well as for all European countries, will be decarbonization and the transition to a wide range of renewable energy sources. At the same time, Alexandra Gavlikovska-Fyk noted that, unlike many other European states, Poland actually did not experience losses from the crisis in the international oil market.

3.2 POSSIBLE WAYS OUT OF THE CURRENT CRISIS

While answering questions about possible solutions to the existing crises, the experts pointed to the need for prompt restoration of destroyed and damaged energy facilities in Ukraine as the first necessity. Even during a period of

heightened military confrontation, it is necessary to invest significant resources and time in maintaining the stable operation of critical infrastructure.

In the long-term perspective, according to Olena Pavlenko, Ukraine should join the pan-European trend of abandoning fossil fuels. In the short term, the expert believes, it is important to develop a strategy of minimal natural gas use for the winter period.

According to Olena Osmolovska, the key tool for solving the problems of the energy sector is the funds that Ukraine should earn from the export of excess energy, from the deregulation of the fuel market, and from the expansion of infrastructure potential. She clarifies that, first of all, we are talking about earned money, not credit. This money will become an important basis for the stability of the Ukrainian energy system.

Ruven Stubbe expresses a similar opinion, indicating the need to find and attract investors in the energy industry in the long term. This also includes large-scale cooperation with international partners who can help Ukraine financially.

Speaking about strengthening the stability of the Polish energy system, Aleksandra Gavlikovska-Fyk pointed out the need to move in the pan-European trend of finding alternative suppliers and "non-Russian sources of fuel". The second important point in her statement, especially in the short term, was the frugal use of available resources by both industry and ordinary consumers.

3.3 ENERGY INTEGRATION WITH THE EU

All interviewed experts spoke positively about the very fact of Ukraine's accession to the pan-European energy system ENTSO-E, as well as about the reforms that Ukraine has implemented in the sector since 2014. The experts also noted the extremely important commercial side of this process for Ukraine, because the beginning of cooperation between Ukraine and the EU at this level became an important component of Ukraine's export balance and allowed a significant increase in the income of the Ukrainian energy sector. Also, all interviewees noted that such cooperation can become an important element of insurance of the Ukrainian energy system in case of emergencies, which are almost inevitable in the conditions of a full-scale war unleashed by the Russian Federation.

At the same time, Maciej Zanevich noted that active energy cooperation between Poland and Ukraine existed even before joining ENTSO-E. In his opinion, it was the insufficient supply of electricity in the EU that created favorable conditions for cooperation between Ukraine and Poland and further integration of Ukraine into the European system. "We have common interests, we have the political will to increase cooperation. This is the reason why it was decided to restore the electricity transmission line between Khmelnytskyi and Rzeszów. It should be operational already in December this year, so we will be able to increase the supply of electricity from 210 megawatts to 1.2 gigawatts," the expert noted.

It should also be clarified that some respondents indicated the need to continue the reforms of the Ukrainian electricity and fuel markets for further integration into the single EU markets. They considered this process, on the one hand, as a way of responding to the current crisis, and on the other hand, as a prerequisite for the sustainable development of the Ukrainian energy industry. Thus, Olha Bielkova considers integration into the EU market as one of the challenges for Ukraine, but at the same time a priority. According to the expert, staying in the common European energy space will allow the country to use its resource advantages, as well as to find sources for replenishing the shortage more easily.

Olena Osmolovska noted that reforms in the energy sector and implementation of EU Directives (which Ukraine started in 2015) created conditions for Ukraine to join ENTSO-E in 2022. This helped both in terms of responding to Russian aggression and in obtaining the status of a candidate for joining the EU. The expert emphasized that further expansion of the commercial synchronization of the Ukrainian electricity market with the European market is necessary so that national producers can supply energy to the EU.

A similar opinion was expressed by Ruven Stubbe, who pointed out the need to bring regulations closer together and solve technical problems in the Ukrainian network for its full synchronization with the European one. This issue is important for the EU, which has faced a sharp increase in electricity prices and is interested in new suppliers, as well as for Ukraine, whose electricity market could benefit from the participation of European players and increased competition in the longer term. In addition, the expert emphasizes that the sale of Ukrainian megawatts to the EU is a source of income for the Ukrainian state, so Kyiv should be interested in accessing the Western electricity market, especially in wartime conditions.

Machei Zanevich drew attention to the fact that before the start of Russia's large-scale attacks on the Ukrainian energy infrastructure, there was a surplus of electricity in Ukraine. The country was able to supply this type of energy to the EU at lower prices than it was on the European market. This was important given the specific crisis situation. At the same time, in the long term, the expert notes, this circumstance can become a challenge: low (non-market) prices for energy carriers from Ukraine can cause skepticism on the part of European players regarding Ukrainian partners, as well as create difficulties for the EU market. In order to create competitive conditions for all parties, the implementation of European regulations by Ukraine is necessary.

Olena Pavlenko noted that currently the situation in the Ukrainian electricity and natural gas markets is distorted because consumers - both the population and industry - do not pay and are not able to pay the market price for energy

carriers. This makes it necessary to constantly find funds for subsidies and makes it impossible to accumulate resources internally for the development of relevant industries. This requires external investment. In order for foreign investors to be interested in projects in Ukraine, says Olena Pavlenko, it is necessary to create markets - with clear rules, exchange data, compliance with deadlines, and creation of conditions for earning. Ruven Stubbe also drew attention to this, saying that clear and stable market conditions allow investors to predict their profits and not be afraid of investments. The supply of fuel at lower than market prices creates a lack of financing for companies and puts innovation at risk.

Olena Osmolovska also said that importing energy at market prices and selling them to national consumers at a reduced tariff is logical, given the current conditions, but creates a significant deficit in financing the energy industry. As an example of a successful decision in this context, she cited actions on the gasoline market: in the spring, the state reduced taxes on it and removed price regulation, and this helped to adjust the supply of gasoline and balance the market.

3.4 THE EU'S REACTION TO RUSSIA'S ENERGY BLACKMAIL

In the context of the European response to threats of Russian blackmail on natural gas, oil, and coal, all experts noted the prompt response of the EU institutions to the new threat and the timely imposition of sanctions against the Russian Federation. At the same time, all interviewed experts pointed to the fact that the position of different EU countries is strikingly different, and each of them - depending on Russian fuel resources - chooses an individual position regarding the European sanctions regime. It is obvious that such a difference in positions makes it difficult to strengthen and maintain the existing regime of sanctions.

Olena Pavlenko pointed out that Hungary still plays a destructive role in the general sanctions regime of the EU.

Olena Osmolovska reminds that Ukraine currently has many years of practical experience in resisting Russian energy blackmail, so it effectively advises both European institutions and individual governments on how to resist the aggressive energy policy of the Russian Federation. However, for most European countries - first of all, Germany - the main steps must be taken at the national level of the concerned countries.

Olha Bielkova drew attention to the fact that Ukraine has considerable storage facilities for natural gas, which EU countries could use for stockpiling and subsequent re-export during crisis periods.

Ruven Stubbe states that there are two urgent needs for the European Union that would help it to respond effectively to Russian energy blackmail – an indirect reduction of the economic burden on consumers, and the introduction of measures that will compensate the costs of the most vulnerable groups of consumers.

Alexandra Gavlikovska-Fyk emphasized that "even before the war, Poland made its position very clear about the danger of dependence on Russian energy carriers." In the long term, for both Poland and the EU as a whole, it will be important to invest more in renewable energy sources to prevent a re-dependence on fossil resources supplied by the Russian Federation.

3.5 EUROPEAN GREEN DEAL AND RUSSIAN AGGRESSION

All the experts interviewed within the scope of this study spoke favorably of the possibility of Ukraine joining the EU Green Deal. Although currently Ukraine as a candidate country cannot legally become a full-fledged part of this policy (Pavlenko), from the point of view of resource and technical potential and possible positive influence, the state is already able to be a constructive part of this process (Osmolovska).

In this topic, experts also noted the importance of secondary measures and means that will help ensure Ukraine's inclusion in European cooperation formats and the successful transformation of its energy system. The majority of experts noted the importance of introducing additional innovations and injecting funds into infrastructure projects that will provide the energy component for this accession.

However, all interviewed experts noted that in the relations between the EU and Ukraine, as well as specifically in the relations between Ukraine and Poland (Aleksandra Gavlikovska-Fyk and Maciej Zanevich), a joint policy regarding the green transition, further decarbonization, and abandonment of fossil fuels is a long-term, strategic perspective. Current tactical tasks do not allow us to talk about the success of any initiatives in this area in the short term.

Olena Osmolovska also noted that Russian aggression became a crash test for the EU's Green Deal policy, but at the same time, she actualized the need to switch to renewable energy sources. According to her, politicians in Europe are now looking more practically at alternative energy sources, in particular at solar panels and hydrogen. In this context, she noted, Ukraine can be a component of the European Green Deal. In particular, the aspirations of European leaders to transfer their industry to hydrogen-fueled status may require Ukrainian electricity and water, and the Ukrainian state may benefit from investments in this sector. Olena Pavlenko drew attention to the fact that before the full-scale invasion, politicians and businessmen from certain EU countries, primarily Germany, expressed interest in establishing hydrogen production in Ukraine. According to her, this perspective is still relevant: the Ukrainian side is ready for such cooperation but needs appropriate external investments.

Olha Bielkova summarized that the development of hydrogen generation in Ukraine is possible, but the country today has urgent tasks to overcome the current crisis. According to her, at the moment, Ukraine is not ready to independently invest

in the construction of the appropriate infrastructure and conduct the necessary research. Therefore, in her opinion, the priority for the Ukrainian side today is decarbonization based on those sources that do not require such investments as hydrogen. If external players are interested in the development of such cooperation with Ukraine, the costs of these projects today can only be covered by them. According to the expert, Ukrainian players should approach this issue carefully.

3.6 A VISION OF THE DEVELOPMENT OF ENERGY RELATIONS BETWEEN UKRAINE AND THE EU

The experts, who took part in this survey, agreed that the common goals of Ukraine and the EU are (1) diversification of energy sources, (2) reduction of dependence or elimination of dependence on Russian fuel in any form, (3) unification of the movement towards decarbonization of the economy and (4) green transition as a common strategy.

Olena Pavlenko noted in an interview that the European Commission has made great progress in the context of creating a joint strategy. In the institution's new package of documents and strategies regarding energy published this year, Ukraine is put in a prominent place and is a participant in many promising programs and new agreements. In fact, at this stage, the task of both parties is to define clear chronological boundaries, and indicators of success and start the process of implementing new strategies.

Olena Osmolovska stressed the importance of a gradual joint move away from fossil fuel sources and the transformation of the energy system by both EU countries and Ukraine.

Ruven Stubbe expressed the thesis that decarbonization as a goal of the development of the energy sector is not only a program task but also a value in itself for both the European Union and Ukraine. In addition, he emphasized that Ukraine's implementation of EU energy directives, even outside of EU membership, is an extremely high-quality and important indicator of Ukraine's aspirations and the level of cooperation that the Ukrainian government and society actually strive for.

4

RECOMMENDATIONS

Based on the results of interviews with Ukrainian and European experts, the following recommendations can be offered to strengthen the resistance and potential of the Ukrainian energy system:

1. The possibility of creating a system of permanent technical and financial support for the energy system of Ukraine during the active phase of the war unleashed by the Russian Federation should be considered. This will make it possible to maintain electrical generation and transportation networks in a functional mode and avoid social and humanitarian crises during the winter of 2022. Such a system should be provided by a broad coalition of international donors and partners.
2. The further integration of Ukraine into the single energy markets of the EU - electricity, oil, and natural gas markets - is one of the priority tasks of the country's authorities for the coming years. Joining these spaces will give national manufacturers the possibility to sell their products to European customers, which will have a positive impact on the incomes of the respective companies and the Ukrainian government as well. Achieving these goals will depend on the gradual departure from the practice of subsidizing local consumers (at least certain groups of them after the end of hostilities), the implementation of relevant EU regulations, and the creation of a competitive market for electricity, fuel, and natural gas in Ukraine. In the long term, it can also create additional favorable conditions for the introduction of new technologies in the country's energy production and gradual decarbonization of the economy.
3. Ukraine and its EU partners need a concerted search for alternative suppliers of key traditional energy resources to meet the needs of the market before full decarbonization.
4. In order to guarantee the energy security of the EU and Ukraine, it is necessary to involve the full potentials (intellectual and technical) of both sides in the study of promising energy initiatives, in particular regarding alternative energy, for the further implementation of initiatives in this area within the framework of decarbonization of the economy and the transition to non-fossil energy sources. It should be noted that today the Ukrainian side cannot undertake the financing of the implementation of particularly costly innovative technologies, such as hydrogen energy. At the same time, Ukraine is ready to implement new approaches in this endeavor with proper external support and interest, but before that, it needs urgent solutions to ensure energy stability and independence in the face of Russian aggression.
5. Ukrainian stakeholders need to develop a strategy for the planned accession of Ukraine to the European Green Deal. It should include steps to implement the elements of active decarbonization and the unification of the approaches of Ukraine and the EU to this process within the perspective of 10-15 years.

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UKRAINE'S PLACE IN THE COMMON ENERGY POLICY OF THE EU: A RECIPIENT OF PRACTICES OR AN INITIATIVE PARTNER?

Russian energy supplies to Europe have been a major threat both to European energy resilience and political impartiality. The European approach to the role of Russian gas as "intermediate fuel" in the context of the Green Deal proved to be a strategic misstep.

Current Ukrainian energy challenges – attacks on the electricity supply network, seizing Ukrainian power plants, creating obstacles for gas transit, etc. – are directly connected to Russian aggression. They need a prompt response and can be overcome with a proactive financial and political stance on the part of the EU.

Ukraine and its EU partners need a concerted search for alternative suppliers of key traditional energy resources to meet the needs of the market before full decarbonisation.

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