The Future of European Energy Security



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Briefing of the Commission on Security and Cooperation in Europe

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ABOUT THE ORGANIZATION FOR SECURITY AND COOPERATION IN EUROPE

The Helsinki process, formally titled the Conference on Security and Cooperation in Europe, traces its origin to the signing of the Helsinki Final Act in Finland on August 1, 1975, by the leaders of 33 European countries, the United States and Canada. As of January 1, 1995, the Helsinki process was renamed the Organization for Security and Cooperation in Europe [OSCE].

The membership of the OSCE has expanded to 57 participating States, reflecting the breakup of the Soviet Union, Czechoslovakia, and Yugoslavia.

The OSCE Secretariat is in Vienna, Austria, where weekly meetings of the participating States' permanent representatives are held. In addition, specialized seminars and meetings are convened in various locations. Periodic consultations are held among Senior Officials, Ministers and Heads of State or Government.

Although the OSCE continues to engage in standard setting in the fields of military security, economic and environmental cooperation, and human rights and humanitarian concerns, the Organization is primarily focused on initiatives designed to prevent, manage and resolve conflict within and among the participating States. The Organization deploys numerous missions and field activities located in Southeastern and Eastern Europe, the Caucasus, and Central Asia. The website of the OSCE is: <www.osce.org>.

ABOUT THE COMMISSION ON SECURITY AND COOPERATION IN EUROPE

The Commission on Security and Cooperation in Europe, also known as the Helsinki Commission, is an independent U.S. Government commission created in 1976 to monitor and encourage compliance by the participating States with their OSCE commitments, with a particular emphasis on human rights.

The Commission consists of nine members from the United States Senate, nine members from the House of Representatives, and one member each from the Departments of State, Defense and Commerce. The positions of Chair and Co-Chair rotate between the Senate and House every two years, when a new Congress convenes. A professional staff assists the Commissioners in their work.

In fulfilling its mandate, the Commission gathers and disseminates relevant information to the U.S. Congress and the public by convening hearings, issuing reports that reflect the views of Members of the Commission and/or its staff, and providing details about the activities of the Helsinki process and developments in OSCE participating States.

The Commission also contributes to the formulation and execution of U.S. policy regarding the OSCE, including through Member and staff participation on U.S. Delegations to OSCE meetings. Members of the Commission have regular contact with parliamentarians, government officials, representatives of non-governmental organizations, and private individuals from participating States. The website of the Commission is: <www.csce.gov>.

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The briefing was held from 2:06 p.m. to 3:12 p.m., Room 2118, Rayburn House Office Building, Shannon Simrell, Senior Policy Advisor, Commission on Security and Cooperation in Europe, presiding.

Ms. SIMRELL: [Off-camera]—Welcome to the hearing organized by the United States Commission on Security and Cooperation in Europe, also known as the US Helsinki Commission. Today's topic is The Future of European Energy Security. Our conversation will center on the effectiveness of the efforts of EU member states to decrease their dependence—

Ms. SIMRELL: [In progress]—on Russian energy, the importance of denying Russia the ability to weaponize energy and to fund its war on Ukraine, examine the wartime and humanitarian implications of the fragile state of Ukraine's critical energy infrastructure, and offer recommendations for U.S. and allied policy responses.

Russia's full-scale invasion of Ukraine in 2022 exposed the dangers of the European Union's over-reliance on Russian oil and gas and sparked urgent debates about its need to diversify sources of energy, decarbonize its economies while ensuring a just transition where all communities will benefit from reliable and affordable energy, in the years since the EU states have bolstered their energy resilience by more closely partnering with the United States and others to increase their use of liquefied natural gas and renewables. However, the goal of denying Russia vast flows of oil and gas revenue to fund its war on Ukraine remains somewhat elusive.

Member states have banned several Russian energy products and invested significantly in enhancing their energy independence, however, Russia continues to take in billions of dollars in oil revenue annually. After nearly three years of Russia's war of aggression, the energy situation in Ukraine is dire. Ukraine's ability to produce, store, and transmit power is severely impaired, with far-reaching implications for the Ukrainian war effort and potentially disastrous consequences for the Ukrainian people. In order to defend its territory and defeat Russia, it is imperative that Ukraine meet its significant and immediate energy needs while also defending and maintaining its energy infrastructure.

To help us explore these issues, we will hear from three expert panelists. After brief introductions, they will have time to deliver remarks, and then we will have time for questions.

Speaking first and on the geopolitics of European energy security, to include a nexus with China, is Dr. Anna Mikulska. Dr. Mikulska is a research staff member at the Science and Technology Policy Institute. She has a background in political science, international relations, and law. Prior to joining STPI, she was both a fellow in energy at Rice University's Baker Institute, where she co-led the Program on Energy and Geopolitics in Eurasia and a senior fellow at the Kleinman Center for Energy Policy at the University of Pennsylvania. Her focus has been on markets for and geopolitics of energy, including the use of natural gas as a geoeconomic tool and the role of U.S. exports of liquefied natural gas in the context of domestic and international energy security. Dr. Mikulska's professional interests also include the impact of electoral politics on energy policy and international systems. She holds a doctorate in policy science from the University of Houston, a master's degree in international relations from the University of Windsor in Canada, and a law degree from Adam Mickiewicz University in Poland. Dr. Mikulska speaks Polish, English, German, Farsi, and Russian.

Then we will hear from Dr. Joseph Majkut on the initiatives to build out Europe's existing critical energy infrastructure and how coordination among the EU, United States, and others can help curb Russian energy exports. Dr. Majkut is the director of the Energy Security and Climate Change Program at the Center for Strategic and International Studies. In this role, Dr. Majkut leads CSIS's work to understand the geopolitics of energy and climate change to ensure a global energy transition that is both responsive to the risks of climate change and the strategic and economic priorities of the United States and the world. Dr. Majkut is an expert in climate science, climate policy, and risk and uncertainty analysis for decision-making. He is frequently cited in trade and national media on the politics of climate change and has testified before Congress on climate change and science. Before CSIS, Dr. Majkut worked as the director of climate policy at the Niskanen—excuse me—Niskanen Center, where he led efforts to research and promote carbon pricing, low carbon and innovation, regulatory reform, and other market reforms to speed decarbonization. Between 2014 and 2015, he worked in the U.S. Senate as a congressional science fellow supported by the American Association for the Advancement of Science and the American Geosciences Institute. He holds a Ph.D. from Princeton University in atmospheric and oceanic sciences, a master's degree in applied mathematics from the Delft University of Technology, and a bachelor's degree in mathematics from Harvey Mudd College.

Finally, Ms. Olga Khakova will offer insights into the current state of Ukraine's energy infrastructure and offer recommendations on how the United States and its allies can partner with Ukraine to foster innovation and resilience. Ms. Khakova is deputy director for European energy security at the Atlantic Council's Global Energy Center. Ms. Khakova leads GEC's portfolio on advancing energy security, decarbonization, and competitiveness through cooperation between the United States and Europe. She addresses these issues through in-depth research and high-level convenings. Ms. Khakova frequently appears on the BBC, Bloomsburg, CNN, Deutsche Welle, NPR, and Times Radio as a guest commentator. Her work has been published in Barron's, The Economist, Foreign Policy, The New York Times, The National Journal, Politico, and The Washington Post. Before joining the Atlantic Council, Ms. Khakova was a senior program coordinator

for the U.S. Energy Association's Energy Technology and Governance Program, and a program director for the Climate and Energy Project, a clean energy nonprofit in the Midwest.

Dr. Mikulska, you have the floor.

Ms. MIKULSKA: Thank you very much for the introduction. Good afternoon.

I am really happy to be here and have the opportunity to revisit what I have been looking at for years now, even before Russia invaded Ukraine. That invasion and the events that followed have exposed serious deficiencies in the energy security of the European Union and its members. As I have testified a year and a half ago to the Senate Committee on Energy and Natural Resources, for the hearing that examined the impact of the invasion on European and global energy security, Europe failed in all aspects of energy security and security of supply, as defined by its availability, accessibility, affordability, and acceptability.

Those deficiencies in energy security were tied directly to the EU's overdependence on the Russian energy supply and Russia's willingness to use that supply to exert geopolitical pressure. Natural gas has been the most geopolitically sensitive of the fuels, due to the need for extensive infrastructure to move its volumes either via pipelines or as liquefied natural gas through import and export terminals. Russia has known it all too well and has been manipulating supplies to Europe since the winter before the invasion.

Ever since, the growth in [LNG] liquefied natural gas trade and buildup of LNG infrastructure in Europe has helped in addressing some of the deficiencies. However, the supply that still does not match the potential demand needed to avoid energy crisis anywhere in the world in case of major supply disruption or if demand increases based on weather. The supply of LNG globally has been steadily increasing with the U.S. as a major player. This is important since the U.S. LNG volumes are flexible in terms of destination and that is how they can help balance global markets. With no destination clause, any buyer of U.S. LNG can send the fuel anywhere in the world.

Oftentimes the supply goes to whoever can pay the highest price. Since the Russian invasion on Ukraine, Europe has been usually the highest bidder. High prices of energy in Europe have contributed to an increase in energy efficiency and the strong development of renewables. However, high prices have also contributed to inflationary pressure and a decrease in industrial activity and investment. The latter is particularly true for hard-to-abate sectors, such as steel, cement, and glass manufacturing, or the fertilizer industry, where natural gas is used.

Renewable power has been often seen as more secure in terms of supply, given that it is generated domestically. However, because of its intermittent nature, it cannot yet support the energy system in the same way that traditional energy generation—or electricity generation does. In addition, there is the concern of becoming dependent on China for critical minerals and rare earth supplies needed for renewable generation. Natural gas, on the other hand, is seen as a good backup for intermittent renewables, as it is less emission-intensive than coal and its generation is flexible. It can be switched on and off relatively quickly to assist the grid. This natural gas will continue to be an important fuel for Europe.

Still, a relatively large share of natural gas that Europe consumes comes from Russia. For some countries, especially Austria, Slovakia, and Hungary, Russian gas still comprises the majority of natural gas flows via pipeline. Russian pipeline gas supply especially to those countries is likely to decrease when the Ukraine-Russia transit contract concludes end of this year. This will make even more critical the supply of LNG that reaches Europe.

Paradoxically, Russian LNG imports into Europe have been increasing. In fact, they are increasing at a time when all other LNG supplies are decreasing. Given the high prices of natural gas, the revenues that the Russian state garners from those sales are contributing to the Russian economy and its ability to wage war. A recent report by EIA has notably pointed out that Russian gas production has increased nine percent year on year in the first three quarters of 2024. Similarly, revenues from oil—from sales of oil support the Russian state, as Russia is able to exploit the lack of universal adherence to sanctions as well as the loopholes in those sanctions.

Russian oil not only flows via pipeline to some of the EU states, it also is blended into oil coming from other origins. It is sold either directly or indirectly as refined in other products. The latter is not subject to sanctions. In the meantime, China has become Russia's main energy export destination, particularly for natural gas, which Russia is sending there via pipeline of Power of Siberia 1 and as LNG. With a lack of other markets, Russia is becoming dependent on China as a demand center. Those closer ties between Russia and China could become problematic, in general as well as with respect to energy flows. After all, both countries combine the powers of the world's major fuel supplier and the world's largest energy consumer. This creates the potential for geopolitical interference. Thank you.

Ms. SIMRELL: Thank you so much. You have the floor.

Mr. Majkut: Thank you, everybody, for having us today. A pleasure to be here with my esteemed colleagues. Noting, of course, that these comments reflect my own opinions, not those of my employer.

It is now well known the energy crisis, kicked off by Russia's invasion of Ukraine, reshaped global energy markets and placed Europe on a new energy trajectory. There are three things I want to highlight for the—for the group today that we have learned from that and are going to affect decision-making going forward.

First, Europe managed the loss of Russian gas through a combination of LNG imports, demand reduction, and the acceleration of renewable energy. Oftentimes we miss the latter two factors in that story from the United States' perspective. Second, the financial and infrastructure challenges that that transition brought still need resolution today. Finally, there remains to be the need for the U.S. to craft a long-term strategy to address Russia's role in global energy markets to achieve long-term—lasting support for Ukraine, as well as larger geopolitical aims.

A lot of my comments today are based on a report that we published earlier this year, entitled "Power Plays: Europe's Response to the Energy Crisis." It is in the materials we shared. I brought one copy, in case anybody is hyper-interested.

When Russia weaponized its energy exports following the invasion of Ukraine, Europe was forced through an unprecedented test of energy resilience. The scaling here actually matters. Russian fossil fuels made up one-fifth of the EU's energy consumption and quickly dwindled to just now five percent in a matter of a couple of years. That is a really large shock to what usually are relatively stiff systems. A critical part, as we just heard and I think is becoming more and more well known, was that Europe's survival

strategy involved ramping up natural gas imports, particularly LNG from the United States.

Between 2021 and 2022, European imports of U.S. LNG doubled, rising from about 30 to 70 billion cubic meters each year, and most of that came from Europe. Europe is now also the primary market for U.S. LNG exports. Therefore, the integration is quite large on either side. Buying such large quantities of LNG from global markets required European buyers to pay high prices, peaking in summer 2022, but those have now settled to about double pre-crisis levels. At the same time, Europe I think made significant strides in renewable energy.

Wind and solar projects were expanded dramatically. There were changes to permitting regimes, and that demonstrated that energy transition really can support energy security for energy-importing countries. While Europe already had significant renewable generation pre-crisis, the expansion, particularly in solar, deserves note. Renewable capacity also adds up year over year as well. For the two years of this energy crisis, Europe added about three percent of its generation needs to solar each year. As that capacity builds, that is expected to reduce the need for gas and coal and power generation going forward.

The combination of quick action on LNG imports and the expansion of renewables helped Europe weather the storm and keep the lights on, but that came at a significant cost. The rapid transition away from Russian energy imports cost Europe dearly. The fiscal outlay to shield consumers and firms from the rise in energy prices amounted to \$650 billion approximately by mid-2023. Across different European countries, this spending ranged from one to seven percent of gross domestic product. This is the U.S. Department of Defense's level of spending, and that is absolutely unsustainable in the long term.

The costs of European energy, which are still, again, twice those in the United States, were recently highlighted in Mario Draghi's report, "The Future of European Competitiveness," as a threat to industrial competitiveness in Europe. To address this, the report cited—and I think this is kind of now emerging consensus—Europe will have to invest further in additional infrastructure that will enable decarbonization and reduce energy costs by improving security. Indeed, we now see a lot of that investment happening. New natural gas infrastructure will meaningfully move European countries off of Russian imports for good.

For example, the Vertical Corridor Pipeline project in the southeastern part of Europe is going to link gas systems from Greece to Ukraine and will really help, particularly in the case of Moldova and Ukraine, get off Russian gas imports. Likewise, the Adriatica Pipeline in southern Italy will connect points from North Africa to points beyond Europe. The Baltic Pipeline connected Poland to Norway and was turned on, I think, very closely to the explosion of Nord Stream 2. The point is, like, a lot of that, I think, is actually happening. The infrastructure necessary to secure long-term energy supplies is being built.

Likewise, as those renewables are deployed, we are going to see a need for interconnection and transmission infrastructure, similar to the one we are seeing here in the United States. Europe is pursuing expanded transmission capacity with projects like the Biscay Gulf Interconnection, linking Spain and France, and the NeuConnect project linking the U.K. and Germany. I will note that even more than pipelines, these international connectors actually require a great deal of trust between the countries on either side because they link to the electricity system on either side. Those things need to be in constant balance. Therefore, that the geopolitics of large-scale and electricity transition actually introduce new dependencies for Europeans that we might not—that are still being sort of probed and need to be well understood.

Lastly, as Europe managed its transition away from Russian energy, Putin's cronies looked elsewhere to sell their stuff. Russian energy is not disappearing entirely from global markets. Russian liquefied natural gas still finds buyers, and the country continues to use oil exports as a source of revenue for domestic and war spending. Russia forecasts that its energy export revenues will, indeed, increase in 2024, despite the imposition of sanctions, import bans, and the U.S.—led oil price cap on oil exports.

The latter of those I would like to comment on briefly, is designed to reduce Russian oil export revenue without spiking global prices. We now see that this price cap is leaking. Colleagues from CSIS recently wrote, and I quote, "Overall, embargoes and price caps have only had a modest impact on Russian state finances. Russia's export volumes have held up thanks to its shadow tanker fleet and despite crackdowns and pressure on dodgy traders. It is been hard to control activities in dark corners of the oil market that enable Russian export." The reality is—end quote.

The reality is that demand for energy products, combined with sophisticated markets, means that energy will find ways into global marketplaces. More effective enforcement may help, but the U.S. needs to think strategically about how to contain Russia's influence over global energy markets while providing alternatives for energy-importing countries, like those in Europe. That means focusing on developing clean energy economies around the world and allowing U.S. export volumes of oil and gas to contribute to well-supplied and less volatile energy markets globally.

I am going to end my comments there. Thank you very much. Look forward to the discussion.

Ms. SIMRELL: Thank you so much. Thank you so much.

Before I pass the floor, I just want to do a little point of order. One, after we hear Ms. Khakova's statement, then we will have a microphone available. We invite you to think of questions and take advantage of the fact that you are in the presence of experts who think about these very important and complex things all the time. I will take a couple questions from the floor. Then we will revert to the panel. Hopefully, we will have a very strong exchange.

With that, I pass the floor. Thank you.

Ms. Khakova: Thank you so much. I really appreciate the invitation, and it is really an honor to be here and join this briefing. Yesterday, October 15, was the start of the heating season in Ukraine, and possibly the beginning of the most brutal winter since the onset of the full-scale invasion. Ukraine could face a supply deficit that is equal to a third of its peak demand following Russia's decimation of around 11 gigawatts of power. However, with the right coordination and preparation across the transatlantic allies, this worst-case scenario can and must be avoided. Such actions are also essential for protecting and securing European energy security as well.

Today also marks the 964th day of this horrific illegal invasion. We are coming up to a thousand days of this assault. Putin's failure to win the war on the battlefield has evolved into this heinous strategy of making Ukraine's bustling, thriving cities unlivable. He plans to accomplish this by taking out critical energy infrastructure, electricity, water,

heating, and communication services. Despite Moscow's efforts, though, Ukrainians stayed brave, resilient, and unbroken during this challenging time—of course, with help from allies, including Europe, the United States, and others around the globe and their generosity.

However, 25 major attacks have been recorded over the two years specifically on the energy sector. This assault has progressively intensified since March. Those who have been following this, especially this summer, leaving millions of civilians without power. Blackouts ranging from a couple of hours, at the very best, to 14 to 16 hours a day. Families are raising children, managing to work—complete their work assignments, cooking, and taking care of their sick and elderly, with just a couple of hours of electricity a day. Imagine that. However, there is a bit of good news too. It is all not doom and gloom. Thanks to the agile and generous responses from Ukraine's allies, and the bravery of the energy sector workers and the leadership in Ukraine, the country is now finally getting a temporary reprieve from the loss of power.

However, the situation is extremely fragile. The past patterns of attacks on Ukraine's energy sector strongly suggest that Russia is stockpiling for another mass offensive to launch Ukraine into freezing darkness this winter, particularly by severing connections to the three remaining operational nuclear power plants and very likely intensifying attacks on some of the heating systems. Such scenarios go beyond the humanitarian disaster for Ukraine that would be expected if Russia succeeds. It is also an economic and energy security issue for Europe, but also the United States. Strong, secure Europe, a strong, massive trade partner for the U.S., is a benefit—for a transatlantic relationship that is a benefit for the United States.

Ukraine's energy security is a win for the U.S., and is a win for European energy markets, as well. As my previous panelists and speakers have mentioned, rightfully so, you know, European energy systems are deeply interconnected. It must not—they do not exist in a vacuum. They must not be treated as in a vacuum. European integration of its energy markets with Ukraine including, is part of its strength. It is what keeps European markets competitive. However, that also means that we need to protect all aspects of European energy security, including Ukraine.

Now what makes this situation particularly challenging are a couple of external factors that could put further pressure and additional demand on the system. For example, cold snaps, you know, really severe winter, potential technical issues, and outages, the insufficient maintenance that did not take place, that should have taken place—because Russia has destroyed so much of the infrastructure, regular maintenance could not happen—that could also exacerbate the problems. Of course, the risks of cybersecurity attacks, not just for Ukraine, but Europe and the United States as well.

For Ukraine, the frequency of those cybersecurity attacks has tripled since the beginning of the full-scale invasion. However, again, some—you know, serious, horrific situation, but some good news and hope. You know, together with allies Ukraine can prepare for Russia's malign actions. We know what to expect, and also some of these additional external scenarios that are really hard to control, or we have absolutely no control over, in terms of the extreme weather events that are on the horizon that could impact the demand.

I am going to outline just a couple of specific opportunities, because, yes, I wanted to present how dire the situation is. I also wanted to showcase how Ukraine was able to maintain its energy production, even in this horrific environment. Yet also, being realistic

about what is on the horizon. Here are a couple of suggested action items that can ensure that Ukraine survives this winter and thrives, not just this winter but in the long term.

Therefore, kind of in the first broader category, just thinking through the protection of the remaining infrastructure. The most efficient way to protect the energy sector is to prevent damage in the first place. Providing Ukraine with sufficient air defense to protect the remaining critical infrastructure, such as the three nuclear power plants and the networks that are interconnected that are near these power plants, would save billions of dollars on reconstruction, rebuilding, and other costs down the road. This is the baseline. Ukraine has also demonstrated incredible innovation in the fortification and concealment of smaller-scale components of the energy system. You know, hard-shelled defense for smaller infrastructure, something that is not possible for the really large, centralized power plants. Scaling this type of smaller protection is also really important, and with the help of allies Ukraine can do this across multiple parts of the system.

The decentralization of Ukraine's energy system is another key pillar and another pathway for Ukraine to create a resilient strategy to protect its energy sector. How so? Therefore, distributed energy systems are much more challenging to destroy for Russia or other malign players versus something that is more centralized. Advancing decentralization at scale will require public-private partnerships, which can be enabled through de-risking mechanisms.

[DFC] International Development Finance Corporation, can play a key role, and they have played a key role, in providing some of those very creative mechanisms. They have contributed significant amounts of money. Yet, again, thinking through how to drive additional private sector investments, showcasing and supporting specific projects, to showcase that there is a way to do this. Even in this challenging environment in Ukraine, there is a way to mitigate risk, to work with partners, and be creative. Ukraine is not a monolith. Certain projects closer to the front lines carry higher risks versus in some other parts.

Again, protection from cybersecurity attacks is extremely important. It is vital. Just as vital as kinetic defense. Allies should support Ukraine in its already very successful efforts, an incredible rate of success, in reinforcing what I call the cybersecurity shield if you would. Now, talking through on how to make sure that the right deliveries get to Ukraine on time. One of the issues is funding. Unfortunately, it remains key.

However, Ukraine's Energy Support Fund has been successfully run by the—by the energy community secretariat and has been an exceptionally effective way to garner and channel funding for meeting the most urgent needs in Ukraine's energy sector, procuring equipment as well as spare parts, technical items, different fuels needed to repair infrastructure and maintain heat supply in Ukraine. The fund has received some additional funding from Germany, from the EU. Therefore, it is really important that this fund continues to stay full, so that way, especially ahead of this winter, there is a lot—there is sufficient money there to ensure that procurement can continue smoothly, and it does not become depleted when Ukraine needs access to this money to repair, replenish, and procure the right parts for its energy system.

Moreover, Ukraine and its allies achieved significant progress on expediting the right equipment deliveries to the right locations across Ukraine. If, you know, those of you—I am sure all of you have seen Ukraine on the map. You know, it is huge. Making sure that the right communities get the right parts that are—you know, have unique specs, is really, really important, as quickly as possible. By building out relationships with

communities on the frontlines, especially donors in different countries or multilateral donors, can better understand the unique needs of the different communities in Ukraine. For example, you know this combined heat and power units, getting them to the right locations as quickly as possible. Make sure there are reliable backup options, including liquefied petroleum gas [LPG], heaters, wood stoves, and other solutions. There has been progress made, and this has expedited how quickly deliveries come to Ukraine to the right places, but there is still room to grow.

Then, finally, repairing, rebuilding, and replacing equipment. Therefore, ramping up the production of critical energy equipment in Europe and the United States would create a much-needed strategic reserve of crucial system equipment. Therefore, thinking through it in a more holistic way, not just for Ukraine but for all of the transatlantic energy systems. This will address a broader transatlantic strategy component shortage on our hands today that we are facing not just in Ukraine, but in Europe, in the United States. One example, Ukrenergo, Ukraine's energy system operator, is making good progress in accumulating a stock of repair equipment. Therefore, they are accumulated three times of what is usually needed. However, these are unprecedented times. Three times might not even be enough. Therefore, really going on extremes and preparing for the worst.

Another strategy is optimizing exports from Europe—imports. Excuse me. Optimizing electricity imports from Europe, will, of course, reduce the need and the pressure to produce more energy at home. Before the full-scale invasion, even at times during the last couple of years and a half—two years and a half, Ukraine has securely exported power to neighboring European nations—incredible, in the midst of the war. Now imports from Europe will play a crucial role in keeping the lights on, anticipating about 1.7 gigawatts of electricity to be imported from Europe by Ukraine in the near future.

Expanding these interconnections with Europe, and especially Moldova, and securing also Moldova's energy system because of how closely it is intertwined, is a very key strategy here. I spoke a little bit about de-risking investments, so just kind of driving that point home. Again, finding ways to encourage private sector engagement in Ukraine. I will give you one example. Ukraine has a massive gas storage capacity. It has been utilized by traders, even during the full-scale invasion, without any kind of de-risking or insurance. However, Russia noticed that and attacked these facilities, to none of their success. They kept the gas flowing safe. They were able to deliver the gas.

However, Russia did this to discourage European traders from storing their gas in Ukraine's vast natural gas facilities into the future. However, the resilience of these facilities has been clearly demonstrated. Europe should offer, and U.S. should offer de-risking mechanisms to encourage future traders, European private sector companies, and others, to store gas in Ukraine. This is also—this also has positive economic implications for Ukraine as well.

Finally, just a couple of last points. The occupied territories must not be forgotten. For example, international communities must prioritize efforts to prevent a nuclear disaster in the occupied Zaporizhzhia nuclear power plant. Multiple safety violations and near misses have been recorded to date near this plant, signaling—and at the plant—signaling that an incident is of high probability and it is just a matter of time. It is not if, it is when. The control of the plant must be given back to Ukraine, in the best-case scenario. At the very least, it must be given to someone who—to non-Russian forces to ensure the safety—you know, whether it is a neutral party. However, we do need to pay more attention to what is happening in Zaporizhzhia, even if it is giving control to more of a

neutral party, even if it is not, in the very worst case, not Ukrainians operating it. With Russians operating it and occupying it, we are just watching a slow motion of a disaster on the horizon.

To finish a bit of a more, you know, positive note, look, Ukraine is in a challenging situation right now. However, it must not be viewed as a victim. It should be viewed as a partner in Europe, a partner who can help Europe build a low-carbon, resilient, secure energy system. The country is a source of best practices for resilience and recovery, decentralization, and cybersecurity defense. As Europe and the U.S. face, you know, unique challenges at home that are, of course, different from what is going on in Ukraine, but, you know, seeing what is happening with hurricanes and other threats to the energy system, even cybersecurity threats are—there are a lot of similarities.

We can take those skills, and we can take best practices and utilize those skills. This will be extremely helpful. We are at an inflection point right now about Ukraine's energy future. We know what the risks are. Russia has shown its true colors, its face, and what it is capable of. We know what the threats are. We know exactly what to do to prevent them, to mitigate them, to make sure that Ukraine, as I mentioned earlier, can be a thriving hub for innovation, clean and low-carbon energy production, and support European energy security. However, first, it must survive this winter. Thank you.

Ms. SIMRELL: Thank you. Thank you to each of our panelists. There have been some reports that have additionally been mentioned in some of the comments. Those will be posted to our website with the testimonies that you have given shortly, so everyone can be able to follow along and be able to look up that additional information.

We heard—we are going to have a staff person here with a microphone, so if you would like to prepare your questions, someone will be right—thank you so much—someone will be right with you. We heard a lot about the costs in interconnectivity and the dire conditions under which Ukrainians are living, but also the—two times the energy costs that our European friends and allies are living with. The real geopolitical crisis that Russia's full-scale invasion has precipitated, exposing all these weaknesses in Europe's over-reliance on gas and how to move to not only a more sustainable future but certainly one that is less invested in helping Russia to fund its war against Ukraine.

With that, I pause a minute, and then I will turn it to the floor. Therefore, if anybody would like to take questions. We will probably get one or two, and then we can turn it back to our panelists for some discussion. Please.

QUESTION: Is he bringing it over?

Ms. Simrell: Yes, he is bringing it over. Please. I will turn off the microphone here. Question: All right. Look at that. Now I feel very improvised. Yes. I am Paul Massaro. I am the staff director of the Helsinki Commission.

My question is for Dr. Majkut. Sorry, the last name. [LAUGHS.] Yet, you mentioned the—you know, the U.S. sanctions and, I guess, really the coalition sanctions on Russian energy. You know, I mean, we have tried to run these to ground on multiple occasions, trying to understand sort of what is happened here because—I mean, certainly by the metrics they seem to have essentially failed. I mean, if our mission was to bankrupt Russia, we have not. [LAUGHS.] By any stretch of the imagination, we have not. I guess the question is, is the design flawed? Was it—was it not going to happen to begin with?

You know, I mean, there is been this thinking of, well, we are trying to get Russia actually to sell as much as possible at the lowest price possible, and we are going to—

[LAUGHS]—I mean, just when I—when I hear even myself say that it is kind of, like, really? That was our goal? I mean, so it is it—you know, I guess I—you know, you mentioned, I think, what is told—has been told over and over and over again, which is we have tried to balance stability in global markets with bankrupting Russia. [LAUGHS.] However, I mean, it seems like we have either misunderstood this or wildly prioritized stability in global markets, to the point that—I mean, Russia does not seem to have even taken much of a hit. I mean, if I am wrong, I would like to know. Therefore, thank you.

Mr. Majkut: Yes. I mean, altering oil markets is a tricky thing to do because as a commodity oil is very fluidly—pun intended—exchanged, right? [Laughter.] While I think there is plenty of evidence that early on the price cap or other sanctions did have an effect on Russian oil export revenues, that just the industry has found ways around that. Like, Russian exporters have created a shadow fleet. It is, like, ships that do not work through the insurance—the standard insurance programs and other things. That is going to be part of the reality. Therefore, what do we—like, that is the reality of how this has worked.

Therefore, what do we do? One, we can work around the edges to make it work a little better, right? You could—you could look at higher levels of insurance requirements and verification at critical shipping points, right? Turkey tried to do this and then, favoring global market stability, they said, well, maybe we can be a little bit laxer. Therefore, like, as we look for options to kind of create additional pressure now, that is one option. I can send you the following—you know, a piece that we wrote that has a couple of others. However, the reality is, like, that market demand will be met.

Therefore, when we think about what a longer-term strategy is going to be, it is probably finding other suppliers or reducing global demand so that we can create additional pressure on Russian exports without causing undue economic harm elsewhere. That is why, like, fluid U.S. oil exports are helpful. If OPEC or Saudi Arabia decides to increase supply to—you know, that would—that would actually, like, potentially reduce prices and cause trouble for Russia's war economy. However, it really, we do—at some point, we need to have some sort of view on what we want, like, the global supply balance looks like, and how we are going to manage that over the long term.

Ms. SIMRELL: Please do. If you would kindly state your name and your affiliation before you speak, thank you.

QUESTION: Thank you all for sharing your expertise today. My name is Isabella Baker. I am with the CSCE.

A few other countries have been mentioned in this discussion. Moldova particularly, Turkey more recently. I am curious what efforts have been made, or what efforts can be facilitated, as to regional energy security in the Black Sea region, in Ukraine's neighborhood.

Ms. SIMRELL: Who would like to take it first? Doctor.

Ms. Mikulska: Well, I think there have been already efforts that have—that are important. That includes the LNG terminals that have started to function in Southern Europe, right? These ones are important for the security of supply in Southern Europe, especially the Greek terminal, I think, for Moldova might be important—as I think Joseph mentioned before.

For Turkey, it is a little bit more complicated. I do not think Turkey has an issue with the security of supply. In fact, it has been developing a system within which it becomes almost a place where the supply ends up being delivered and then distributed.

Sort of a hub, and that includes supply from Russia, right? Therefore, there has been a recent announcement that potentially BOTAS, the Turkish state company, will start mixing oil—its oil, have a new blend, Turkish blend, which will include up to 40 percent of gas of Russian—sorry, this was gas—of gas and mixed with Gazprom's gas. Therefore, that is something that Turkey has been actually in many ways using to increase its ability to be the regional gas hub and potentially profit, both politically but also one could think of geopolitical profits that Turkey could basically have, being in that situation between both worlds.

Ms. Khakova: This also speaks to the need for Europe and the EU specifically, to have a broader, enforceable strategy about the future of Russia's LNG and natural gas. Right now, the gas that is not going to Europe, the reason for reductions, is Russia. Putin was the one who stopped the exports, not European sanctions or laws. Right now, there are some restrictions on being able to do transshipments for LNG, but overall, LNG and gas and piped gas can come legally into Europe. There is no enforceable date. There is no enforceable deadline for phasing those out.

Therefore, if Europe, and the EU specifically, is serious about clarity, to creating transparency, what is coming through Turkey, what is coming through Azerbaijan and other Central Asian countries to Europe, there needs to be a clear timeline to say, by this date this is how much we want to see or not see some of the piped gas. This is what we want to see on Russian LNG. This strategy right now does not exist, which makes it more confusing for private sector investors to figure out how they can play into the European market if they do not know that there is a certain phase-out date deadline for Europe and the Russian gas relationship.

Ms. SIMRELL: Perhaps I can use my privileged position as the moderator to ask a question or two myself. One of the conditions of being able to try to make European energy more secure and more resilient is obviously a shift away from carbon in general or Russian gas in particular. However, one of the things that you mentioned, Ms. Khakova, is the decentralization and kind of hubs and smaller systems making the system itself, by design, infrastructurally speaking, more resilient.

Where is European thinking in terms of this ability to look at building out infrastructure in that way? Also, the ability to—of our European friends, if you could project, to, let us say, sustain the kind of increases in prices, as they have, as they figure out this transition? Will the transition come, in whatever form it comes, quickly enough to be able to meet the public's expectations, as well as their energy security needs? Perhaps I will start with you. Thank you.

Ms. Khakova: Sure. You have hit on something that is exactly the answer here too. [Laughs.] This is the reason for Ukraine's decentralization versus in Europe. You know, in Europe, yes, it is—energy security is an important aspect of decentralization, but it is—decentralization in Europe, broadly, is driven by the need to decarbonize, whilst trying to do that competitively. While in Ukraine, it is very much driven by how do we physically, you know, secure our energy sector. Now, I think in the future, if, you know, Europe, can build out a system that is both, that is the end goal. Yet, even in peaceful times, even in Europe that is not in the broader Europe and EU that is not being bombed every day, it is a challenging—and in United States—it is a challenging task, in peaceful times, to decentralize a massive system.

You know, I have heard energy experts refer to this. This is such a great comparison of, you know, trying to build out a multi, high—smaller highway road system, while you

are still using the main highway, and then somehow encouraging, you know, the cars to kind of get off. I mean, it is extremely complex. However, there is a way to do it, with the right strategies and the right upgrades to the grid, the right build-out of the grid. However, it is a lot of financing. It is a lot of money. The Draghi Report was mentioned a few times, and I think we can all agree that it is the financing gap that is really a massive—you know, a massive concern. Part of that financing is building out the energy infrastructure that is going to take us to the decentralized systems that we want to see in Ukraine and across Europe.

Ms. Mikulska: If I can add, I think it is actually really—a really great point. One thing that Europe is doing is it is developing its renewables, which are much more decentralized—or can be decentralized. The other part is [SMRs], so small modular nuclear reactors, right, that we are thinking about as part of the decentralizing, potentially, once they get employed in Europe or otherwise. However, that is something that we are trying to figure out.

What I wanted to underscore is something we talked about when I was still at the Baker Institute. We were talking about what is energy security, right? Energy security, we are talking about how important—how important it is to decentralize and also diversify supply. However, what actually decarbonization does, it does the opposite. It actually puts everything into a grid, into electricity, exactly directly opposite to diversifying as the electricity reaches the demand points.

Yes, there is some diversification in terms of the generation, but in the end, everything is in a system that could be attacked, both physically but also through cyberattacks. That is when the decentralization might be extremely important to achieve. Therefore, once the system is attacked, it does not necessarily roll through different countries because, as Joseph has mentioned, those countries are—in Europe in particular—are becoming increasingly interconnected with respect to electricity.

Mr. Majkut: Right. Yes, I will just—maybe I kind of take a step back, right? Like, Europe was already aiming to do a relatively rapid transition away from fossil fuel use. You know, like, there was—there was some kind of sense and a lot of public rhetoric, right, when this emergency happened, like, well, now they are going to change all the—you know, get rid of those unrealistic plans. No. Like, Europe now is—the prices are incentivizing transition in a way that they did not necessarily before.

The tasks ahead are relatively straightforward. They are not necessarily easy, right? Building enough interconnection that you can build a highly renewable system, finding a way to do storage, to deal with, like, daily or weekly or monthly shortfalls in a generation. The European Union is, like, slightly different from the U.S., where when we build electricity transmission, we want it to go east to west. They want it to go north to south because there is a lot—it is very sunny in the Mediterranean, it is very windy in the north. Finding—and those two can kind of help balance each other over a long time.

Now, what can the U.S. do? The U.S. can definitely help by, you know, investing in technology and sharing the technology, the learnings that we do—whether it is small modular reactors, whether it is, like, digital services, you know, demand reduction techniques. Like, those are all things that are relatively shareable between developed economies. There is some role for the state in helping enable that, but it is, you know, largely the U.S. letting our firms innovate, and take their innovations abroad.

The other thing we can do is, you know, make sure that we are providing adequate energy supply, to the extent we can. Whether that is continuing to export LNG, or supply oil to global markets. There is a future role for hydrogen that the Europeans see as a big part of their energy security strategy. To the extent the U.S. is going to be a maker or supplier of those—of that hydrogen, we should work together to make sure whatever we are producing meets the environmental and other standards that are going to be set in Europe and are part of their energy security story.

QUESTION: I do not mean to hog the mic. I just—you said the magic words, the magic letters, which were SMRs. I am just wondering—I actually have two quick things. The first is—[LAUGHS]—are SMRs real? Because —[LAUGHS]—they constantly get brought up as some kind of miracle solution, and I have never seen one. I mean, they always just seemed like fantasy technology to me. [LAUGHS.] Or else, like, right on the precipice but never quite there, sort of things.

Then the second thing, I guess, because we were talking about the decarbonization thing, I sort of take exception with the idea that—[LAUGHS]—Europe was—they were saying they were decarbonizing, sure. [LAUGHS.] However, I mean, Germany shut down its nuclear power plants. [LAUGHS.] You know, I mean, nuclear is, like, zero carbon technology. You know, the idea here was to buy a huge amount of cheap Russian gas, you know, to basically, you know, run the system off purchasing from corrupt gas from Russia. When that was no longer an option, they went back to coal. [LAUGHS.]

I mean, yes. Believe me, I mean, these are not—these are not exactly, like, low carbon, you know, fuels. Therefore, I mean, I guess it is confusing to me to hear, like, oh, they are heading this way, or they were doing it anyway, or something like this. Like, because, to me, it is, like, actually, if they were serious about this, they would have been investing in nuclear a long time ago. The only one that did was France, which did it not out of decarbonization reasons, but out of energy independence, you know, great France sort of reasons, which, you know, were different than all this other kind of stuff.

Therefore, I mean, is Germany now going to reembrace nuclearization? Is nuclear going to come back? Because—I mean, you make that face, but I mean, I mean, are we serious about this or not? [Laughs.] I mean, it is just—there just feels like this almost, like, foundational silliness to this, that we have got the Greens in government burning lignite and coal. [Laughs.]

Ms. SIMRELL: Well, there is a lot there. Does someone want to start with?

Ms. Mikulska: Since I mentioned that SMRs. [Laughs.] I will go ahead.

Ms. Simple Please. Honestly, we are delighted you did. Please.

Ms. Mikulska: I think there is something to it, although, yes, indeed, the SMRs are kind of still always, like, one step behind of what we are hoping. I believe there is one SMR working, or close to working, in China. Therefore—again, do not quote me on this, but there are some—there is some movement right on the horizon, I believe. However, when it comes to clean energy and decarbonization of energy in Europe, I think there is a lot to it. Particularly in Germany. I think there was this kind of idea, well, let us run on cheap Russian gas until we can actually really decarbonize through renewables, based on some type of technological breakthrough that we are going to have—for sure we are going to have, right?

However, until then, let us run it directly from Russia under the Baltic Sea, you know, and get that gas in a cheap way. Exploit Russia, because Russia will depend on

us. Little did they know, Russia thought the opposite, right? Russia was able to actually call the bluff, in many ways, by cutting supplies—as Olga has mentioned—by cutting supply to Europe. Europe has not cut supply from Russia. I mean, it is the opposite—the exact opposite. Therefore, in terms of nuclear power, and I have looked at it at some point in Germany, there has been the movement against nuclear through, actually, Greens, that has been happening in Germany since the 1970s. It is much, much deeper than we can think of in the last three, four years or so.

It has been underscored by the Chernobyl, you know, disaster. Later on, going forward, access to the gas kind of allowed Germany to think outside the box—of the nuclear box, and that is kind of what they—actually that nuclear was taken out by law. In fact, Germany has extended its nuclear power plants by four months, till April of—April, even though it was supposed to shut it down in December, based on the energy security consideration, as backup power, interestingly enough. Which is nuclear is not really for a backup ability, right? However, it has extended and did not shut it down.

It is unclear whether or not Germany had actually fuel to be able to keep those power plants alive at that point, because nuclear fuel is also not easy to come by. Most of the nuclear fuel that Germany has been buying has been from Russia. Therefore, here we have this kind of a system that is truly, you know, relying on Russia, not only on natural gas but also on the things that could back it up.

When it comes to nuclear power, I think in Europe in general France actually has not been investing in nuclear power. A lot of the issues that France has had over the last three years, because of the Russian invasion, it has with the working of its old nuclear reactors, which they actually have now to reboot because they were not building new ones to sustain them because there was this idea of, you know, renewable power and potentially natural gas supporting their system as well.

Where nuclear power could have a potential impact will be places like Poland, for example, which is trying to build not one, but potentially more of nuclear facilities. With—actually with the U.S. You know, it is right on the border with Germany, really. Therefore, I am not sure what Germany is going to actually, you know, gain, besides the fact that Poland will potentially be sending some of the nuclear power, hopefully, once it is built, to Germany. It will take time, however.

Mr. Majkut: Yes. Amongst the mysteries of the universe that one should not try to explain is German nuclear policy. [Laughter.] However, it is a large, integrated market. Therefore, look for other places that are supportive. Poland is interested in building, with U.S. support, large nuclear reactors of the kind we just finished at Vogtle. That seems like it is going to go forward. There is a small SMR project that has U.S. support being destined for Romania. Then Ukraine, to the extent that it is interconnected with Europe and joining the common market, is like a—can be a large source of nuclear power as well. They have got the workforce. They have got a security environment—well, they had a security environment that was relatively hospitable. Therefore, those are places where I think it is just more productive to look.

Ms. Khakova: Just to add two sentences on SMRs. Yes, real technology, but the reason why we cannot just simply ignore it is because China is going to build them regardless, at scale. Therefore, the question is, is this another race we are willing to—another tech race that we are willing to lose to China, if we do not step on the gas and think through a way to do this in a way where—it is all about how to do this cost competitively in a way where it is not just, you know, one-off—yes, the first—the first ones are going

to be complex. There is going to be setbacks. We mentioned several countries that are moving forward in this. Czechia, Slovenia, and others, even some Baltic countries.

This has been a wake-up call. Therefore, even, you know, when Germany is already reconsidering nuclear, that serious. It is a missed opportunity to not have a cohesive strategy on nuclear across Europe. It is a missed opportunity. However, it will be extremely important to then, once, you know, new technologies, like SMRs, like, one or two get built, that there is a cohesive regulatory environment that makes it easier, so you do not have to go through the hoops of, like, certifying, you know, in multiple member states. That is going to be—

Ms. Mikulska: Absolutely. The policy—the policy is usually the—not the technology—is often the issue that ends up killing some of the technologies at the end, unfortunately. Actually, part of the SMR—Russia also is developing its own SMRs, and they are close. In addition, most of the fuel that actually would fuel SMR would come from Russia. Therefore, there is a point of developing alternative SMR fuel supply centers, because we probably should not be in the same situation that Europe found itself when Russia invaded Ukraine.

Ms. SIMRELL: Thank you. I think some of the things that I am hearing as we are talking—there is a lot going on with policy recommendations, with realities on the ground, geopolitical and also technological not only innovations, but complexities. I am hearing that this war of aggression is heightening an awareness of interconnectivity, not only within Europe but across Europe. Certainly, drawing in the United States in terms of our ability to be part of the solution, with innovation, with business possibility, investments, with energy supplies.

However, I am hearing also that as we work forward on this, nearly three years in—and certainly 2014 after the purported invasion—annexation of Crimea, we are still lacking really cohesive, longer-term strategies, as the community writ large. We are still grappling very mightily with this. I think from the United States perspective, we do understand, and we have to understand—and I am glad that you are here today to tell us and double down on the fact—that a Europe whole, free, and at peace, with the lights on, is in the United States' best interest. When we can have a role in supporting that, we should, and certainly, we need clarity.

I was thinking about clarity. You know, we need clarity from the national priorities, whether we are balancing, you know, comfort and cost. We need clarity from a perspective of how the business environment is working, whether it is—you know, how sanctions work, and public-private partnerships, and how that helps in encouraging innovation and engagement. I think that we have to be clear about Russia's aims. Russia's not pulling any punches when it says that it wants to dismantle Ukraine. Therefore, we have to be very clear, because they are clear, and they are letting us know.

I think also it would be remiss if I did not bring it back to the clarity of the righteousness of the Ukrainian position of self-defense, and to try not to be completely dismantled and taken over by its neighbor. It is fighting right now not only for its existence but also trying to—also, again, you said partnership with Europe and allies. We need to—energy security comes to the root of some of these geopolitical fundamental questions about how we live and work and exist together in a community of nations that respect the rule of law and want to do business and to innovate and look forward to the future.

Therefore, on those couple of points of clarity, I offer it perhaps back to—maybe we will go in reverse order. Can I offer the floor back to you for final thoughts and reflections before we close today?

Ms. Khakova: Final point. We need to get off our back foot and be constantly on offense. You know, starting from COVID, starting from, you know, multitudes of Russian invasions, not just in Ukraine but Chechnya invasions, and takeover of territories in Moldova, Georgia. We have been on our back foot. We have been reacting and responding to threats from malign players such as Russia and, in some cases sometimes China. You know, responding to global events such as COVID, which was really extremely impossible to predict.

Therefore, we need to look ahead and ask ourselves, how do we develop a proactive strategy? Instead of letting people like Putin drive the energy security policy in Europe, for the United States, for Ukraine, how do we drive a vision that—we have the tools? We have the capabilities. We have the innovations. We have the resources. The question is, do we have the political will?

Mr. Majkut: Thank you for having us today. I think I will just remind everyone that the sort of transition we saw in Europe was multifaceted. I think that is just important to remember. There are things we can learn from it, in terms of the speed of permitting, allowing both, you know, the necessary infrastructure to be built really quickly, but over a long time to reduce costs. You know, like, it is important to remember that the U.S. now plays this sort of vital global energy security role that was super helpful in the case of Europe. We do not really know what crisis lies around the corner but maintaining our ability to do that was clearly helpful in this case, and I think will be in the future as well.

Ms. Mikulska: I think for me, the whole lesson from what we went through since—the world has gone through since the invasion of Russia on Ukraine is that energy security is important. It is important for everybody. It is important also for Western Europe, which oftentimes before seemed to forget about it. We have often been taking for granted that we can actually switch the switch, and the lights will go on. This is not the reality of many people in Ukraine, but also other places in the world where it is just not enough energy for people to access. They value any energy, independent of the source, in the absence of it.

I think that the fact that we are talking about energy security is important because it will help us to understand not only the realities of the developed world but also the developing world, which make or break—may make or break our energy transition. If there is no energy security for the people of India, Southeast Asia, and other places, Africa, and so on, we will not be able to expand our transition to different fuels, cleaner energy, and so on. Maybe that is a lesson that the developed world can take, that energy security is important. Does not matter how well-developed you are, and energy access is vital for everybody in the world. Thank you.

Ms. SIMRELL: Well, I cannot think of a better note to end it on. Thank you so much for reminding us that we are in the driver's seat and we have to lead. Honestly, these issues are vital. It has been a pleasure having you here today. Thank you so much for your time and testimony. This meeting is closed. Thank you.

Mr. Majkut: Thank you.

Ms. MIKULSKA: Thanks for having us.

[Whereupon, at 3:12 p.m., the briefing ended.]



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