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Europe’s Energy Dilemma: War and the Green Transition

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The European Union has been facing a protracted energy crisis since the second half of 2021. The crisis was caused by a combination of factors, including tight global energy supplies during the economic recovery from the COVID-19 pandemic, lower domestic energy production, and reduced natural gas supplies from Russia—until recently the EU’s main oil, gas, and coal supplier. Russia’s invasion of Ukraine in February 2022 made the crisis more acute. In order to limit Russia’s income from energy exports, which were seen as financing its war in Ukraine, the EU and Western allies imposed a ban on Russian coal, a partial embargo on Russian oil, and sweeping financial sanctions. Moscow responded by stopping gas supplies to some EU member states and reducing them to others. This caused a spike in gas and electricity prices, which in turn worsened inflation of prices for basic consumer goods. Annual inflation in the Eurozone rose at the unprecedented rate of over 10 percent in October and November 2022.

The EU has responded to the crisis with partly contradictory policies, which are subsumed under the REPOWEREU Plan, unveiled by the European Commission on May 18, 2022. On the one hand, Brussels presented plans for energy savings and an acceleration of the energy transition, which would decrease the demand for fossil fuels, now mostly met by external suppliers. On the other hand, the EU has intensified the quest for new fossil fuel suppliers and has allocated funds for additional import infrastructure, such as liquefied natural gas (LNG) terminals. Member states have also

subsidized their citizens’ energy bills to reduce societal costs; in doing so, however, they have contributed to the soaring revenues of fossil fuel exporters, including Russia.

Although the various components of the REPOWEREU Plan share the objective of reducing reliance on Russia, they are inconsistent when it comes to the main goals of EU energy and climate policy: swiftly reducing greenhouse gas emissions, mainstreaming the energy transition, and achieving climate neutrality by 2050. The EU’s green agenda was elevated to a top priority in 2019 and surprisingly retained that status despite the pandemic, as witnessed by the substantial allocation of EU funding to the energy transition in post-pandemic national recovery plans. During the crisis with Russia, however, the EU and its members have been implementing measures that may slow down or even reverse the energy transition in the next few years. Coal-fired power plants have been reopened, pipeline gas imports are being replaced by more polluting LNG imports, and additional “permits to pollute” will be sold in the Emissions Trading System (ETS), the EU’s carbon market.

Despite the EU’s attempts to stay focused on existing climate goals, geopolitical confrontations and the foreign policy agenda seem to have gained the upper hand, and EU energy policy is now being adjusted to the necessities of realpolitik. It is an open question whether this adjustment is temporary and climate policy will regain top priority once geopolitical tensions subside.

The EU has had a climate and energy transition agenda since the 2000s. This agenda has been structured around three main targets: reducing greenhouse gas emissions from 1990 levels, increasing the share of renewable energy in final

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energy consumption, and improving energy efficiency. For the year 2020, the EU-level goal for each of those adjustments was 20 percent. Meanwhile, the EU adopted new targets for 2030, which were revised upward several times during the past decade as Brussels increased its ambition. The latest revision of the three headline targets was announced in 2021 as part of the Fit for 55 Package, which raised the greenhouse gas reduction target to “at least 55 percent.” At the same time, the targets for renewable energy and energy efficiency improvement were raised to 40 percent and 36 percent, respectively (in terms of final energy consumption).

Most importantly, EU climate and energy policies are no longer seen as separate domains in EU policymaking. The energy transition requires the mainstreaming of the green agenda in numerous policy areas, ranging from trade to industrial policy and agriculture. Such mainstreaming is a key objective of the European Green Deal, a roadmap of policies and strategies for the energy transition in the EU. Achieving climate neutrality (zero net greenhouse gas emissions) by 2050 is the overarching goal of the Green Deal. But the war in Ukraine has made short-term progress on the EU’s climate agenda more difficult as European countries invest in new fossil fuel projects and increase coal consumption in order to meet immediate energy needs.

The Green Deal put climate change at the center of the European political agenda.

THE MAKING OF A GREEN DEAL

The European Commission presented the Green Deal plan in December 2019, following a period of increasing civil society and grassroots political pressure for a focus on climate change. The popularity of movements such as Fridays for Future and Extinction Rebellion and the strong performance of Green parties in the 2019 European Parliament elections played important roles in prompting action.

Among its most important measures, the Green Deal includes a Sustainable Europe Investment Plan, a new EU industrial strategy, a circular-economy action plan, the new EU Biodiversity Strategy for 2030, and a “farm to fork” sustainable agriculture strategy. It also provides for the introduction of a carbon border tax to prevent carbon leakage—the transfer of heavily polluting industrial production outside the EU, where it would not

be subject to the same level of environmental restrictions.

In order to implement the Green Deal, the European Commission pledged to mobilize at least 1 trillion euros in sustainable investments (including private-sector deals) by 2030. To meet the higher costs of the energy transition for regions that are more reliant on coal, the Green Deal included a Just Transition Mechanism and Fund. It also proposed turning the European Investment Bank into “Europe’s climate bank,” offering preferential financing for green projects. Despite uncertainty about how much of the necessary funding was available, the Green Deal succeeded in putting the energy transition and the fight against climate change at the center of the European political agenda.

The March 2020 onset of the COVID-19 pandemic in Europe could have derailed the Green Deal shortly after it was launched. Although some eastern members (notably Poland) sought to postpone the green agenda, the EU managed to stay the course. In a statement published on May 27, 2020, the European Commission clarified that the Green

Deal and the climate targets took priority in the EU’s post-pandemic planning. The Commission announced its intention to borrow 750 billion euros on financial markets to launch the Next Generation EU initiative

(NextGenEU), a plan for a post-COVID recovery focused on the green and digital transitions. This was the first time that the EU—rather than its member states individually—had issued debt on such a large scale. These funds supplemented the Multiannual Financial Framework, a revamped EU budget of approximately 1.1 trillion euros for the years 2021–27. The Commission declared that 30 percent of both funding schemes was to be spent on climate investments.

Meanwhile, negotiations began among EU institutions—the European Council, the Commission, and the Parliament—concerning the two cornerstones of the Green Deal: the European Climate Law and the 2030 Climate Target Plan. By April 2021, following difficult discussions, a deal was reached on the climate law, which codified the objective of achieving climate neutrality within the EU by 2050, as well as the goal of reducing greenhouse gas emissions by at least 55 percent by 2030.

In the months that followed, European institutions began work on the Fit for 55 package, which

included measures to implement the 2030 climate and energy agenda. It encompassed proposals to adjust the ETS in order to progressively reduce emission permits, boost renewable energy production and energy efficiency, raise emission standards for cars, limit maritime and aviation emissions, address land use and forestry, and introduce a Social Climate Fund to support the most affected businesses and citizens.

SUPPLY SQUEEZE

Just as EU climate and energy policy appeared to have successfully weathered the storm of the COVID-19 pandemic, an energy supply crisis began in the autumn of 2021. The global economic recovery from the depths of the pandemic brought growing energy demand and the subsequent supply squeeze. The climate crisis compounded these factors as scarce precipitation hindered European hydropower production; wind power production was also lower than expected in the latter part of 2021. Aging nuclear reactors in France and dwindling gas production in the Netherlands, which had been one of Europe's major gas providers until the early 2010s, contributed to a reduction in domestic EU power generation. In this context, faults in the design of the EU gas market and a change in strategy at Gazprom, Russia's largest gas company and the main gas supplier to the EU, made the situation go from bad to worse.

For over a decade, the EU's gas and electricity markets had been "liberalized" through a series of reforms that aimed to break monopolies, shrink the role of states, and increase competition. This also involved reducing reliance on long-term supply agreements with external gas producers and replacing them with purchases on the spot market. Given the apparently solid long-term prospects of continued "energy abundance," it was assumed the EU would become a large buyers' market.

Throughout the 2010s, this logic worked relatively well. Facing the threat of growing competition from LNG suppliers with higher marginal costs, Gazprom increased supplies to the EU and invested in new infrastructure projects, such as the Nord Stream 2 and TurkStream pipelines. Gazprom was the only pipeline gas supplier with the capacity to significantly ramp up production and exports to the EU. Despite Russia's annexation of Crimea and a first wave of EU sanctions in 2014, for the most part it seemed that the energy trade would continue to be kept out of the confrontation between the EU and Russia.

The picture changed drastically in the fall of 2021 amid the global supply squeeze. Gazprom continued to honor its long-term contracts with European companies, but scaled down its sales on the spot market, halting them completely in mid-October. Initially, EU politicians and analysts thought Gazprom was reducing supplies to reap profits from higher prices and to pressure the EU into allowing the opening of the Nord Stream 2 pipeline, which had been delayed for legal and political reasons. However, in November and December, while building up its military presence along the border with Ukraine, Russia put forward two treaty proposals demanding the removal of NATO forces from eastern alliance members and an end to NATO enlargement. In this context, the reduction in gas flows to the EU had clearer strategic implications.

CONFRONTATION WITH RUSSIA

Russia's attack on Ukraine on February 24, 2022, and the events that followed transformed the European energy crisis into a broader, structural economic crisis. As German Chancellor Olaf Scholz put it, the war marked an epochal turning point (*Zeitenwende*)—a major statement coming from the leader of a country that had been Russia's main energy and trade partner in the EU. The surge in gas prices spilled over into the electricity market. The war extended the rise in prices to oil and its derivatives, as well as to several critical minerals of which Russia is a major exporter. Together with tensions between the United States and China, the war also aggravated price increases for raw materials and disruptions of supply chains, factors that had been at work already in previous months due to the pandemic.

Unlike during previous escalations, the EU–Russia energy trade was not spared from the logic of confrontation, and instead became a factor fueling it. Between April and June, the EU imposed an embargo on Russian coal and a partial embargo on oil and some petroleum products. The coal embargo took effect in August 2022. Crude oil sanctions were to be applied gradually from June through the end of 2022. Temporary exceptions applied to pipeline imports of crude oil by EU members dependent on Russian supplies, with no viable alternatives. Since most Russian oil deliveries to the EU were seaborne, the EU expected 90 percent of these supplies to be affected by the embargo, which would have a heavy impact on Russia's revenues.

Russia was indeed forced to redirect its oil exports to other markets, particularly China and India, and to sell at discounted prices. But the energy crisis and the war had driven such an increase in prices that Russia was still able to reap large profits from oil sales throughout the summer and fall of 2022. In this period, China and India increased their imports of Russian oil and largely made up for Moscow's loss of revenue in Western markets.

In September 2022, the Group of 7 countries (Canada, France, Germany, Italy, Japan, Britain, and the United States) announced their intention to impose a price cap on Russian oil. Since they had already stopped oil imports from Russia, or were about to do so, the G-7 hoped to leverage their influence over global companies providing insurance for oil shipments to induce them not to cover cargos of Russian oil sold over the price cap. The effectiveness of the cap was uncertain, since it largely rested on compliance by insurance companies and other countries. Defying the G-7's oil strategy, the OPEC+—an intergovernmental organization comprising Russia and the largest oil producers in the global South—announced a symbolic cut in oil production shortly after the G-7 cap was announced.

In early December 2022, the EU and G-7 countries introduced the oil price cap. Buyers of Russian crude oil could only access Western services such as insurance and brokerage if they attested that they had paid less than \$60 a barrel. Though Russia threatened to refuse to sell any oil to countries that complied with the cap, early reports suggested that Moscow was continuing to trade with Indian buyers that had done so. This is explained by the fact that Russia can still make a profit if it sells its oil below \$60 a barrel (and was already doing so before the cap was introduced).

As the EU attempted to reduce Russia's energy revenues, it saw its own energy crisis worsen when Russia first reduced and then halted supplies of gas, the only form of energy trading that remained exempt from EU sanctions. After sweeping Western financial sanctions were imposed in February and March 2022, Russia demanded that European energy companies make payments for gas purchases to a ruble-denominated bank account at Gazprombank, saying it would no longer accept payments denominated in euros or dollars. EU

member states that did not comply with the system—starting with Poland and Bulgaria in April and Finland in May—had their supply cut off. Some other members that opened ruble-denominated accounts (Germany, Italy, France) avoided a cut-off, but experienced reductions or fluctuations in supplies in the following months.

During the summer of 2022, Russia sharply decreased its gas supplies to the EU. Moscow blamed EU sanctions for technical issues that prevented the correct functioning of the Nord Stream pipeline, one of the primary remaining conduits for gas trade between the blocs. Following the G-7's announcement of the oil price cap in September, Russia declared that gas supplies to the EU via Nord Stream would be halted indefinitely. This left the EU in a critical position, on the eve of winter. The EU had already laid out plans to address the crisis, but more time was required to implement them.

Throughout the autumn of 2022, EU officials discussed setting a cap to limit gas price spikes. An agreement was difficult to attain; member states such as Germany and the Netherlands feared that

the cap could lead to shortages and threaten their energy security. But on December 19, the European Commission agreed to cap gas prices at 180 euros per megawatt-hour if market prices were higher

than that for three consecutive days (in trading on the Dutch Title Transfer Facility), starting February 15, 2023. The mechanism will have a minimal impact on current market conditions (gas prices were around 70 euros below the cap at the time when it was set), but it can protect consumers from extreme price spikes.

Between March and May of 2022, the EU drafted the REPOWEREU Plan, a strategy to phase out imports of Russian gas by diversifying suppliers, boosting renewable energy production and energy efficiency, and taking other measures such as increasing both domestic production and imports of green hydrogen. When it was published in May, the plan was accompanied by a raft of other documents, notably an External Energy Strategy, a Solar Strategy, a Save Energy Communication, a Solar Rooftop Initiative, and a Biomethane Action Plan.

The REPOWEREU Plan attempted to build on the Fit for 55 agenda announced in 2021 and make some of its objectives more ambitious. For instance, it proposed to increase the 2030 renewable energy target from 40 to 45 percent of total energy

The EU has responded to the crisis with contradictory policies.

consumption. It set targets for rapidly installing new solar photovoltaic capacity (from almost 160 gigawatts in 2021 to 320 gigawatts by 2025 and nearly 600 gigawatts by 2030) and introduced a European Solar Rooftop Initiative with a binding commitment for new buildings. It also proposed to double the current deployment rate for heat pumps and recommended simplifying permitting and planning procedures for renewable energy installations. Together with greater reliance on green hydrogen, the plan called for boosting biomethane production to 35 billion cubic meters (bcm) by 2030. This large-scale deployment of renewable energy infrastructure and storage systems will require reliable access to the necessary critical minerals and rare earth elements, for which the EU relies on imports and is particularly dependent on China-controlled supply chains.

The plan also put an emphasis on renovating buildings. The spike in prices and shortages of construction materials made renovations a difficult and costly task. To compensate for this at least partly, the Commission recommended that member states lower the value-added tax on new efficient heating systems and building insulation, among other steps.

In addition to mid- and long-term infrastructural changes, REPOWEREU and the Save Energy Communication highlighted the importance of behavioral changes in the short term. Accordingly, European politicians called on citizens to limit the use of air conditioning in the summer and of heating in the winter. According to the REPOWEREU agenda's assumptions, these energy-saving measures would allow for reducing imports of Russian gas by 10 bcm per year.

Since the REPOWEREU agenda was announced, however, large increases in electricity prices and heating bills have posed enormous challenges for European citizens and companies. In order to offset at least part of these costs, European governments introduced extensive subsidies. Setting the pace, in October 2022 Germany announced a 200 billion euro energy relief plan. But other member states lacked comparable financial resources to shield their citizens and economies from energy price spikes.

DOWNSIDES OF DIVERSIFICATION

The REPOWEREU Plan envisions that a large share of Russian gas imports will be replaced by diversifying suppliers. This is the most controversial part of the plan in terms of climate policy.

Most notably, the plan calls for the EU to increase LNG imports by 50 bcm and supplies of non-Russian pipeline gas by at least 10 bcm per year. This means that new gas infrastructure will have to be built, including LNG import terminals, floating storage regasification units, and interconnectors. Germany alone is planning to operate five new LNG terminals in the near future, one of which was completed in November 2022.

Despite a clear intention to downplay the cost of these efforts, which would otherwise cast doubt on the EU's green credentials, the plan itself estimates that 10 billion euros will be required for new fossil fuel infrastructure. Controversially, as part of its Green Deal agenda, the EU has been calling for an end to new fossil fuel projects in other areas of the world.

Moreover, the large increase in LNG imports would come from a group of distant countries, such as the United States and Qatar, which would add to the environmental impact of transporting the gas, notably the higher methane emissions associated with LNG. Also, the EU will have to compete with other large and small buyers on global markets for its LNG imports. That may end up diverting flows away from poorer countries, forcing them to rely more on coal.

The weaponization of the EU–Russia energy trade has led to a highly dysfunctional outcome for the European energy market. After half a century of growing trade and interdependence, Russia is no longer seen as a reliable supplier by its EU customers. As Russia reduces or halts gas supplies and the EU implements its diversification policy, the thick network of pipelines connecting them is left largely unused and could turn into a gigantic stranded asset.

Alternative gas imports via pipelines from countries like Algeria and Azerbaijan, should they become available, would entail both geopolitical risks and dependence on other nondemocratic states. Increased EU demand for fossil fuels from these countries will prompt them to increase production and make related investments in exploration and infrastructure, thereby delaying their own energy transitions.

Investments in new fossil fuel infrastructure divert funding and policy focus from renewables and energy efficiency. The risk of spending public money on large projects that will become stranded assets after a few years, or worse, lock the EU into new fossil fuel dependencies, is considerable. This risk was made more acute by the Commission's 2022 decision to include investments in gas infrastructure

in the EU's green taxonomy. Now such investments can be labeled and marketed as green, and more easily obtain political and economic support.

Another critique of the REPOWEREU agenda concerns the planned aggressive increase in biomethane production. (Biomethane is renewable natural gas that can be produced from biomass, including agricultural waste, or from byproduct gas collected from landfills and wastewater treatment.) According to some critics, this could create competition for agricultural harvests and pose a risk to food security. Some stakeholders also argue that the plan places an excessive focus on hydrogen, and that without careful regulation it could divert scarce supplies of renewable electricity to the production of green hydrogen.

Overall, the Commission estimated that additional investment of 210 billion euros will be necessary before 2027 to implement the REPOWEREU Plan. This will have to be financed mostly with existing funds, especially the Recovery and Resilience Facility originally created to mitigate the economic impact of the pandemic. According to the plan, 20 billion euros will be raised by auctioning additional ETS emission allowances, which would enable higher greenhouse gas emissions. But costs could be partially offset by the reduced requirement for fossil fuel imports envisioned by the plan. According to Commission estimates, this would save over 90 billion euros by 2030.

CLIMATE ON THE BACK BURNER?

While the EU was attempting to cut its dependence on Russian energy supplies, the climate crisis constrained domestic energy production in several parts of Europe. Following a winter with scant precipitation and earlier snowmelt in the spring, many European rivers partially or fully dried up in the summer of 2022. The drought was particularly severe in the Iberian peninsula, France, northern Italy, and Germany.

Not only hydropower generation was affected; the drought and high water temperatures threatened the normal operation of nuclear power plants as well, and even hindered the transportation of coal on European waterways, notably the Rhine. By late summer, nearly half of France's nuclear reactors were offline for maintenance. France began buying electricity from neighboring Germany, which in turn increased its coal-based power generation due to the shortage of gas and the progressive shutdown of domestic nuclear power plants. Germany's phase-out of nuclear power has been under way since 2011,

in response to Japan's Fukushima nuclear accident that year; its completion was expected by the end of 2022. In October 2022, however, the German government decided to extend the lifespan of the three remaining nuclear power plants until April 2023.

The increase in coal consumption was a climate policy setback, given the higher emissions associated with burning coal, compared with gas or even oil. In essence, the EU's focus on geopolitical and economic crisis management in 2022 led to the de facto deprioritization of the climate agenda. As of late 2022, it remained to be seen whether this was just a short-term outcome or a long-term trend.

What is worse, geopolitical tensions could undermine the multilateral efforts under way to fight climate change. The 2022 United Nations Climate Change Conference (COP27), held in November in Sharm el-Sheikh, Egypt, was an important test. Even before the start of the war in Ukraine and rising tensions between the United States and China over Taiwan, several major countries (most notably India and China) had refused to clearly commit to the phaseout of coal. Little was achieved at COP27 in this regard. The "Sharm el-Sheikh implementation plan" excluded any mention of winding down the use of fossil fuels, and provided little indication that countries were serious about scaling up efforts to cut emissions. For the EU, a longtime leader in climate negotiations, it will be even more difficult to advance that cause internationally while it increases its own reliance on coal, even if only temporarily.

The EU has tried to be flexible and adapt to the changed circumstances imposed by the war in Ukraine and the energy crisis. Brussels has attempted to turn the situation into an opportunity to accelerate the energy transition, but it will take years before most of the REPOWEREU Plan goals are met and the energy crisis ends. Until then, the EU will have to cope with a situation where very expensive energy becomes the new normal, and savings and efficiency measures are no longer an option but an absolute necessity.

So far, a fair degree of intra-EU solidarity has prevailed, as member states have united to face a common rival—Russia. But this unity remains frail. The winter of 2022–23 will bring economic challenges that have not been experienced for at least half a century. Societal costs will be high, especially for poorer citizens. European governments and institutions will have to make difficult choices, including substantial budget adjustments. They may face mounting opposition in parliaments and in the streets. ■