Dossier: Mediterranean Ramifications of the Ukraine War

The Ukraine War and European Energy Dependence and Reconfiguration of Energy Relations

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Russia's war against Ukraine has been rapidly and profoundly changing the European energy system and having larger, global impacts with both immediate and lasting consequences. It is fair to say that one year on, there are also major uncertainties ahead. The war has led to a brutal decoupling of energy relations between most of the European nations and Russia, putting an end to over 50 years of ever-denser energy relations through a wide network of infrastructure and commercial agreements, which developed into the most closely interconnected energy system in the world.

The unthinkable happened first during the Cold War, when the Soviet Union and western European nations entered into the first energy supply agreements. Amidst sanctions by the United States under Reagan in the early 1980s, both sides built a broad network of pipeline and trade arrangements, whereby trade interdependence became a factor of geopolitical stability: the West needed gas for industries, the residential sector and thermal power generation, alongside oil, and the Soviet Union needed currencies. As gas supplies proved to be stable and secure during the Cold War, especially when tensions reached a peak in 1983, the argument was often made that Russia is and will always be a reliable supplier to Europe. In 2022, after two gas crises in 2006 and 2009, President Putin took the historical decision to end the mutually beneficial gas relationship. He did so almost as brutally as he has destructed peace on the European continent, and in a similar sequence: in a first attempt in 2014, interrupted by the collapse in oil and gas prices and probably surprised by Western sanctions, before the final showdown in 2022. As for gas, he first ordered the reduction in supplies, then cut off several smaller customers in central and southeastern Europe using various pretexts, before ending the relationship altogether, which probably came too late if he were hoping to prevent Europeans from replenishing their stores. Was that a strategic mistake, a miscalculation or both? For oil and coal, it was the European private sector which first shunned Russian supplies and sought to reduce imports as quickly as contracts allowed, before governments imposed a ban on imports of coal, biomass and later, oil and petroleum products. In 2023, the only supplies still flowing are nuclear fuel for reactors of Soviet design, and a few oil and gas volumes to a handful of European Union (EU) Member States, and some states in the Balkans.

Up until the war, Russia was the world's largest gas exporter, the second largest oil exporter, one of the world's largest uranium and fuel suppliers, one of the world's largest coal exporters, and a significant raw material supplier, notably of aluminium. And Europe has been a major offtaker of these resources, notably natural gas, but also crude oil, petroleum products or high-quality coal. Hence the fact that 2023 marks a tectonic shift in the European energy system with major global repercussions and profound and most likely permanent changes.

There are major issues and implications for energy security, resilience of energy systems and decarbonization. The most serious security crisis since the Second World War in Europe is taking place, marked by an omnipresent nuclear deterrence dimension and high-intensity warfare, while another unprecedented, mounting crisis is unfolding: cli-

mate change and environmental devastation, with a world still on a highly dangerous + 2.5°C track, eight years after the Paris Agreement on climate. It would now require greenhouse gas emissions (GHG) to be reduced by 10% per year in order to align with the 1.5°C trajectory.

This article first recalls the energy dimension of war preparations, then lays out the major and often brutal transformations in energy systems in 2022, and finally offers perspectives for Europe and the Mediterranean region going forward.

The Energy Preparation of Russia's War of Aggression Strained Global Hydrocarbon Markets

In the mid-2010s, Gazprom's position in the European gas market was robust, and competitive supplies enabled the Russian supplier to keep LNG competition largely at bay. With the growing penetration of renewables and several coal and nuclear phase-outs, gas demand in key European markets picked up, enabling Gazprom to cement its position and the role of gas to become more prominent, especially in providing flexibility. Gazprom suffered from a price drop as of 2014, but continued to pursue plans to develop the Nord Stream 2 and TurkStream pipelines and reduce volumes in transit through Ukraine. Sanctions by the US Treasury forced Gazprom to delay its Nord Stream 2 project and sign up to a new five-year gas transit contract through Ukraine (2019-2024), which had managed to end direct Russian gas imports by resorting to reverse flow imports.

As of May 2021, Gazprom suddenly started reducing its supplies to Europe, with European buyers then turning increasingly to LNG in the autumn. This pushed global prices up and reduced available spot LNG supplies to emerging nations, unable to match the rising costs. It is, therefore, important to recall that the global energy crisis had actually already started at the end of 2021 and has been provoked by Russia's malign behaviour, and is not related to Europeans ending or reducing offtakes. After the invasion, EU leaders said they would phase out Russian gas as fast as possible at the March 2022 EU leaders summit in Versailles, yet no sanctions or limitations on Russian imports were put in place.

Russia had also been patiently operating a historical rapprochement with Saudi Arabia over oil market regulation during the course of 2016, before sealing this historical OPEC+ alliance, whereby Russia would end its free rider stance and help Saudi Arabia, and other members, to push up oil prices. From that moment on, Russia was in a position to influence both oil prices and European hub gas prices – any shortage in supplies would largely reduce liquidity and push up hub-indexed gas prices.

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Against this backdrop, in early 2022, all stars were aligned for President Putin to undertake his brutal invasion, with gas and oil prices at high levels, and unlikely to fall as in 2014, and with a heavy dependency of key EU Member States. This was meant to avoid two fundamental risks: a brutal fall in energy prices and export revenues, as was the case in the mid-1980s in the midst of the Afghanistan debacle, and in the autumn of 2014. The calculation was certainly that this position of force would exert pressure on European governments, who would be scared to take meaningful action against Russia, especially if Kyiv was to be taken in just a few days. This energy vulnerability certainly worked in the first months of 2022, and so did the nuclear deterrence, with several Western governments showing timid military support to Ukraine at the outset. But it then lost traction. What is now left of this is Russia's ongoing and operational alliance with Saudi Arabia concerning oil markets, although Russia has limited room for manoeuvre and Russia's influence on European gas markets has largely disappeared, even if some critically important supplies remain, such as to Hungary or Türkiye. But Gazprom now needs to maximize revenues from its remaining few exports.

Energy Decoupling between Europe and Russia: The Reconfiguration of Energy Flows

With the progressive and then final termination of most Russian pipeline gas supplies to Europe, European buyers managed to cope with incredible hardships. At huge costs to economies, they managed to offset a large part of Russian supplies. The bulk of the adjustment was realized through demand reduction, be it forced (industries reducing or shutting down production) or voluntary (production optimization, fuel switching, lower temperatures). Citizens, helped by mild weather, also took action to reduce electricity and gas demands. The remainder was covered thanks to higher Norwegian gas and LNG imports and, predominantly, by a surge of US LNG exports to Europe. This came at a cost though: several importers in emerging Asia could no longer afford to buy exceptionally expensive and rare LNG spot cargoes and were forced to switch to coal and heavy fuel, notably for power generation.

As a consequence, a reinforced global artery for LNG supplies was established across the Atlantic, a much shorter route than the typical supplies from the US to Asia, and hence, enabled the moving of larger volumes of LNG due to the shorter distances. Decisively also, several European governments, backed by the European Commission, rapidly acted to scout out and rent Floating Storage and Regasification Units (FSRUs), and bring them as fast as possible to their shores, while traders were given large liquidity guarantees and facilities to source spot LNG cargoes. In Germany, Uniper, highly exposed to Russian supplies, went bankrupt and was nationalized, while Russian entities were taken under administrative management, with the German government tasking them to secure volumes no matter the cost. This is how gas storage was able to be filled to maximum levels ahead of the 2022-2023 winter season, which was a miracle per se. The second miracle occurred when record high gas prices in August 2022 started to decelerate, bringing with them much lower electricity prices, and thus helping to avoid economic recession.

Finally, governments all across Europe stepped in to intervene in markets in two ways: capping and taxing extra profits for energy companies, and supporting their citizens and consumers in alleviating the impacts of high energy prices. In several cases, these redistribution measures were too generous and not targeted, and several governments have, therefore, reintroduced temporary fossil fuels subsidies, notably for gasoline consumers.

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While Europe's gas demand has dramatically decreased in 2022, it will remain significant in the foreseeable future. In a context of declining domestic gas production, which can only be marginally offset here and there by some additional biomethane production and conclusive efforts to push up production from existing players or in new areas, Europe will remain heavily dependent on LNG imports, at least up until 2030-2035, in addition to pipeline supplies from Norway, Algeria and, to a lesser extent, Azerbaijan and Libya.

Hence, the potential for tensions in LNG markets is expected to continue, with volatility dependent on the weather in China, the US Gulf Coast, Europe in summer and winter, as well as technical outages. The situation should improve as of 2025, when new additional liquefaction capacity becomes operational across the world, notably in Qatar, the US or Papua New Guinea. Europeans are now also dependent to a greater extent on spot markets for their supplies and hence likely to continue paying more than competitors to secure cargoes. They also rely on Russia's two LNG terminals to continue operating and supplying European and Asian markets, as their default would put great strain on LNG markets deprived of any flexibility. Finally, it is noteworthy that ENI, which is state-controlled, was tasked to urgently develop new gas resources and ship them to Italy, notably in Algeria and other African resource-holding nations.

This outlook could be disrupted in a scenario in which Russian gas pipeline supplies one day return to Europe. The likelihood of this is not very high and would lead in the most optimistic case scenario to just a

few additional volumes supplied to Europe, therefore being most likely in a lower price environment.

A major question is if and when emerging nations such as India or those of Southeast Asia, now deprived of spot LNG supplies, will return to LNG, and, if so, how and in what volumes. There is a case for prolonged coal usage combined with a boost in solar generation, but that would require major grid upgrades, large access to finance in emerging economies, and storage solutions. Ultimately, coal will decline, but king coal has been reinvigorated by the crises and will most likely continue to ensure generation in many emerging nations.

Meanwhile, Russia has been rather successful in actively seeking to redirect its crude oil, petroleum products and coal from Europe to Asia, notably China, India and several African and Latin American nations. Developing a new gas infrastructure to the East is much more costly and difficult than redirecting oil flows on cargoes. It appears that Russia has managed to redirect its crude and product supplies, most likely in some cases by granting discounts to buyers, and in acquiring a large tanker fleet to circumvent the impacts of the embargoes and of the price cap. It remains to be seen if Russian companies are able to develop domestic LNG technologies and if more Russian gas can be exported to China (via pipeline and LNG) and India (via LNG), which would of course have major impacts on global LNG markets and coal demand.

The New Balance and Acceleration of the European Green Deal

The EU energy transition has been accelerated in terms of targets and policy measures on paper by EU Council, Parliament and European Commission decisions, but it is clear that the war in Ukraine is making the European and global energy transition much more costly, complicated and uncertain. There is obviously only one way out of the crises for every country in the world dependent on fossil fuels, which is to lower this dependence and push for alternative low-carbon technologies. Yet this is easier said than done, even in Europe.

The new reality is that the energy transitions will have to take place against a backdrop of relatively higher oil and gas import bills, high interest rates, high public debt servicing costs, inflationary wages, strong geopolitical and geoeconomic tensions, shortages of skilled manpower and much lower nuclear electricity generation. This will add to stranded assets and much higher energy efficiency costs. The deployment costs of the low-carbon energy and industrial systems will, therefore, be more expensive and the ability to accelerate sharply is not a given. It also means that the EU's ability to sustain economic competitiveness is in jeopardy, as nations with abundant hydrocarbon reserves and supplies, lower climate targets, lower populations and lower public acceptance challenges and raw materials have invaluable assets. If they can combine these with good infrastructure, predictable regulation, large access to capital and a skilled workforce, they can obviously develop extremely strong competitive advantages.

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It is noteworthy, though, that the EU has been aggressively pursuing its very ambitious decarbonization agenda. The Fit for 55 package of legislation is very comprehensive and well put together, designed to accelerate decarbonization and presented in July 2021. About two years later, it is about to be fully adopted. It aims to reduce the EU's GHG emissions by over 55% with respect to 1990 levels by 2030. The EU will notably raise energy efficiency targets and building renovations, deploy 42.5% of renewable energy sources in final energy consumption (that is, well above 65% in final electricity demand), largely phase out thermal engines by 2035, decrease emissions in the maritime and aviation sectors, partly replace fossil hydrogen with green and low-carbon hydrogen, boost biomethane production and expand

EV charging infrastructure, and toughen and expand its emission trading scheme (ETS). Also, as of 2026, the EU will have introduced a carbon border adjustment mechanism. Last but not least, the EU has been beefing up its industrial strategy, with three pillars: a reform of the electricity market; a critical raw material act, notably to boost recycling and reuse and mining; and a net zero industrial act, to foster local content and facilitate state aid for critical low-carbon industries. It remains to be seen if this will be enough to offset higher electricity prices and challenging permitting issues.

Fit for 55 will have strategic consequences for trade and energy flows, raw materials demand and the deployment of low-carbon technologies:

- It can be expected that the EU's oil demand reduction will accelerate in the coming years, but will remain significant, even after 2030, as the massification of electric vehicles is not yet in sight.
- The boom in renewables deployment will be uneven in Europe as permitting and availability of equipment will remain issues. Overall, offshore wind and solar PV will boom.
- Natural gas will remain important, notably in the electricity sector. It can be expected that dozens of GW of gas-fired power plants will have to be built to back up renewables and allow the phase-out of coal. These will have ever-lower running hours as greater grid interconnection and flexibility tools are deployed, but nonetheless, gas will continue to matter, notably in the residential sector.
- The EU's internal market will be increasingly dominated by stricter ecodesign norms and wider ESG protectionism. Access to the EU market will be conditional on meeting its requirements, such as on deforestation, biodiversity conservation, social responsibility and decarbonization.
- The EU's imported hydrogen and related by-products (notably ammonia and sustainable aviation fuels) will grow and the EU will seek to accelerate the deployment of such new trading schemes, notably in covering cost differences with fossil hydrogen and organizing large scale international supply tenders. As such, the EU should be wary of building up strong dependencies on single suppliers or regions.
- The EU will seek to expand cooperation with countries willing to phase out coal plants before the end of their technical lifetime, and be willing, as part of the Just Energy Transition Partnerships, to help fund these closures, the reskilling and transfer of workforce and the development of alternative low-carbon energy systems.
- The EU will also seek to expand cooperation with countries willing to boost biodiversity conservation, and those taking resolute action to reduce fugitive methane emissions.
- Countries holding critical raw materials and willing to engage in mutually beneficial partnerships to develop these resources with robust ESG frameworks will also see priority engagement.

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- Moreover, the EU can be expected to beef up initiatives aimed at raising skills and developing innovation, such as in digital tools, fertilizers and crops.
- Last but not least, it will use its influence to push for the accelerated decarbonization of the maritime and aviation transportation segment, and support the deployment of the underpinning infrastructure in large parts of the world as part of its Global Gateway Initiative, which, so far, is still rather empty, but which could rapidly take shape when the Ukraine conflict ends.

Implications and Opportunities for the Mediterranean Region

The rapid transformation of the European energy system comes with challenges and opportunities for the EU's southern neighbours in the Mediterranean. A first remark is that these neighbours have taken

action to help Europe address its energy crises, notably in the gas sphere (Algeria/Italy, or Egypt's higher LNG exports), while Europeans took action, alongside Türkiye, to push Russia to open up a grain corridor for the export of Ukrainian products. A second remark is that the new configuration offers reinvigorated perspectives to develop new energy interdependencies linking up both sides of the Mediterranean.

- New HDVC electricity cables are clearly in high demand to help Europe get through its peak demand hours. Largely available land and good wind & solar potential in many North African countries are key assets in this respect, alongside easy permitting.
- Hydrogen production and export projects are also of great interest, especially since Russia is now ruled out as a potential supplier, even if the opportunity for southern Mediterranean neighbours now increasingly lies in seeking to attract transformative industries to consume the low-carbon hydrogen produced on site, and export semi-finished or finished products. While North African countries are ideally located and benefit from low permitting issues, competition with other regions in the world is strengthening.
- Lower carbon fertilizer production and exports.
- Gas exports, notably using existing, sunk infrastructure, or flexible infrastructure, such as LNG export terminals, so that if the European agenda to rapidly decrease gas demand by 2030 is somehow successful, supplies can be redirected to other consumers.

However, these opportunities also come against the backdrop of ongoing, systemic challenges southern neighbours need to address for these projects to be successful:

- Continue the decarbonization of their own electricity systems, which still rely largely on fossil fuels in spite of the growth in renewables, especially in Morocco or Egypt, and seek to reduce related GHG emissions, notably fugitive methane emissions.
- Expand their own grids, flexibility tools and build out their investment frameworks.
- Overcome their bilateral conflicts to better integrate their energy systems: it remains a paradox that the world's most integrated energy system north of the Mediterranean, which is the EU, is located opposite one of the world's most isolated, south of the Mediterranean.
- Deploy an emission control area (ECA) in the Mediterranean, modernize the shipping fleet and resolutely address environmental degradations in this region, and ensure that the growth in water desalination technologies is not harmful to the climate and the environment.
- Build up skills, local content with large, predictable deployment rates and further invest in innovation.
- Improve the quality of appliances, develop stricter building norms, and progressively reduce fossil fuel subsidies.
- Connect the new large-scale water desalination capacities with new, renewable energy sources, ideally, a combination of wind, solar and hydro.