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Lessons Learned from the Russian War in Ukraine

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ANALYSIS

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Executive Summary

For the past decade, Europe had grown so comfortably accustomed to cheap, reliable gas from Russia that it willingly turned a blind eye to Gazprom not being exactly a commercial company, in the old-fashioned, liberal meaning of the term. The belief that Russia could somehow be tamed and integrated in the liberal Western order by doing business and entering mutually-beneficial economic deals was a widespread delusion which long guided the foreign policy of some Western countries, and in particular Germany. In retrospect, that belief proved naive and horribly misplaced. However, the past years' experience of Russia's war of aggression against Ukraine brings to the fore many more valuable lessons on the benefits, as well as limits, of liberalism when it comes to Europe's energy security in the future and its relation to the wider world.

This paper follows the key developments in energy in Ukraine and Moldova in the past year in relationship with the EU, as a key factor in the unexpected resilience to Russia's aggression, an element certainly less apparent than tanks and missiles, but which proved equally decisive. Since the beginning of the war, but most visibly since October 2022, energy has been a key weapon in Russia's arsenal to demoralize Ukraine, on one hand, and break Western unity in the support of Ukraine, on the background of protests of consumers, on the other. Russia's bet that energy shortage and high prices would ensure a relatively quick and painless victory over a divided West and a freezing Ukraine turned out a major disappointment for the

Kremlin. On the contrary, it strengthened the internal societal cohesion in Ukraine even more and solidified unity between Ukraine and its allies.

The paper concludes that liberal, mutually benefitting cooperation works well when all actors share certain values and abide by international agreements and rules. However, not all of Europe's partners are equally benevolent. In particular, among those in control of critical assets such as energy, technology or rare minerals, few share the same liberal values, while others see the economy as a means to exercise power and control. In the past year, Europe learned this lesson the hard way. Almost all European countries faced Russia's continuous blackmail, market abuse and dishonest behavior in its gas contracts. This was a wake-up call that is critical for Europe not to make the same mistake in the future when it comes to deals with other authoritarian regimes where their dominant position could become leverage for political concessions. Much can be adapted when it comes to diversifying energy supplies to bolster resilience. To safeguard liberal democracies and ensure prosperity and freedom, dependencies from authoritarian regimes must be reduced to the minimum and partnerships among liberal value partners fostered. Ending the war in Ukraine and strengthening the international world order challenged by authoritarian regimes requires a much bolder, principled approach. This means restoring Ukraine's full territorial integrity and security guarantees.

1. Introduction

Before Russia's invasion in Ukraine last February, Europe had become increasingly dependent on Russian energy supplies. EU's major vulnerability was on gas, which - unlike coal or oil - critically depends on the existence of infrastructure (pipelines, compressors, storage) to bring it to consumers when and where needed. As of 2021, about 45% of EU's gas consumption was supplied by Russia. Germany, in particular, had increased its reliance on Russian gas from 38% of total imports in 2005 to 55% in 2020.¹ The country's energy-intensive economy was expected to consume even more Russian gas as soon as the newly-built Nord Stream 2 pipeline would have been authorized by the German regulator.

In retrospect, Russia's war of aggression against Ukraine appears to have been planned well before February 2022 and it envisaged a much broader conflict, with different levels of intensity, against what the Kremlin calls the "collective West". Apart from its military posturing at Ukraine's borders in spring 2021, the Kremlin started to systematically reduce pipeline gas supplies to Europe as early as July 2021, meeting its contractual obligations from storage in Europe and thus reducing EU's supplies for the winter.² Until the very start of Russia's war against Ukraine in February 2022, arguments that Russia had legitimate reasons to do so was still accepted by various audiences and Gazprom's explanations were quoted in the media without much questioning. At the time, Gazprom explained that it had started the spring of 2021 with low levels of gas in storage, pretty much like everyone in Europe, and had to prioritize the refilling of domestic storage and meeting domestic demand. This did not explain, however, why Gazprom fully used the capacity of Nord Stream 1 and the newly-opened Turk Stream, cutting deliveries only on the old pipeline infrastructure crossing Belarus and Ukraine.³ A more plausible explanation was that the Kremlin was putting pressure on the German authorities to speed up the opening of Nord Stream 2 - and the Russians had made their intentions on the matter quite transparent.⁴

While Europe was sleepwalking in Gazprom's trap, Ukraine and Moldova knew better. Particularly after the annexation of Crimea in 2014 and the armed conflict in Donbas, both countries sought to diversify their historical dependence on Russia on energy, in particular in the network-bound energy sectors of gas and electricity. Moldova tried to accelerate interconnections with Romania, on gas and electricity, though the speed of this diversification varied in the past decade in keeping with the political will in Chisinau.⁵ More determined, Ukraine became fully independent of gas imports directly from Russia as early as 2015. Since then, Ukraine has been purchasing gas exclusively from its Western neighbors (at market prices, even though still Russian gas); and has accelerated much-needed investments to ensure bidirectional flows on all pipelines which had historically shipped Russian gas to Poland or Slovakia via Ukraine. On electricity, the biggest technical hurdle for both countries was the incompatibility of Ukraine and Moldova's power systems, connected to Russia's, with the European continental grids. The challenge is significant, as can be testified by the three Baltic countries that remain connected to the Russian system still, despite their otherwise fully integrated energy markets in the EU. Ukraine (and Moldova) started the synchronization efforts more consistently in 2016, and the transition should have been finalized in 2023, at the earliest.

Thus, for the past decade, EU members, Ukraine, and Moldova had a mixed, meandering approach to the dependence on Russian energy. This was largely in line with the perception of political elites in each country of Russia, from a potential aggressor, willing to use its energy leverage as weapon in a hybrid war, to a country with which one could do regular business. The start of Russia's war against Ukraine brought clarity and abruptly changed the paradigm for all.

¹ Kedzierski, M., "A dangerous dependence on Russia. Germany and the gas crisis", OSW Centre for Eastern Studies, February 23, 2022, available at: <https://www.osw.waw.pl/en/publikacje/osw-commentary/2022-02-23/a-dangerous-dependence-russia-germany-and-gas-crisis>.

² "Gazprom's low gas storage levels fuel questions over Russia's supply to Europe", Financial Times, October 27, 2021, available at: <https://www.ft.com/content/576a96f7-e41d-4068-a61b-f74f2b2d3b81>.

³ "Russian gas flows into Europe plunge in January amid Ukraine tensions", S&P Global, February 2, 2022, available at: <https://www.spglobal.com/platts/zh/market-insights/latest-news/natural-gas/020222-russian-gas-flows-into-europe-plunge-in-january-amid-ukraine-tensions>.

⁴ "Quarterly report on European gas markets Q3, 2021", available at: https://energy.ec.europa.eu/system/files/2022-01/Quarterly_report_on_European_gas_markets_Q3_2021_FINAL.pdf?fbclid=IwAR0Kg7RGXyV6U_jc8F1pyxQnzTkV5yX2ggayksDQgaqGiYXFbj-FgfjYcil.

⁵ Expert Forum Policy report on Romania-Moldova interconnections on gas and electricity, June 24, 2019, available at: <https://expertforum.ro/gazoductul-ungheni-chisinau-cum-urgentam-accesul-moldovei-la-gaze-europene/>.

2. The three decisive energy events of the war

2.1. Synchronization of power grids between the EU and Ukraine/Moldova

Though in the early days of February-March 2022 the war had not yet specifically targeted civilian infrastructure, the dangers of destruction of critical assets in the energy system were immediately apparent. In the morning of February 24, Ukraine and Moldova had just disconnected from the Russian power system for a 3-day test, previously planned as per regular schedule for synchronization with the European continental grid. After the test, the two countries were supposed to reconnect to Russia. Naturally, the reconnection was no longer an option after the start of Russia's war against Ukraine. However, the two countries were not yet technically fully ready to join the EU grid, either. Over the following three weeks, engineers from Ukraine, Moldova and the European grid association ENTSO-E raced against time to provide an emergency connection, to ensure that lights could be turned back on from the EU in case of an accidental or intentional destruction of critical assets in Ukraine's power system. The emergency synchronization succeeded on March 16, and it was the first decisive moment to strengthen regional energy security and decoupling from Russia's threats.

At the time, no commercial flows (electricity trading) between the EU and the Ukraine-Moldova power bloc were allowed. This was because there were still uncontrolled flows of electricity between the two grids. Though manageable, these uncontrolled flows could have spiraled out of control in case electricity exchanges between the two regions were to take place. However, Ukraine needed money to repair infrastructure, and had a surplus of electricity given the war-caused destruction of industrial demand in the East; while the EU needed cheaper and cleaner electricity than available in the European market, also to save gas ahead of the winter. Once again, technicians from all sides worked around the clock to fix the remaining technical issues blocking commercial exchanges of electricity. Already from the end of June 2022, Poland, Romania and Slovakia bought more and more electricity, up to a capacity that had reached about 300 MW by the beginning of October. Despite the limited use of the interconnectivity potential with the EU until October 2022, the synchronization proved vital starting in autumn; without it, both Ukraine and Moldova would have faced long-term shortages of energy during winter.⁶

2.2. Decoupling from Russian energy sources goes two ways

A second decisive moment for Europe's decoupling from Russia was the gradual realization in Europe that Russia is not a reliable energy supplier. The impact of this change cannot be overestimated: despite the horrible nature of Russia's war, not everyone in the EU thought it was a good enough reason to stop doing business with the Kremlin, particularly with cheap energy. As late as May, when the European Commission was unveiling its RepowerEU plan, there was still a lot of disagreement whether the continent could do without Russian gas by 2027. It took Gazprom's consistent neglect of its contractual obligations, such as demand for payment in rubles and selective cut of gas deliveries, as well as the spectacular explosion of Nord Stream pipelines to finally get all EU members to agree that finding alternatives to Russian energy supplies are urgent. While coal, oil and gas will soon be out, there is still remaining disagreement on nuclear supplies, a sector that has been skillfully carved out from all the sanctions packages so far.⁷

Much has been said on whether or not sanctions imposed by the West against Russia have actually had the desired effect. Analysts observed that throughout 2022, Russia continued to cash in substantially from its oil and gas sales and registered huge trade balance surpluses precisely because imports of certain products (e.g. dual-use technology) fell under sanctions; this allowed Russia to continue financing its war against Ukraine. In reality, it is precisely the indecision of the first months of 2022 concerning the approach to energy supplies that allowed the Kremlin to successfully dodge the impact of sanctions until end-year. In fact, Russia allocated significantly more revenue (+€35 billion or +28%) from oil and gas to the federal budget in 2022 as a whole than in the previous year.⁸

It should also be noted that not many had observed that Russia's war on energy with Europe had begun long before February 24, 2022. Since July 2021, half a year before Russia's invasion of Ukraine, Gazprom had created shortages in EU's gas market, gaining much more from higher prices than losing from the reduction of delivered quantities, and this approach only intensified in 2022. In part, this is because Europe's gas demand is highly inelastic, with consumers willing to pay high prices just to maintain the same level of consumption.

⁶ A more detailed description of the synchronization process in Nutu, A., "Security Powered by Energy: Three Lessons for the Black Sea Region and the West", February 16, 2023, available at <https://www.gmfus.org/news/security-powered-energy>.

⁷ Wesolowsky, T., "The Rosatom Exemption: How Russia's State-Run Nuclear Giant Has Escaped Sanctions", Radio Free Europe, June 15, 2022, available at: <https://www.rferl.org/a/rosatom-russia-nuclear-giant-escapes-sanctions/31899192.html>.

⁸ Expert Forum, Annual Report "One year of fighting. Lessons for the EU from Ukraine's resilience and the energy sector", February 21, 2023, available at: <https://expertforum.ro/raport-anual-2023/>.

However, more importantly, political decisions in EU member states only deepened the problem, as governments raced to subsidize gas consumption for both households and certain industries. In other words, governments generally provided massive subsidies for consumption, sometimes at the expense of investments in new production and diversification of gas and electricity, which were overtaxed, at least temporarily, to cushion the blow on consumer's bills. Very likely, this contributed to high energy prices for a longer time. But other events in the markets had a much higher visibility. The exceptional gas price spikes registered on the Dutch gas exchange TTF in August 2022⁹ (reaching 350 EUR/MWh, about ten times the average of previous years) were a direct result of panic: Gas buyers feared massive shortages in winter if Russia suddenly decided to stop selling gas and there would be little alternative to fill storage. With more than 50% of its supply contracts linked to the TTF spot price,¹⁰ Gazprom most likely gained a fortune from the panic.

At the same time, Russia continued to collect large amounts of money from the sale of oil and oil products, the prices of which remained relatively high throughout 2022. It should be noted, however, that the first sanctions that actually targeted the oil sector only came into force on December 5, 2022 (EU embargo on oil excepting pipeline, and the price cap) and February 5, 2023 (embargo on oil products - diesel).¹¹ Thus, the full effect of oil sanctions and loss of European gas market will likely be seen only in late 2023 - so far, oil and gas revenues dropped by 43% in March year-on-year and the official forecast of Russia's budget includes an estimated decrease of oil and gas revenues of 23% for the entire year.¹² What would have happened if Europe had managed to effectively undermine Russia's oil and gas business much sooner, e.g. by deciding and imposing the same oil price cap earlier in the year (which now proves successful) or introducing a price cap on imports of Russian gas during 2022, remains speculative. There was a likely risk that Russia could have reduced the supplies to Europe even more abruptly last year; however, this fear was, again, speculative. In the end, the EU managed to survive relatively painlessly (i.e., without going into recession) a drop of more than half of Russian gas supplies from 155 bcm in 2021 to just 75 bcm in 2022.¹³ The mild winter played a role - but the diversification, energy efficiency efforts, and the substitution of gas with other energy supplies contributed the bulk of the reduction. Most surprisingly, Germany, which had imported 55% of its gas from Russia by 2021 and was the most resistant to the idea of a quick exit from Russian gas, became completely independent from Russian gas by the end of the year.

2.3. Power cuts and the destruction of the central power system

The third decisive energy event was the start of the Russian targeted attacks on energy infrastructure in Ukraine, on October 10, 2022.

From one day to the other, Ukraine stopped exporting electricity and became a net importer. This affected to a certain, limited extent the availability of electricity on EU markets, which had imported some modest quantities and were hoping to enhance the supplies in the following months. However, it became a critical vulnerability for Moldova, which fully depended on either Ukrainian electricity exports or the Russian-owned gas-fired power plant in the breakout region of Transnistria. Russia's missile and drone attacks on Ukraine's power system also caused two blackouts in Moldova during autumn. For Moldova, the solution consisted of imports from Romania, which covered the electricity gap on the right bank (i.e. Moldova without Transnistria) in October and November, much of which at the regulated prices at which Romanian consumers received electricity (90 EUR/MWh at producer prices). As Gazprom cut gas deliveries to Moldova by 30% in October and 50% starting in November, Chisinau finally reached an agreement with Tiraspol to transfer all the Russian gas to Transnistria in exchange for electricity at prices lower than from the Romanian supplies (72 vs 90 EUR/MWh).¹⁴ The solution may have been suboptimal; however, it also meant that Moldova practically became independent of Russia's potential energy blackmail, being able to procure electricity and gas from other sources, at least for the needs of the right bank, with financial support from EU and Romania for energy bills at end-users.

Ukraine's response to Russia's attacks targeted at energy infrastructure consisted of planned outages to manage the supply gap during peak hours and local decentralized supply with several hundreds of thousands of generators for households, public institutions and critical infrastructure.¹⁵ Imports of electricity are rather marginal, but the power system can be restored in case of an unplanned interruption (blackout). However, this solution, which worked well over the winter, can only be temporary. Local generators are expensive, inefficient, require a steady supply of gasoline or other fuels, and cause major pollution in cities. At the same time, Ukraine's power system requires repairs of large transformers and replacement of equipment in large power plants to return to its previous capacity.

⁹ "Europe's gas prices have broken a new record. How high can they go?", Euronews, August 26, 2022, available at: <https://www.euronews.com/my-europe/2022/08/25/europes-gas-prices-have-broken-a-new-record-how-high-can-they-go>.

¹⁰ "Majority of Gazprom's European sales hub-indexed", February 13, 2020, available at: <https://www.argusmedia.com/en/news/2070157-majority-of-gazproms-european-sales-hubindexed>.

¹¹ "EU sanctions against Russia explained", European Council, available at: <https://www.consilium.europa.eu/en/policies/sanctions/restrictive-measures-against-russia-over-ukraine/sanctions-against-russia-explained/>.

¹² "Russia's March energy income drops 43% y/y, quarterly tax supports monthly revenue", Reuters, April 5, 2023, available at: <https://www.reuters.com/markets/commodities/russias-march-energy-income-drops-43-yy-quarterly-tax-supports-monthly-revenue-2023-04-05/>.

¹³ "Conscious uncoupling: Europeans' Russian gas challenge in 2023", Kardas, S., European Council on Foreign Affairs, February 23, 2023, available at: <https://ecfr.eu/article/conscious-uncoupling-europeans-russian-gas-challenge-in-2023/>.

¹⁴ Expert Forum Annual Report 2023, "One year of fighting. Lessons for the EU from Ukraine's resilience and the energy sector", February 21, 2023, available at: <https://expertforum.ro/raport-anual-2023/>.

¹⁵ See, for example, "Official: over 300,000 generators delivered to Ukraine in December", The Kyiv Independent, January 14, 2023, available at: <https://kyivindependent.com/official-over-300-000-generators-delivered-to-ukraine-in-december/>.

Such works, as well as the partial incompatibility of equipment that would be already available in the West with the Ukrainian power system, would mean that some medium-term solution to produce electricity needs to be found for the next two to three years. As Russia's war against Ukraine continues, albeit at a slower scale given the expected depletion of Russia's stocks of missiles and drones, the full reconstruction of Ukraine's power system would be feasible only after Ukraine wins the war and receives credible security guarantees. The reconstruction would require substantial investments in the range of tens of billions, both in the public and private infrastructure, which would be feasible only if the risk of renewed destruction is minimal.

However, this crisis is also an opportunity. Energy shortages meant that, for the first time, local consumers (households and industry) became suddenly aware of the need to save energy and optimize consumption. Municipalities and groups of consumers have become much more active in the search for locally-controllable, decentralized production of energy. This is less vulnerable to attacks targeted at the country-wide energy supply system, and means an enormous number of small units distributed across the territory. For consumers, the idea of "flexible demand" (the ability to organize consumption when energy is readily available and cheap by optimizing the schedule of consumption or by storing energy) is much closer to home than anywhere else in Europe. At some point, within the next two to three years in which Ukraine's power system cannot be restored to its condition before October 2022, some of the smaller or larger generators are likely to be integrated in local distribution grids of electricity to provide energy to a larger number of consumers and this will happen as grids are repaired locally. Such relatively small capacities can later be replaced by greener, environmentally friendly, units. Put simply, it would be not difficult to replace a diesel generator which now supplies one consumer or a group of consumers with an equivalent solar, wind or other renewable capacity (plus storage) later, and possibly integrate it in the local distribution once there is an urgent pressure to repair – and why not modernize – the grids at local level. This development is certainly much more straightforward than what the EU faces today under the Green Deal: the need to replace large coal or gas-fired units in national power systems with the equivalent capacities on renewables while keeping the system functional and safe. Europe's power grids, largely built by the mid-20th century, are incredibly path-dependent. This is probably the biggest challenge in the EU for the massive transformation expected of the power sector in order to reach the "net zero

by 2050" goal, which envisages also a substantial increase of electricity demand compared to current levels. The model of Europe's future electricity system is likely to consist of decentralized production and flexible local grids that are capable to integrate energy available locally, in parallel with so-called energy highways transporting energy from areas where renewable energy is highly concentrated (e.g. onshore or offshore wind), and consumers with flexible demand. Decentralized production, which can be decoupled from the nation-wide system, is also much more resilient to risks, from warfare or cyberattacks to climate change. Ukraine is much more likely to get there well ahead of the EU precisely because it needs to adapt to the destruction of its power system today.

2.4 Looking ahead: renewable energy and Ukrainian gas reserves

In addition, Ukraine has significant renewable potential that needs to be tapped for the benefit of the entire region, from existing hydropower plants to onshore and offshore wind potential, which is concentrated around Crimea.¹⁶ Even today, and despite the destruction of a large share of its energy generation capacity (including solar and wind units in the South ruined by the war and the disconnection of Zaporizhzhia nuclear power plant), Ukraine's electricity mix is 70% carbon-free. The country's energy system has also managed to recover significantly from the previous waves of destruction, with virtually no planned outages and even resumed exports of small quantities of electricity in early April.

On the gas side, Ukraine's system comprises most of the routes by which Russian gas had historically been exported to Europe. This network is flexible and largely unscathed by the war, as most of the infrastructure (pipelines, storage) is underground. Ukraine's gas storage capacity is about 30% of the total gas storage in the EU,¹⁷ which means that gas stored in Ukraine could easily manage price shocks and panic moments such as the one in August 2022 on EU markets. Ukraine is also a large producer of gas, its total output being twice as high as Romania's, which is currently the only EU gas producer in the region. In Europe, Ukraine has the second-largest known gas reserves: 1 trillion cubic meters, compared to Norway's 1.5 trillion.¹⁸ However, most of the unused gas reserves are inaccessible, being in territories controlled by Russia or in direct range of Russia's attacks: Crimea, Dnieper-Donetsk, Black Sea-Azov.¹⁹ The EU is rushing to find alternative supplies to Russian gas for members in the South, East and

¹⁶ Gumbau, A., "Ukraine sets plans for ambitious 'green' reconstruction", Energy monitor, August 24, 2022, available at: <https://www.energymonitor.ai/finance/green-infrastructure/ukraine-sets-plans-for-ambitious-green-reconstruction/>.

¹⁷ Detailed statistics on storage capacity and quantities in storage in real time published in the Aggregate Gas Storage Inventory database, available at: <https://agsi.gie.eu/>.

¹⁸ Amelin, A., Prokip, A., Umland, A., "The Forgotten Potential of Ukraine's Energy Reserves", Harvard International Review, October 10, 2020, available at: <https://hir.harvard.edu/ukraine-energy-reserves/>

¹⁹ Ukraine energy profile - energy security, International Energy Agency, available at: <https://www.iea.org/reports/ukraine-energy-profile/energy-security>.

Central Europe including by negotiating long-term contracts with Azerbaijan. However, the country has a poor track record of human rights, internal repression and external aggression, all likely financed also from revenues from oil and gas that are produced and sold by a state-owned giant company, a model uncannily resembling that of Russia. Indeed, the EU would never be as dependent overall on Azerbaijani gas as it was on Russia's (the envisaged imports by 2030, around 20 bcm, would amount only about 15% of what was imported in the EU from Russia before 2022). However, Gazprom's strength in its relation with Europe was never about using its leverage against a united EU, but in playing one country against the other and using its dominant position individual countries. Aliyev's regime may use a similar leverage in relatively poorly governed countries in Europe's South-East, e.g. to influence decisions in Brussels that require unanimity.

3. Conclusions and recommendations

The past year has taught EU and the West a few valuable lessons concerning the benefits of taking a principled stance on the international arena, in relations to Ukraine, and in relations to authoritarian regimes, as well as the risks of not doing so.

1. Dependence on authoritarian regimes for critical supplies, such as energy, entails risks that go much beyond economic pressures and abuse of monopoly power. Russia actively sought to divide Europe by selective cuts of gas supplies. Initially, this approach worked. Despite the war, the decoupling from Russian energy has not been considered seriously until Russia started cutting deliveries by itself, most visibly in summer 2022 when it completely shut down gas flows on Nord Stream 1. If Russia had not pushed this leverage too far causing a massive gas crisis in August, it is quite likely that the EU may have not agreed on imposing more serious sanctions such as the oil price cap under the leadership of the US, which took effect only in December. Indeed, now the EU seeks to accelerate the Green Deal and phase out of fossil fuels to ensure a faster decoupling from Russia's gas, coal and oil. However, there is a high risk that the EU may instead become dependent on renewable technologies and materials where China has a dominant position. This risk is acknowledged,²⁰ and the EU's leadership revisits substantially its stance towards China,²¹ though the concrete measures to reduce the dependence on critical supplies are still being debated. Where possible, the EU should "friend-shore" supplies. In this respect, Ukraine's gas and cleaner electricity can be a significant part of EU's energy mix. However, this cannot be achieved before Ukraine wins the war and receives comprehensive security guarantees. Without Ukraine gaining control of its entire territory, including Crimea, and without credible guarantees that Russia can never launch again attacks on Ukraine's critical infrastructure, this potential will not be realized. Given the stakes, it is in Europe's interest to ensure Ukraine's integrity and security – by supplying as quickly as possible all weapons and capabilities that Ukraine needs for victory, but also by adopting a road map for Ukraine's membership into NATO.
2. The EU (and the West in general) has been successful each time it fully respected its liberal, democratic principles and values, and has lost when such principles have given way to a poorly understood *realpolitik*. What ensured Ukraine's (and Moldova's) survival in the past year, and helped Europe to overcome the decoupling from Russian energy supplies relatively smoothly has been solidarity, not further concessions to Russia. Solidarity has worked every time, as exemplified in the synchronization of grids, the mutually beneficial exchanges of energy, the joint negotiations for gas imports from third parties. The EU has been hurt by its hesitancy to sanction Gazprom for market exploitations and to decouple from Russian gas as soon as it became clear that Gazprom is not a reliable supplier. The delays and hesitations on the critical sanctions on energy that would have impacted the Kremlin's ability to finance the war (oil embargo, oil price caps, Russian gas price caps) led to higher energy prices for Europeans and allowed Russia to continue its war against Ukraine. The current hesitations to provide a clear schedule to decouple also from Russian nuclear supplies (by sanctioning technology, equipment, fuels) will allow the Kremlin to probably divert some of its businesses with the EU under the umbrella of its nuclear power company Rosatom, which is currently seeking to open subsidiaries in sectors not related to nuclear energy and seeks ways to avoid sanctions. Arguably, also the hesitations to provide a clear path towards NATO membership to Ukraine fifteen years ago has only emboldened Russia to invade; the current temporization of all needed measures, from weapons deliveries to clear paths to NATO and EU membership, is a repetition of the same mistake. Such hesitations are only perceived as a critical weakness of the Western liberal democracies by a multitude of state actors around the globe, and are only strengthening their resolve to challenge the international liberal world order with potentially disastrous consequences.
3. Ukraine's energy sector could provide the way forward for the transformation of EU's entire energy system during its reconstruction – the major structural change that

²⁰ Kratz, A., Oertel, J., Vest, C., "Circuit breakers: Securing Europe's green energy supply chains", European Council on Foreign Relations, May 11, 2022, <https://ecfr.eu/publication/circuit-breakers-securing-europes-green-energy-supply-chains/>.

²¹ "EU's von der Leyen calls for tougher policy on China ahead of Beijing visit", Politico, March 30, 2023, <https://www.politico.eu/article/eus-ursula-von-der-leyen-xi-jinping-calls-for-tougher-policy-on-china-ahead-of-beijing-visit/>.

EU needs to become carbon-neutral by 2050 and lead the way for international partners. If rebuilt, Ukraine's power sector would be based on decentralized production with energy highways to integrate flexibly all renewable resources available (territorially distributed or concentrated in certain areas); and on flexible, efficient demand. Once more, this reconstruction will not be possible without Ukraine's full control of its internationally recognized borders and guarantees that no attacks can further destroy its infrastructure. However, the modernization of Ukraine's energy sector will be a testing ground for the future model of EU's energy market. Currently, despite the ambitions of the Green Deal, it is not clear at EU level how to accelerate the transition by 2030-2050, given the path dependency of the existing systems, as well as the substantial change needed in consumer behavior, residential and industrial. Because of the war, the destruction, and the mobilization of people to resist Russia's aggression, Ukraine has taken a giant leap in this direction, well ahead of any EU country.

In the face of increasing threats to the international order from illiberal, authoritarian regimes, the EU and the West in general must adopt a clear, principled stance. This approach is not only much more credible on the international stage, but has also proven successful, as the events of the past year related to Russia's war of aggression against Ukraine and the response of the united West show.

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