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**Europe's Gas Dilemma:  
Preparing for a winter without Russian Gas**

CSL White Paper

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## Introduction

Russian President Vladimir Putin's invasion of Ukraine has shone a spotlight on the European Union's reliance on Russian energy, especially natural gas. According to the International Energy Agency (IEA), the 155 bcm that the EU imported from Russia in 2021 [accounted](#) for around 45% of its gas imports and nearly 40% of its total gas consumption.<sup>1</sup> Although access to Russian gas has not yet been a major issue since the war broke out, the EU's reliance on Russia for gas creates a degree of [uncertainty](#) that significantly impacts its energy security, economy, and foreign policy.<sup>2</sup>

This short White Paper highlights three core points. First, the threat of a partial or full Russian cut-off of natural gas is real. Second, the European Union has a variety of countermeasures and options available to it. Third, even with those countermeasures, Europe faces a very real danger of a long, cold winter in 2023. The need for energy security and climate sustainability both point to the importance of transitioning off of fossil fuels as soon as possible.

### The threat of a Russian gas cut-off

While some have argued that Russia is unlikely to cut off EU's gas supply, because of Russia's economic dependence on gas export revenues, or because doing so would [essentially be an act of war](#),<sup>3</sup> it remains a possibility for which policymakers should be prepared. Putin has demonstrated that he is not afraid to expose his country to economic risk or to escalate a conflict.<sup>4</sup>

Already, Russia has partially curtailed gas exports to Europe and threatened more cuts. IEA analysis [suggests](#) that Europe's historic low gas storage levels and surging prices were largely due the fact that the Russian state-owned Gazprom sent about 25% less gas than usual to Europe in the quarter 4 of 2021, despite a surge in demand.<sup>5</sup> On February 7, in response to Chancellor Olaf Scholz's [announcement](#) that Germany would be halting the process of certifying the Nord Stream 2 gas pipeline, Dmitry Medvedev, Russia's former president and current deputy chair of Russia's Security Council tweeted, "Welcome to the brave new world where Europeans are very soon going to pay 2,000 euros for 1.000 cubic meters of natural gas!"<sup>6</sup>

More worryingly, on March 7, Russian Deputy Prime Minister Alexander Novak [told reporters](#) that, “in connection with the unfounded accusations against Russia regarding the energy crisis in Europe and the imposition of a ban on Nord Stream 2, we have every right to make a [reciprocal] decision and impose an embargo on gas pumping through the Nord Stream gas pipeline, which today is loaded at the maximum level of 100%.”<sup>7</sup> Since the majority of Russian gas comes into Germany via Nord Stream 1, halting it [would mark](#) a serious blow to the German economy.<sup>8</sup>

Additionally, whether or not Russian policymakers take action to deliberately decrease gas supply to the European Union, the roughly one third of the gas the European Union imports from Russia via Ukraine is [at risk](#) due to Russian bombing of Ukrainian critical infrastructure.<sup>9</sup> Preparing for a total shutoff would allow the European Union to manage setbacks to Ukrainian pipelines.

## **The European Union’s options**

International organizations, consultancies, and policy experts have suggested many tools that the European Union can use to rapidly reduce its reliance on Russian energy. Two prominent plans exist.

First, the IEA’s [10-Point Plan to Reduce the European Union’s Reliance on Natural Gas](#), aims to reduce Europe’s need for Russian gas by over 50 bcm over the next year, which represents about one-third of the EU gas imports from Russia.<sup>1</sup> The plan centers around reducing gas use through measures such as speeding up the replacement of gas boilers with heat pumps, encouraging thermostat adjustments, and accelerating energy efficiency improvements in buildings and industry, as well as replacing Russian gas imports with gas from alternative suppliers and a combination of bioenergy, nuclear, wind, and solar energy. The IEA notes that additional fuel switching options, such as gas to coal- or oil-fired power generation, could be combined with the plan to further reduce demand for Russian gas by up to 28 bcm, before there was an overall increase in EU’s energy-related carbon emissions, since the 10-point plan by itself would result in significant emissions reductions. The emergency contingencies, when combined with the IEA’s baseline

plan, could collectively result in about a 90 bcm reduction in demand for Russian gas – a little over half of Europe’s 2021 consumption.

Meanwhile, the European Commission’s [REPowerEU: Joint European Action for More Affordable, Secure, and Sustainable Energy](#)<sup>10</sup> builds on and expedites components of the European Union’s [Fit for 55](#)<sup>11</sup> and the [European Green Deal](#).<sup>12</sup> The plan includes similar measures to the IEA’s plan, but it is more ambitious. The European Commission estimates that if all of REPowerEU’s measures are implemented, Europe’s demand for Russian gas could be reduced by about 100 bcm by the end of 2022. Table 1 illustrates divergences in priorities and estimates between the IEA and EU plans.

**Table 1: Short-Term Demand Reduction Measures for REPowerEU and IEA 10 Point Plan**

	IEA 10-Point Plan		REPowerEU		Considerations
	Demand Reduction Measure	Demand Reduction*	Demand Reduction Measure	Demand Reduction*	
Gas Diversification	LNG diversification	20 bcm	LNG diversification	50 bcm	<ul style="list-style-type: none"> <li>High prices</li> <li>Processing and distribution logistics</li> <li>Supply limitations</li> </ul>
	Pipeline import diversification	10 bcm	Pipeline import diversification	10 bcm	
	Maximizing bioenergy production	9.3 bcm	Boosting biomethane production	3.5 bcm	<ul style="list-style-type: none"> <li>Burden on agricultural sector</li> <li>Environmental impact</li> </ul>
	Returning offline nuclear reactors to operations	3.7 bcm	–	–	<ul style="list-style-type: none"> <li>Political resistance to deviating from maintenance schedule</li> </ul>
Green/Efficient Energy	Encouraging a temporary 1°C thermostat adjustment	10 bcm	EU-wide energy saving measures (e.g., 1°C thermostat adjustment)	14 bcm	<ul style="list-style-type: none"> <li>Public support</li> <li>Unpredictable adherence</li> </ul>
	Faster deployment of rooftop solar PV systems	2.6 bcm	Frontloading FF55 rooftop solar deployment	2.5 bcm	
	Doubling current EU heat pump installation rates	2 bcm	Frontloading FF55 heat pump rollout	1.5 bcm	<ul style="list-style-type: none"> <li>Lengthy planning and development process</li> <li>High cost</li> <li>Supply chain considerations</li> </ul>
	Accelerating utility-scale wind and solar PV projects	3.4 bcm	Frontloading FF55 industrial wind and solar deployment	20 bcm	
Emergency	Accelerating energy efficiency improvements in buildings and industry	2 bcm	–	–	
	Gas-to-coal switching	22 bcm	–	–	<ul style="list-style-type: none"> <li>Inability of many plants to rapidly switch</li> <li>Setback to emissions targets</li> </ul>
	Switching 25% of gas-fired power plants to another liquid fuel	6 bcm	–	–	
	<b>Maximum Total Russian Gas Demand Reduction</b>	<b>91 bcm</b>	<b>Maximum Total Russian Gas Demand Reduction</b>	<b>101.5 bcm</b>	

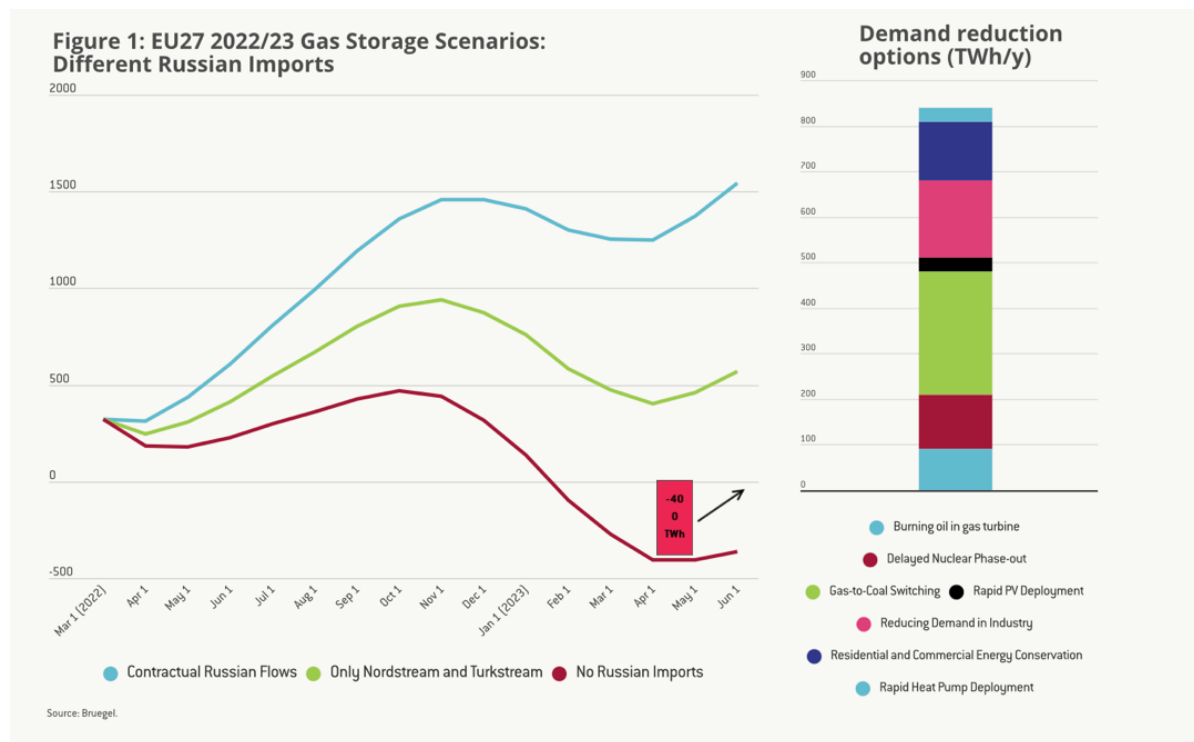
\*By the end of 2022 \*\*Over the next year

## The European Union’s risk exposure

The IEA and EC’s plans, if completely and successfully implemented, would represent a victory for European energy security, the climate, and the West’s geopolitical leverage. However, both plans fall short of preparing Europe for an

abrupt and complete cessation of Russian gas imports. In particular, by both plans' estimations, they leave more than 50 bcm of unmet demand for natural gas if Russian gas imports were to stop entirely.

The analysis of [Bruegel](#) independently corroborates this. The think tank assessed the demand reduction potential of many of the measures that are put forth in the IEA and EC proposals in the context of three scenarios: one in which Russian gas imports to the EU remain at average levels, one in which they decrease, and one in which there are no Russian gas imports.<sup>13</sup> Notably, as their Figure 1 illustrates, in a “no Russian imports” scenario, at least 400 TWh (approximately 40 bcm) of demand for gas are left.



Furthermore, complete and successful implementation of these plans will be challenging, and contingent on various internal and external factors. For one, natural gas consumption is highly sensitive to the winter, with cold temperatures leading to much more demand for gas. Secondly, flexible LNG contracts have enabled Europe to achieve historically high LNG imports by rerouting shipments from Asian customers, but it is not clear how much longer this will be the case, given the rising demand for LNG in Asian countries.<sup>13</sup>

Thirdly, implementation of much of the aforementioned plans depends on national governments, and some measures that are good for the EU as a whole in a total shut-off scenario might not align with stakeholder priorities in various EU countries.<sup>14</sup> For instance, Russia could cause gas prices to stay high over the summer by limiting exports, then suddenly flood the market in December.<sup>13</sup> In this scenario, gas companies that dutifully replenished their reserves over the summer would find themselves in deep financial trouble. The EU should provide financial insurance against such a scenario, such as contracts which pay companies back the difference if gas prices end up below a certain threshold next winter.

Finally, a Russian gas shut-off scenario could also highlight the challenge of intergovernmental cooperation within the EU, as direct exposure to Russian gas disruption varies widely across Europe. For instance, the Iberian Peninsula is a hub for LNG import terminals, and [can import](#) about 10 TWh (about 1 bcm) more gas than it consumes each month. However, existing pipelines permit a [maximum transfer](#) of 5 TWh (about 0.5 bcm), and increasing that capacity would require a concerted effort and significant investments.<sup>15</sup> And even if it is financially and technically feasible to transfer gas from areas of abundance to areas of scarcity across Europe, it may not be politically palatable. Leaders of countries with a good supply of gas might be unwilling to share with other countries and instead prefer to bolster their national reserves.

Thus, even with the best efforts, the EU remains dangerously exposed to the risk of severe energy shortages, and there are many complicating factors that are not fully accounted for in the aforementioned plans.<sup>16</sup>

## **Policy Implications**

EU decision makers should continue to prepare for the worst-case scenario: a total cut off of gas from Russia. In addition to embracing the baseline measures proposed in REPowerEU and the IEA 10-Point Plan, which would accelerate the EU's transition to green energy, policymakers can plan for additional emergency measures. For instance, the energy consultancy Wood Mackenzie, [has pointed out](#) that if Europe were to totally run out of gas, it could use up to 15 bcm of its existing 150 bcm of "cushion gas" that is normally kept in storage cavities such as salt

caverns and aquifers for technical reasons.<sup>17</sup> Gas storage companies have [indicated](#) their willingness to sell limited amounts of cushion gas, but only if a technically sound plan and associated regulatory concessions are in place, both of which take time to develop.<sup>18</sup> Rather than waiting until a worst-case scenario unfolds, governments should proactively begin working with storage operators to develop these plans and concessions now.

Similarly, Robert Habeck, the German economy minister, has [said](#) that as a precaution, Germany will be keeping coal-powered plants on standby so that they can be made operational at short notice if the worst case transpires.<sup>19</sup> These and other contingency measures should be made ready for widespread deployment across the European Union.

In the United States, policymakers must come to terms with what they can and cannot do to aid the EU. To the extent that Europe needs more heat pumps, American manufacturers might be in a position to ramp up production and export them to Europe. On the other hand, the United States has more limited potential to export more natural gas to Europe next twelve months, despite some prominent political calls to facilitate that action. For instance, Senate Energy Chair Joe Manchin has [proposed](#) using the Defense Production Act to expedite the completion of a pipeline that would increase US gas production within the next year,<sup>20</sup> and other lawmakers wrote a letter to Biden on March 10, urging him to “provide financial incentives ... [for] refinery enhancements needed to boost production.”<sup>21</sup> But as mentioned previously, the logistics of swapping Russian piped gas for US LNG are not simple. Europe’s LNG terminals currently have limited ability to absorb more LNG from the US. Germany, one of the countries that would be hardest hit, does not yet have a single LNG import terminal, and Spain, which imports little to no Russian gas, has around 27 percent of Europe’s capacity, and its gas infrastructure is not well integrated into the rest of Europe.<sup>22</sup> Furthermore, US LNG [export terminals](#) are [already working](#) at close to capacity, so significant increases in exports are not viable in the near future, even if a new gas pipeline were completed.<sup>23</sup> So while the US should not actively curtail exports to Europe, policymakers should not assume that US natural gas will be able to rescue Europe from a worst-case energy scenario.



## Conclusion

Policymakers should use the energy crisis as an opportunity to learn from past mistakes and prevent a similar situation from occurring in the future. CSL Director Jeff Colgan has [noted](#) how past decisions have contributed to Europe's present-day vulnerability, such as Germany phasing out its nuclear reactors, allowing the Nord Stream 2 pipeline to be built, and failure across Europe to invest sufficiently in natural gas storage and pipeline interconnections that could serve as a buffer in the event of an emergency.<sup>24</sup> Additionally, the estimates put forth in the IEA and EC plans suggest that if the EU had expedited investments in solar power, wind power, and energy efficiency 10 years ago, its baseline demand for Russian natural gas would be far lower today. While these measures might not be sufficient to fully offset Europe's gas needs in the short-term, they provide direction for the medium term. A rapid clean energy transition could make a significant contribution to the EU's security, economy, and climate goals.

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