

Europe risks rationing if Putin cuts off Russian gas supply



The prospect of Europe getting cut off from Russian gas supplies is starting to get real.

The clock is ticking in a standoff over the Kremlin's demand that its customers in Europe pay in rubles for the fuel, which the region depends on for a fifth of its power generation.

The European Union has said the decree violates sanctions and hands more power to Russia. It suggested an alternative that avoids rubles on Friday, but it's up to Moscow to decide if that's acceptable. Payments come due in May, and that's when the moment of truth arrives.

By refusing President Vladimir Putin's payment terms and testing his threat to turn off the taps, European buyers "would be running a very real risk of their supplies being cut," said Katja Yafimava, a senior research fellow at the Oxford Institute for Energy Studies.

The game of geopolitical chicken could lead to Europe rationing energy for the first time since the oil crisis in the 1970s. As the biggest consumer of Russian gas in Europe, Germany is most exposed, but the fallout would ripple across the continent and beyond. Here's what could happen:

Market meltdown

Europe's natural gas market would show the impact immediately. Trading is already on edge, with prices five times higher than the same time last year. That could get worse.

In the event of a supply disruption, forward contracts could more than triple, especially if Europe enters next winter with depleted storage, according to Kaushal Ramesh, senior analyst, gas and LNG at Rystad Energy.

Such a surge would put governments and central banks under pressure as they seek to control soaring inflation. The risk is that the mounting cost-of-living crisis intensifies and spills over into wider unrest and a deeper crisis.

Power shift

With less fuel for gas-fired generators, the risks of rolling blackouts would increase. While countries would try to shift to other sources, the options are limited.

France would halt large gas-fired power plants to conserve the fuel for other needs, Italy would maximize production from coal or fuel oil, and Germany has discussed burning more local lignite – the dirtiest form of coal. The workarounds are likely to make the region even more polluting.

On the upside, warmer weather would reduce gas consumption for heating, delaying the worst impacts at least until the fall.

By ramping up other energy sources, including an accelerated expansion of renewable power, the EU aims to cut its gas dependency on Russia by two thirds this year.

German rationing

Germany has triggered an emergency plan, with a task force meeting daily to monitor consumption and inventories. Its energy regulator is surveying companies about their usage to help determine how to distribute supplies.

Consumers would be protected as long as possible, and that

means industry would bear the brunt of a rationing plan. That's a big risk for Europe's largest economy. The country depends on Russia for 40% of its gas supplies, and the fuel is critical for processes in the chemicals and metals industries.

At Europe's biggest chemical factory, BASF SE churns out compounds used in manufacturing autos, medicines and fertilizers and all fueled by pipelines filled with Russian gas. The company warns that a sudden halt would send shock waves through many industries and cause irreversible damage to German competitiveness.

The concerns are echoed by the likes of steelmaker Thyssenkrupp AG, automaker Volkswagen AG and utility RWE AG.

"Stopping the pipeline-bound gas supply at this time would have dramatic consequences," RWE Chief Executive Officer Markus Krebber said in an advanced copy of a speech for the company's shareholder meeting next week. Many manufacturers "would no longer be able to operate their plants."

Chancellor Olaf Scholz has said a halt to gas flows from Russia would trigger a serious economic crisis in Europe, leading to the loss of millions of jobs.

The sudden halt in Russian gas deliveries could cost Germany's economy 220 billion euros, or about 6.5% of annual gross domestic product, according to a joint forecast of the country's leading economic institutes. The Bundesbank estimates that output could shrink nearly 2% this year in the event of an embargo on Russian coal, oil and gas.

Read more: [Germany to Borrow Extra 40 Billion Euros to Cushion War Blow](#)

But the Berlin-based DIW think tank says a combination of energy savings and optimizing alternative supplies could put Germany in position to offset Russian gas as soon as this winter.

The government has expanded its authority over the energy sector with new rules on gas storage. It's also planning to grant itself powers to put critical energy infrastructure under temporary state control.

Global squeeze

Emerging nations would get squeezed by Europe's thirst for energy, especially liquefied natural gas, as they would struggle to compete on price. The region is already pulling most of the spare LNG supply from the U.S. and other nearby exporters, keeping spot rates for the super-chilled fuel well above normal for this time of year.

Pakistan is suffering from blackouts, due in part to European nations outbidding the cash-strapped country for LNG cargoes. Argentina is also dependent on LNG from the spot market and has been forced to fork over hundreds of millions of dollars to secure deliveries for the southern hemisphere's upcoming winter.

Double bluff

As in any game of chicken, there's the chance for one side or both to pull away from the brink. While Europe needs the gas, the continent remains the only potential market in the near term for production from Russian fields.

Turning off the tap now may permanently close the door on Russian energy imports to its neighbor, choking off a key source of revenue in the process. Germany, which has been criticized for cautious support of Ukraine, would face renewed pressure to stand up to Putin more forcefully.

U.S. Natural Gas Surges to 13-Year High on Global Supply Crunch



As a result of strong demand, U.S. natural gasoline prices soared to their highest intraday levels in more than 13 years.

- Despite a drop in backup inventories, production is still flat
- Strong demand from Europe has almost pushed LNG exports to the limit

Futures rose to \$7.558 per million British Thermal Units, surpassing January's -fueled the rally. This was roughly twice the level at the beginning of the year.

As suppliers struggle to keep up with a surge in demand after a pandemic, a global fuel shortage is emerging across the markets. This situation is further complicated by the conflict

in Ukraine. This discount is shrinking, even though U.S. natural gasoline prices have been well below those in Europe and Asia over the past year due to a bounty from shale fields.

The underground caverns and the aquifers holding backup inventories are lower than normal, and production is flat. To help Europe reduce its dependence on Russian energy, the U.S. is currently exporting every molecule possible of liquefied gas.

According to the National Oceanic and Atmospheric Administration, temperatures below normal are expected in parts of the northern U.S.A. between April 25 and May 1. This could lead to an increase in demand for heating and power-plant fuels, which would divert supply from storage that is normally used during this time. The U.S.'s shortage of coal has also contributed to the rise in gas prices, which has limited power generators' ability to switch fuels.

According to the Energy Information Administration, inventories increased by 15 billion cubic yards in the week ending April 8, which was less than half of the average gain over the past five years. Stockpiles are still 18% lower than usual.

How Ethanol and E15 Gas Fit Into Biden's Plans to Fight Inflation



Ethanol, the intoxicating alcohol found in beer, wine and liquor, has been powering automobiles in the U.S. since the era of the Model T more than a century ago. Since the 1970s, when oil became more expensive and subject to international disputes – and as worries rose about the environmental damage caused by fossil fuels – the U.S. government has used tax policy and regulations to encourage use of ethanol and other environmentally friendly alternatives to gasoline. U.S. President Joe Biden, as part of his efforts to combat rising prices, is making it easier to sell more ethanol in the coming summer months, even as critics raise concerns about the corn-based fuel.

1. What does ethanol do?

It provides oxygen, making gasoline burn more cleanly in engines. The biofuel E10, so named because it contains 10% ethanol and 90% gasoline, is widely accepted and available at U.S. gas stations. E15, with its 15% ethanol, is currently 5

to 10 cents cheaper per gallon than E10, a discount that's especially appealing in these times of sky-high fuel prices. However, ethanol is corrosive, and some critics believe that E15 can cause damage to cars. In 2011, the EPA authorized the use of E15 for newer cars made in 2001 and later. But it's still not common at U.S. service stations; just about 2,300 of the nation's more than 150,000 filling stations sell E15. And E15 is typically banned in most areas of the U.S. during the summer months.

2. Why is summer an issue?

Since the heat of summer increases the evaporation of all liquids, including gasoline, the EPA has had more stringent rules in place between June 1 and Sept. 15 to regulate Reid vapor pressure, the propensity for gasoline to evaporate and lead to smog. The EPA has granted E10 a waiver from the vapor pressure limit, but not E15.

3. What change is Biden making?

The U.S. Environmental Protection Agency, which regulates air pollution from gasoline, is issuing a national emergency waiver to allow E15 fuel to be widely sold this summer, even in areas where it's typically off-limits. The move temporarily exempts E15 from air pollution requirements that block the fuel's sale in most areas of the country from June 1 to Sept. 15.

4. Why is this change temporary?

The EPA tried making the change permanent in 2019 under former President Donald Trump, issuing a rule allowing year-round sales of E15 even in areas where smog is a problem. The nation's top refining trade group successfully challenged the regulation in federal court, and the rule was tossed out two years later. Ethanol producers have lobbied the Biden administration to try again. The three-and-a-half-month summer blackout period deters some retailers from offering E15 at

all, since they'd need to change pumps and warning labels at the start and end of each summer.

5. Who supports year-round use of E15?

Mainly agricultural interests in the Midwest. Corn use for ethanol has more than tripled since 2005, when President George W. Bush enacted the Renewable Fuel Standard that compels refiners and fuel importers to use a variety of biofuels. Ethanol now accounts for about 10% of U.S. gasoline usage, up from less than a 10th of 1% in 1993. Demand also was given a boost by the Clean Air Act amendments of 1990, which spurred the use of ethanol as an oxygenate to combat pollution. Support for ethanol is a political litmus test in the Midwest U.S.; while campaigning for the presidency in 2020, Biden promised to "promote and advance renewable energy, ethanol and other biofuels."

6. Who opposes year-round use of E15?

Oil companies have battled it for years, warning about potential engine damage from motorists inadvertently pumping the fuel into vehicles and other equipment not approved to use it. Some automakers warn that car warranties would be voided if motorists use E15. Oil refiners worry that increased use of ethanol will pare their share of the fuels market. (This risk is less acute for refiners that also produce ethanol, such as Valero Energy Corp.) Some environmental activists argue that expanding the availability of E15 will drive the production of more corn, resulting in more prairies being plowed and waterways polluted by agricultural runoff.

7. What would broader use of E15 mean for industry?

Not very much, especially right away under the emergency waiver, since the necessary equipment to distribute E15 is limited and concentrated in the Midwest. For refiners and fuel importers obligated to blend renewable fuels into their products, the move could trigger the generation of more

biofuel credits and modestly lower the price of compliance. A long-term shift to allow E15 sales year-round could mean a gradual reduction in U.S. demand for petroleum, which refineries can offset with increased exports.

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Russia-Ukraine war could delay Europe's decarbonization plans for a decade



Russia's invasion of Ukraine could force Europe to delay key

decarbonization efforts for up to a decade, a prominent regional energy expert has warned in Greece.

“They don’t have many choices left,” said Roudi Baroudi, CEO of Doha-based Energy and Environment Holding, an independent consultancy. “Unless some European countries pull out all the stops, much of the continent could soon be looking at crippling shortages, prohibitively high prices, or both.”

Now that Europe is moving to reduce imports of Russian oil and gas, he explained, some of the measures expected to reduce carbon emissions may have to be put off “for eight, nine, maybe 10 years,” as would planned shutdowns of nuclear generating stations.

“The European Union will need to provide the necessary permissions in some cases, plus financing in others,” he said. “Eight to 10 nuclear plants and as many as 30 coal stations slated for decommissioning will have to remain online to keep up with electricity demand, and several projects required to replace Russian gas will need to be accelerated with additional funding and/or guarantees.”

If and when gas stops flowing through pipelines from Russia, Baroudi told the 7th Delphi Economic Forum last week, “it cannot be replaced by simply ordering more liquefied natural gas from Qatar, the US, and/or other producers. Europe doesn’t have enough receiving facilities to re-gasify such huge amounts, which is why efforts to expand capacity in Germany and the Netherlands are so urgent.”

Coordinated releases of strategic oil reserves by the US and other countries are helping to contain upward pressure on crude and other energy prices, he said, but reasonable levels “cannot be maintained unless more supply makes it to market and that means oil producers –primarily OPEC but others as well – have to start pumping more.”

On yet another front, “Spain has both spare LNG receiving capacity and an undersea pipeline for imports of gas from North Africa – but very little of that can reach the rest of

Europe unless and until a new pipeline connects the Iberian Peninsula to the rest of Europe via France,” said Baroudi, who has been advising companies and governments on energy policy for decades. “Paris has recently voiced new openness to that idea, but the EU can and should do more to facilitate it. It should also do more to establish an agreed route for another pipeline to carry gas from the Eastern Mediterranean to Greece and/or Turkey.”

Baroudi also argued that the EU would be wise to ensure adequate capital flows into renewables such as wind and solar. “We might have to retain fossil fuels longer than we had planned, but that’s no reason to stop funding a cleaner future,” he said. “In fact it’s a reason to move as quickly as possible.”

“The whole situation is very sad,” he added. “Ever since the Paris Agreements of 2015, and especially since the Glasgow climate summit last year, Europe had been on the right track to be ready for a decarbonized economy. But now those plans are being pushed temporarily to the back burner. Apart from the lives being lost in the fighting, the energy and economic implications will mean severe hardships across the continent, especially for lower-income people. And much of the cause is due to the fact that Europe had delays to diversify its sources of supply. Now it finds itself scrambling to prevent an economic disaster.”

Russia April Gas Exports Fall On Spot Price Drop, Warmer Weather



(Bloomberg) – Gazprom PJSC’s average daily exports to key foreign buyers so far in April fell to lowest in three months, as warmer weather and lower spot prices started to lure European clients away from Russian gas. The gas giant exported an average of 407 million cubic meters a day to countries outside the former Soviet Union in the first 15 days of April, according to Bloomberg calculations b

The gas giant exported an average of 407 million cubic meters a day to countries outside the former Soviet Union in the first 15 days of April, according to Bloomberg calculations based on a Gazprom statement published Friday. That’s nearly 18% below the daily average for the month of March. The company’s year-to-date exports to its key markets tumbled more than 26% compared to the same period of 2021 to 44.6 billion cubic meters, Gazprom said.

“Russian flows have been reduced and LNG imports strengthened in the last few days, as a result of the TTF day-ahead price falling, making spot volume prices more competitive compared to TTF-indexed Russian pipeline gas,” Rystad Energy analyst

Vinicius Romano said in a research note earlier this week.

The European Union depends on Russia for 40% of the gas it consumes, which makes it challenging for the alliance to stop the purchases immediately in retaliation for Moscow's invasion of Ukraine. However, the bloc is trying taking steps to wean itself off Gazprom supplies, with EU governments starting to assess alternative supply sources.

Moscow's demand that so-called "unfriendly" countries pay for gas deliveries in rubles starting from April is creating additional pressure on its clients to find alternative supplies, as the Kremlin has threatened to cut off exports to buyers that refuse to comply.

Gazprom doesn't provide a detailed export breakdown by country, making it difficult to assess supplies to Turkey and most of Europe, the key market for the company's foreign deliveries. Russian daily flows toward the borders with European nations have averaged nearly 324 million cubic meters between April 1-12, compared with 361.5 million cubic meters per day in March, according to Gazprom data.

Gazprom said it continues to supply gas in line with requests from consumers and is in full compliance with its contractual obligations.

The EU Commission's plan to eventually have the continent's gas storages 90% full by the start of winter is "very ambitious," Gazprom said in the statement. That would imply reinjections of 63 billion cubic meters, which is higher than the volume of gas stored during the warmer months in recent years and still would not cover peak demand if winter is abnormally cold, according to the Russian company.

Gazprom's daily output between April 1-15 averaged 1.393 billion cubic meters, according to Bloomberg calculations. That's 4.3% below the average over the whole of April 2021. Since the start of the year, the producer pumped 155.9 billion

cubic meters of natural gas, down 1.3% year on year, according to Gazprom's data.

Russia's year-to-date domestic gas consumption declined 3.6% compared to the same period in 2021 amid warmer weather in February, Gazprom said.

– *With assistance by Helen Robertson*

Morocco considers onshore, offshore options for LNG import facility



RABAT, April 15 (Reuters) – Morocco is studying options at several ports to build a floating or land-based facility to import liquefied natural gas (LNG), Energy Minister Leila Benali said on Friday.

Morocco relied for much of its gas needs – about 1 billion cubic metres (bcm) annually – on a pipeline that used to channel Algerian gas to Spain, until it was halted last October by Algiers, against the backdrop of worsening relations between the Maghreb's most populous countries.

Whether floating or onshore, studies are underway to choose the “most immediate solution”, Benali told reporters.

The country tendered in January for a study on the upgrade of Mohammedia port near Casablanca to host an LNG floating storage and regasification unit (FSRU).

Mohammedia and the Mediterranean port of Nador appear to be best equipped to host regasification terminals, she said.

“But we can prepare four ports at least,” she said, citing Kenitra and Jorf Lasfar ports.

“It is important for Morocco's energy sovereignty to have regasification capacity on our territory and in our maritime space,” she said.

Morocco will enter the international LNG market “in the upcoming days,” making use of unused capacity at Spanish terminals, she said, without giving further details.

Though she said: “We are not importing Spanish or European LNG.”

“Transit issues have been settled,” she said.

In addition to Spain, Morocco discussed in November with Portugal and France about tapping into the under-used regasification capacity.

“They have regasification terminals that are under-used, and we have a pipeline that has to be used,” Benali said.

The pipeline is key to feeding two small power plants that

supply Morocco's northwest and northeast, which currently rely on the national grid.

Draghi is betting on Africa for Italy's exit from Russian gas



Italian Prime Minister Mario Draghi is chasing a raft of natural gas deals in Africa as he seeks to cut energy ties with Russia.

Draghi will travel to central and southern Africa this week in pursuit of further supplies after Italy struck agreements for Algerian and Egyptian gas.

His tour may ruffle some feathers as European partners vie to displace Russian energy following Moscow's invasion of Ukraine.

Potential deals in the Republic of Congo and Angola could

bring Italy an additional 5bn cubic metres and 1.5bn cubic metres a year, respectively, people familiar with the matter said, asking not to be identified discussing private information.

Together with the extra volume it secured from Algeria, which would replace more than half the amount it gets from Russia as early as next year.

Talks are ongoing and details of any accords may change, the people said.

Italy currently gets about 40% of its gas from Russia, and Draghi – together with local energy giant Eni SpA – has sought alternative sources since President Vladimir Putin launched an invasion of Ukraine in February.

With Eni already present in more than a dozen countries in Africa, the continent is an attractive option. Yet the former central banker's energy diplomacy is causing some anxiety among European Union allies.

The Algeria deal stoked concerns in Spain that its own access to the country's gas could be affected, prompting talks between Rome and Madrid.

It's also unclear how Italy's plans square with a push to centralize gas-purchase negotiations at the EU level.

"It's really important that the EU sticks together at the moment, that's essential," said Oliver Sartor, senior industry adviser at think tank Agora Energiewende. "There are some countries that are more exposed than others, so it's normal that they would look to protect themselves. But there's a higher priority here."

Draghi's discussions in Congo and Angola this week will focus – among other things – on boosting deliveries of liquefied natural gas, the people said.

That trip could be followed by travel to Mozambique, though plans haven't yet been confirmed, they said.

Gas discoveries off Mozambique have attracted international operators, including Eni, to its waters.

While work in the country is risky – with attacks by an insurgency group threatening onshore developments – Eni's

Coral Sul offshore LNG plant is expected to start production in the second half of 2022.

The company's deal with Algeria's Sonatrach Group, signed during Draghi's first official visit to Algiers, sees Italy buying an extra 9bn cubic metres of gas annually by 2023-2024.

On Wednesday, the firm struck an agreement with Egypt to increase flows of LNG to Italy. It has also said it's ready to invest billions of euros across the Mediterranean Sea in Libya, where it has been present for decades.

Draghi isn't the only EU leader to court gas-rich countries in a bid to ease dependence on Moscow.

Germany, which relies on Russia for 40% of its gas imports, is creating its own LNG infrastructure.

Others from France to Croatia plan to build or expand import terminals, while the US has also agreed to boost shipments to the bloc.

"Everyone is moving very fast," said Simone Tagliapietra, a senior fellow at the Bruegel think tank in Brussels. "It makes sense for Draghi to act now, and he is doing it very well."

Iraq may make decision on Halliburton gas deal in May



(Bloomberg) – Iraq’s cabinet may reactivate a deal with Halliburton Co. to drill wells in a western gas field in Akkas next month, Oil Minister Ihsan Abdul Jabbar told local media.

An agreement with Halliburton would enable the oil ministry to get clear data on the production capacity of the Akkas field and it may reach a decision after the Islamic holy month of Ramadan, which ends in early May, the minister said.

If the government decides to develop the field, which has been idle since Baghdad retook it from Islamic State militants in late 2017, it would have to pick a production company for the project.

Officials have been in talks with Chevron Corp. and Saudi Aramco about investment in the region. That “will depend on the data we get from the exploration and well-drilling operations,” Abdul Jabbar said in an interview on Al-Forat channel.

Kurdistan Talks

Abdul Jabbar said 80% of the contracts that the Kurdistan Regional Government signed with oil companies are correct and the rest need to be reviewed. The KRG has no problem with half

the solutions the federal government offered to resolve the oil issues in Kurdistan.

The Kurdish region exports 430,000 barrels of oil per day, Abdul Jabbar said.

Baghdad has long sought to bring Kurdish production under its control in exchange for funds from the national budget. A February ruling in Iraq's top court asserted the central government's right to the semi-autonomous region's hydrocarbons. The KRG has said its rights to control the region's oil and gas are enshrined in the Iraqi constitution.

High Oil Prices

Iraq will probably sell its oil for an average of \$106-\$107 a barrel this month if prices remain at current levels, the minister added.

The oil ministry is providing 30 million liters of gasoline a day for local consumption, which Abdul Jabbar called a "big" number. Work on a new refinery in Karbala has been delayed by Covid-19 but the facility is expected to enter service in the first quarter of 2023, he added. The country will continue to import gasoline until 2024.

**Qatar, Iran and Saudi Arabia
'bright spots' for Middle
Eastern gas output until**

2050: GECF



Pratap John

Qatar, Iran and Saudi Arabia are the “bright spots” for Middle Eastern gas output over the next three decades, the Gas Exporting Countries Forum (GECF) has said in a report.

In its Global Gas Outlook 2050, GECF said between 2020 and 2050, the natural gas supply is set to climb by an annual average growth rate of 2.4% in Iran, 2.2% in Qatar and 1.2% in Saudi Arabia.

It said Qatar aims to maintain its status as the top LNG producer and exporter in the world. The planned expansion of production from the North Field and other fields will increase Qatar’s total gas production by an overall of 91%, from about 175 bcm last year to 330 bcm in 2050.

National oil companies in the Middle East are focusing on developing their gas fields. As most of the countries in the Middle East are also crude oil producers, the majority of natural gas production in the region is associated gas.

With almost 17% of global gas production, the Middle East is the third-largest gas-producing region worldwide after North America and Eurasia. The region is a net exporter of gas, and supply has been growing rapidly by an annual average growth

rate of 6.3%, from about 190 bcm in 2000 to around 650 bcm in 2020.

According to GECF, associated-dissolved natural gas (gas obtained from crude oil reservoirs) has always been accounted for as a share of total gas production. This gas can be found as free gas (associated) or in solution with crude oil, referred to as dissolved gas.

Like the impact that Covid-19 had on non-associated gas production, the demand for oil also declined in 2020, resulting in a lower level of associated gas production in that year.

According to the EIA, associated gas production in the US fell in 2020 by 1.5% reaching a level of around 140 bcm, following three years of growth. For the first time since 2016, the share of associated gas production in the US was reduced to almost 37.7%.

The GECF report forecasts that the demand for oil will stabilise through to 2050 and the level of global oil production will peak at slightly more than 100 mboe/d in around 2035 and will steady at around 90 mboe/d by 2050.

This lower level of crude oil production will consequently affect the level of associated gas production. Furthermore, the need for EOR measures by the injection of associated gas into oil wells will be magnified by the ageing oil reservoirs. "So a lower level of associated gas will reach the market, and the total volume of production from this category in the future is forecast to be lower than current levels," GECF said.

Currently, it is estimated that slightly less than 500 bcm of marketed natural gas is sourced from oil wells, and this level excludes the volume of the gas obtained from unconventional crude oil production.

The total level of associated gas production is even higher than this, as injection and recirculation do not count in marketed production, GECF noted.

Sanctioning a nuclear foe is a studied endeavour



By Ana Palacio/ Madrid

Western governments must be clear about what sanctions can and cannot achieve – and how much sacrifice is acceptable

The grim scenes left behind after Russia's withdrawal from Bucha, where Ukraine accuses Russian troops of torturing and slaughtering civilians, have intensified pressure on the West to provide more offensive weapons to Ukraine and for Europe to ban Russian energy imports. But beyond the legitimate question of Europe's willingness to pay such a high price on Ukraine's behalf lies the stark reality that sanctions are hardly a silver bullet.

Calls for sanctions began well before the invasion. When Russia was massing troops near Ukraine's border, the Ukrainian government – and some American lawmakers – urged the United

States and Europe to impose preemptive sanctions and offer Ukraine stronger security guarantees. But Western leaders demurred, arguing that sanctions would impede their ability to reach a diplomatic solution.

Of course, in geopolitics, as in life, hindsight is 20/20: we now know that those diplomatic efforts were in vain. What we do not know is whether preemptive sanctions would have motivated Russian President Vladimir Putin to rethink his plans, especially given that preemptive sanctions most likely would not have been as severe as the package of measures imposed after the Kremlin launched the invasion.

That package, after all, is the most comprehensive and coordinated punitive action taken against a major power since World War II. Overcoming initial reservations, the European Union joined the US in cutting off Russian banks from the arteries of global finance in a matter of days. The West also froze much of the Russian central bank's foreign-exchange reserves – an unprecedented step that surely triggered a red alert in China, with its \$3.25tn in official reserves.

At first, the sanctions seemed to be having the intended effect. Within a week, the rouble had fallen by a third against the US dollar. Tumbling share prices forced the authorities to suspend trading on the Moscow stock exchange for nearly a month. Russia's GDP is expected to contract by 10-15% this year.

But, even as the sanctions vise continues to tighten, Russian markets appear to be stabilising. Thanks to robust intervention by the authorities, the rouble is now trading close to its pre-war levels, and the stock market has recovered some losses. With the violence showing no sign of abating, Western governments must be clear about what sanctions can and cannot achieve – and how much sacrifice is acceptable.

Sanctions, first used in the Peloponnesian wars, have been an instrument of foreign policy for some 2,500 years. While their sophistication and complexity have increased over time, the basic mechanism has remained the same: inflict enough economic

pain to force the target to change its behaviour.

But the most comprehensive analysis of sanctions use, conducted by researchers at Drexel University, found that the goals of sanctions were completely met in only 35% of cases. Where sanctions have had an impact, such as in South Africa during apartheid, they have been combined with other measures to advance a specific foreign-policy objective.

Moreover, even well-targeted sanctions and asset freezes have limited efficacy against autocracies. From North Korea to Iran, regimes shield themselves from economic pain through convoluted schemes to evade sanctions. Putin's regime – including his cronies – has proved adept at ensuring that sanctions do not affect them.

Instead, it is ordinary Russians who will pay the price for today's sanctions. And, contrary to the hopes of some in the West, this is unlikely to lead to Putin's fall from power. Dictators are not particularly vulnerable to shifts in public opinion. And a revolution does not seem forthcoming, not least because of the work of the Kremlin's increasing repression and powerful propaganda machine.

By "cancelling" Russian culture and mounting "unprovoked" attacks on the country's economy, the Kremlin narrative goes, the West is trying to destroy Russia – just as Putin had long warned. Anyone in Russia who opposes the "special military operation" in Ukraine is a "traitor" or a "gnat," ready to "sell their souls."

With no independent media left to refute these narratives, Russians seem to be largely convinced. A recent poll by the Levada Center indicates that 83% of Russians approve of Putin's actions in Ukraine, compared to 69% in January – a relevant statistic, notwithstanding the complex realities in Russia.

While Putin's regime insulated itself from the pain of sanctions, Europe is facing high costs of its own. In today's economically interdependent world, sanctions often imply hefty costs for both sides. Though Western economies are not particularly dependent on Russia overall, Europe relies on it

for a large share of its energy. So, while the US Congress votes to ban all Russian energy imports, EU leaders have targeted only Russian coal, not oil or gas.

A comprehensive ban on Russian energy imports to Europe would undoubtedly increase the pressure on the Kremlin. But such a decision must be approached with care. As German Chancellor Olaf Scholz recently warned, the economic and social costs of a sudden embargo would be massive. It will take time to wean Europe off Russian natural gas while also maintaining European social and economic stability.

Equally important, sanctions are an integral part of a broader negotiating strategy. Once the West has launched all its biggest economic weapons, it will have no remaining leverage. There must be room to escalate in response to Putin's actions, particularly the deployment of chemical or tactical nuclear weapons.

The West's arsenal in Ukraine is clearly limited. Sanctions are an important and powerful weapon, and they are putting some pressure on the Kremlin. But given their limitations – and the costs that must be borne by both the West and ordinary Russians – they must be used judiciously. Otherwise, Putin, who appears to believe his paranoid propaganda and oversees the world's largest nuclear arsenal, may conclude that he has nothing to lose. – Project Syndicate

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