



America's growing LNG exports come with great political challenges

By Angelo Katsoras

Introduction

The European Union has set an ambitious target to reduce its dependence on Russian natural gas by two-thirds within a year and to cut off all remaining purchases by 2027. Given that 43.5% of its natural gas imports came from Russia in 2021¹ and that the EU produces only about one-fifth of the gas it needs,² other countries need to step up to fill the gap.

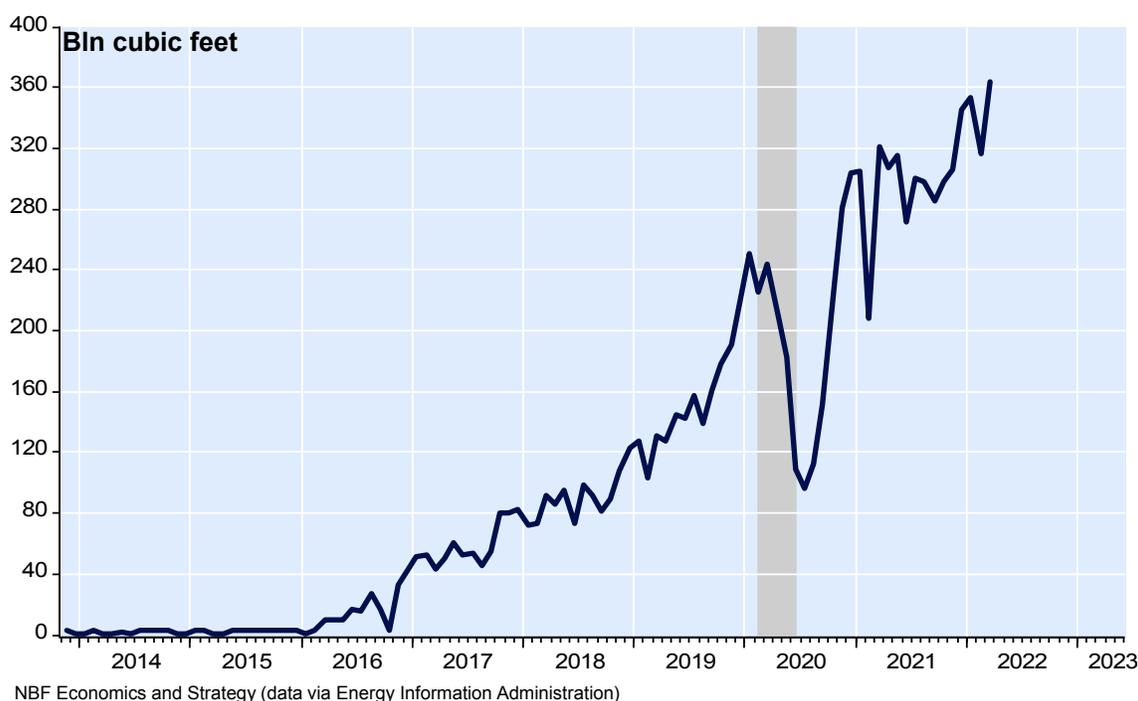
The United States, for one, has pledged to significantly increase liquefied natural gas (LNG) exports to Europe. However, the more LNG the United States exports, the greater its infrastructure, regulatory and political challenges will be, all the while trying to stay on track with longer-term environmental targets.

Shipping more LNG to Europe to reduce its dependence on Russia is a boon for the U.S. gas sector and has strong public support at present, but it will have an impact on domestic politics over the longer run. As U.S. natural gas becomes more connected to the global markets, Americans risk seeing prices at home remain high. The fact that current price hikes have not been followed by a significant increase in production accentuates this risk.

The surge in U.S. LNG exports

Until recently, the U.S. gas market was still mostly a regional one, connected only to Mexico and Canada via pipelines. In the past six years, however, the gas industry has grown increasingly linked to global markets through the construction of a growing number of LNG facilities. Consequently, LNG exports have gone from virtually zero in 2015 to around 12% of total domestic gas production (or about 360 billion cubic feet) as of March 2022.³

U.S.: Liquefied natural gas exports Monthly data



NBF Economics and Strategy (data via Energy Information Administration)

¹ "In focus: Reducing the EU's dependence on imported fossil fuels," European Commission, April 20, 2022

² "Europe's Quest to Replace Russian Gas Faces Plenty of Hurdles," New York Times, May 5, 2022

³ "U.S. gas production must accelerate to meet LNG export demand, Reuters, June 1, 2022

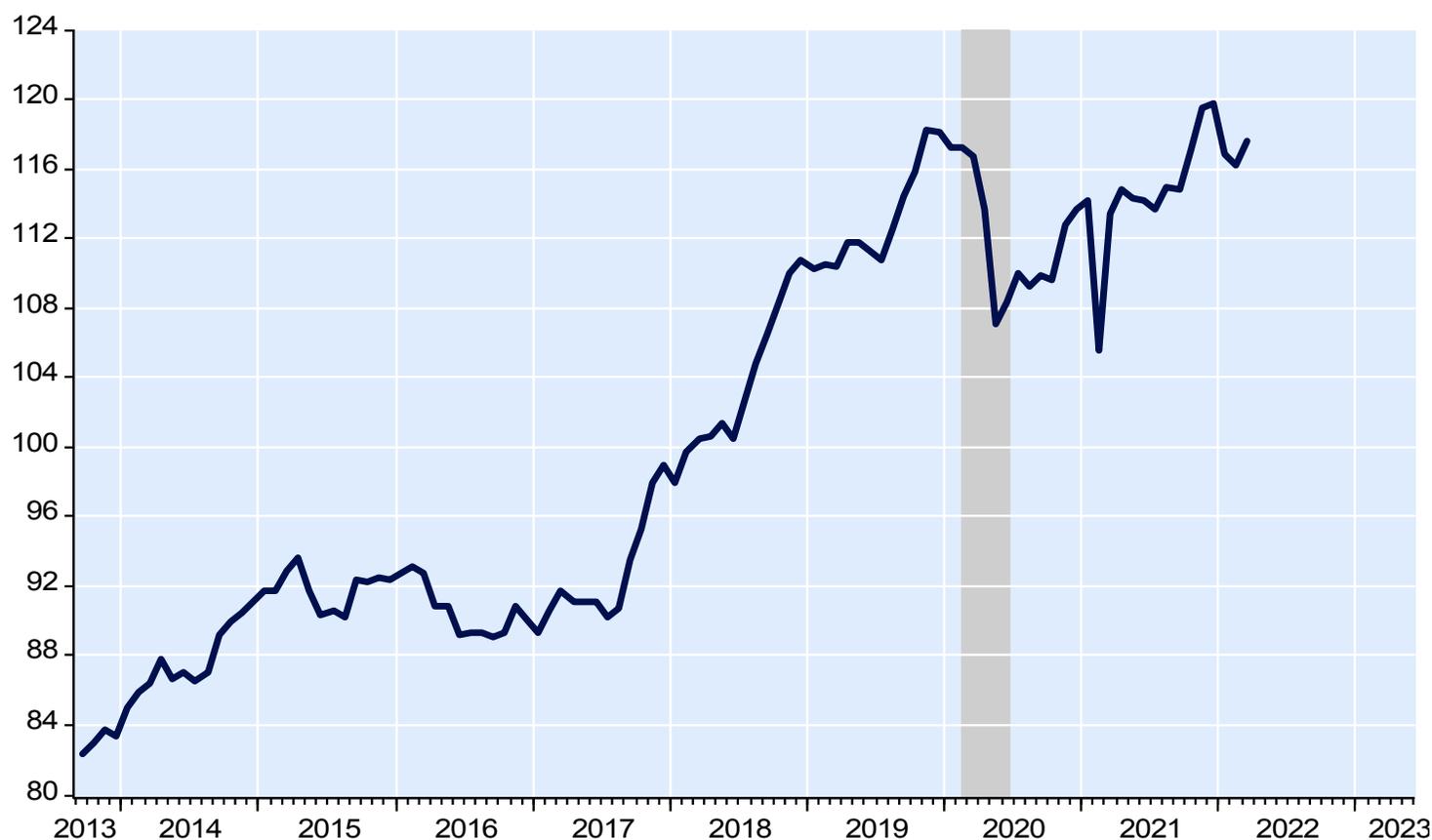
Given that U.S. LNG is being exported at full capacity, the higher price is the incentive for sending more gas to Europe in the near term. Nearly 75% of U.S. LNG exports have gone to Europe so far this year, up from 34% in 2021.⁴

U.S. gas production has not kept pace with demand

In the past, a significant jump in the price of natural gas has tended to be followed by a surge in output. Despite the price being near a 14-year high at present, this has yet to occur in 2022.

United States: Natural gas production

Bln cubic feet per day



NBF Economics and Strategy (data via Energy Information Administration)

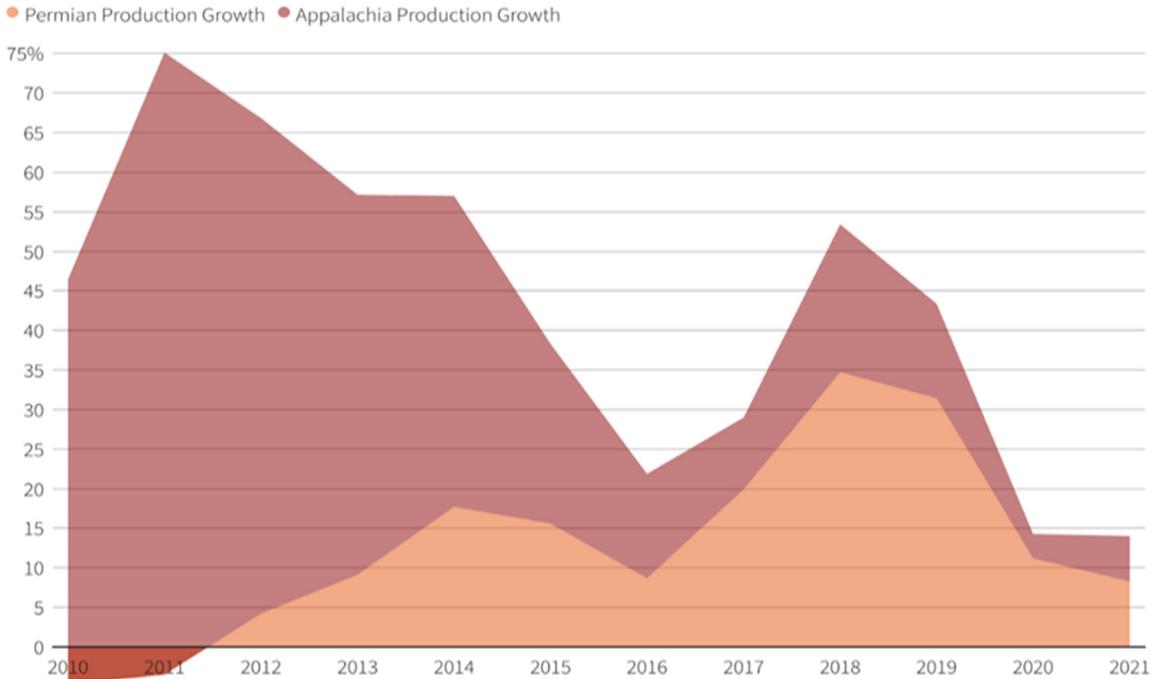
This is the case particularly for gas production in two key regions: the Appalachian Basin, which covers parts of Pennsylvania, West Virginia, and Ohio and the Permian Basin in West Texas. In 2021, these two regions accounted for 37% and 19% of America's natural gas production, respectively.

Appalachian gas production has gone from growing at an average annual rate of 36% from 2010 to 2019 to only 4% in 2020 and 2021. Permian gas output grew an average of 17% per year from 2012 to 2020, before slowing to 8% in 2021.⁵

⁴ "Europe and the U.S. Make Ambitious Plans to Reduce Reliance on Russian Gas," New York Times, March 25, 2022

⁵ "U.S. natural gas production growth wanes as need arises," Reuters, May 2, 2022

Gas production slows in Permian and Appalachia



Source: U.S. Energy Information Administration monthly productivity report

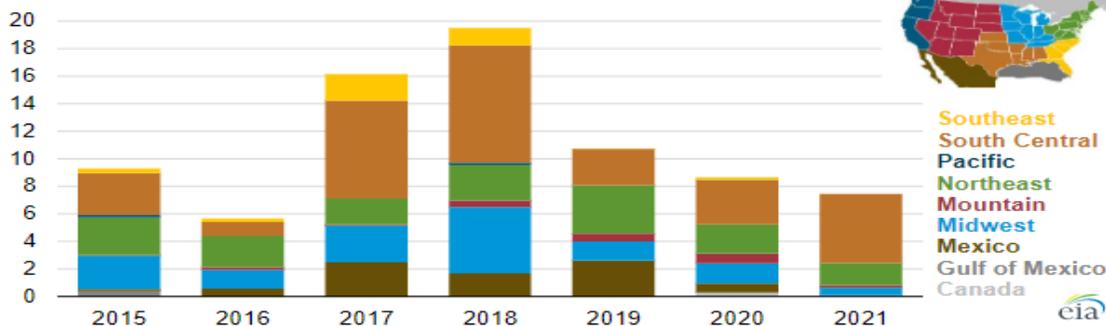
Source: "U.S. natural gas production growth wanes as need arises," Reuters, May 2, 2022

Another indicator that U.S. gas companies are not responding to high prices is the rig count. The number of rigs drilling for gas in America stood at about 150 in late March, far below the nearly 1,000 in operation 13 years ago, the last time the price of gas topped \$7 per million BTU.⁶

Pipeline constraints

One of the factors behind the slowing pace of production growth is lack of adequate pipeline infrastructure. The U.S. Energy Information Administration stated that a total of 7.44 billion cubic feet per day of interstate natural gas pipeline capacity was added in the United States in 2021. This was the smallest amount of new capacity since 2016, the year before LNG exports began to gather momentum.⁷

Interstate and international interconnection pipeline capacity additions by region (2015–2021)
billion cubic feet per day



Source: U.S. Energy Information Administration, [Natural Gas Pipeline Projects Tracker](#)

Note: We consider only pipeline projects under Federal Energy Regulatory Commission jurisdiction as interstate capacity.

Source: "Natural gas interstate pipeline capacity additions decrease in 2021," EIA, February 24, 2022

⁶ "Biden's Gas Exports Create Imported Headaches," Washington Post, April 21, 2022

⁷ "Natural gas interstate pipeline capacity additions decrease in 2021," Energy Information Administration, February 14, 2022

In recent years, several key pipeline proposals for the Appalachian region have been scrapped owing to more stringent regulations and opposition from environmental groups. These include interstate projects such as the Atlantic Coast Pipeline, the Penn East Pipeline, and the Constitution Pipeline.⁸

Other factors slowing natural gas production

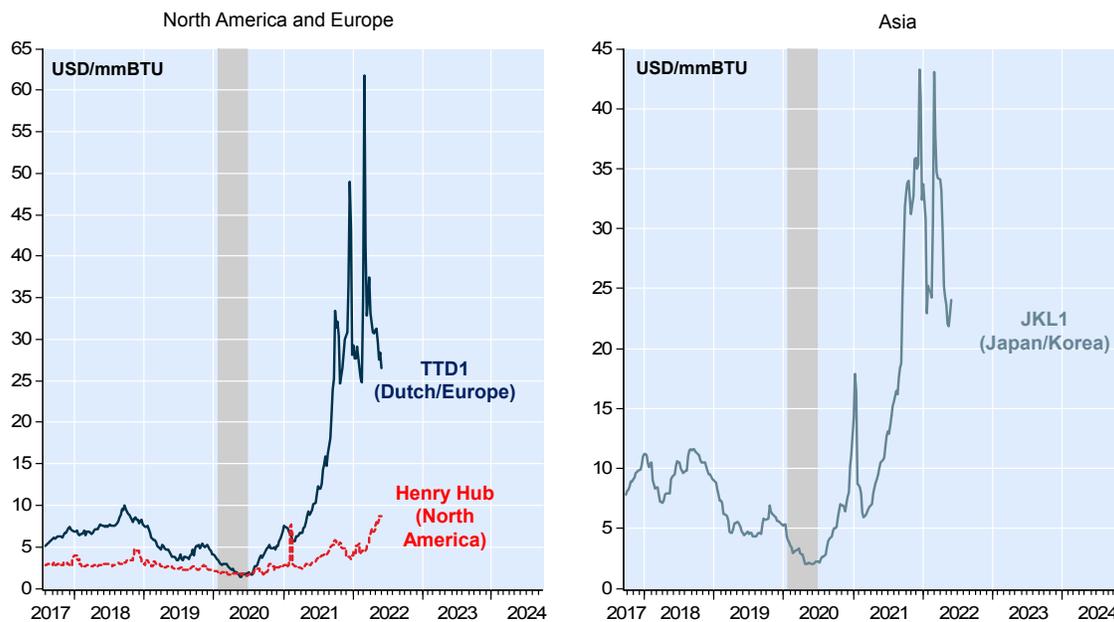
These include:

- the mounting price of supplies and a shortage of workers and equipment; and
- pressure from investors to focus on profitability over production, which means that instead of drilling more, companies are increasingly using profits to reduce debt, pay dividends, and buy back stock.

The growing risk of political pushback to growing LNG exports

The growth of LNG exports has not only increased demand for U.S. gas, it has also tied the domestic natural gas market more closely to those in Europe and Asia where prices are multiple times higher. This means that American consumers are increasingly competing with buyers overseas. U.S. natural gas is now trading in the range of \$8 to \$9 per million BTU, far above the \$3 average for the previous 10 years.

Europe and Asia must pay sky-high LNG prices to meet demand Weekly averages, as of June 3rd



NBF Economics and Strategy (data via Bloomberg)

Calls to limit LNG exports

Just before the start of the war in Ukraine in February, a group of senators, including Elizabeth Warren, wrote a letter to the Biden administration urging measures to limit U.S. natural gas exports. The letter stated: "The administration must also consider the potential increase in cost to American families because of higher export volumes."⁹

Opposition has also come from the Industrial Energy Consumers of America, a trade group representing manufacturers of fertilizers, chemicals and other products heavily reliant on natural gas. The group wrote to U.S. Energy Secretary Jennifer Granholm last November asking the administration to limit LNG shipments when domestic gas prices rise significantly.¹⁰

⁸ "Demand for U.S. natural gas has never been higher. So why is production slowing?" Fortune, May 4, 2022

⁹ "US natural gas prices surge as Europe turns away from Russian energy," Financial Times, May 5, 2022

¹⁰ "Biden faces growing pressure to restrict LNG exports following price spike," Houston Chronicle, February 3, 2022

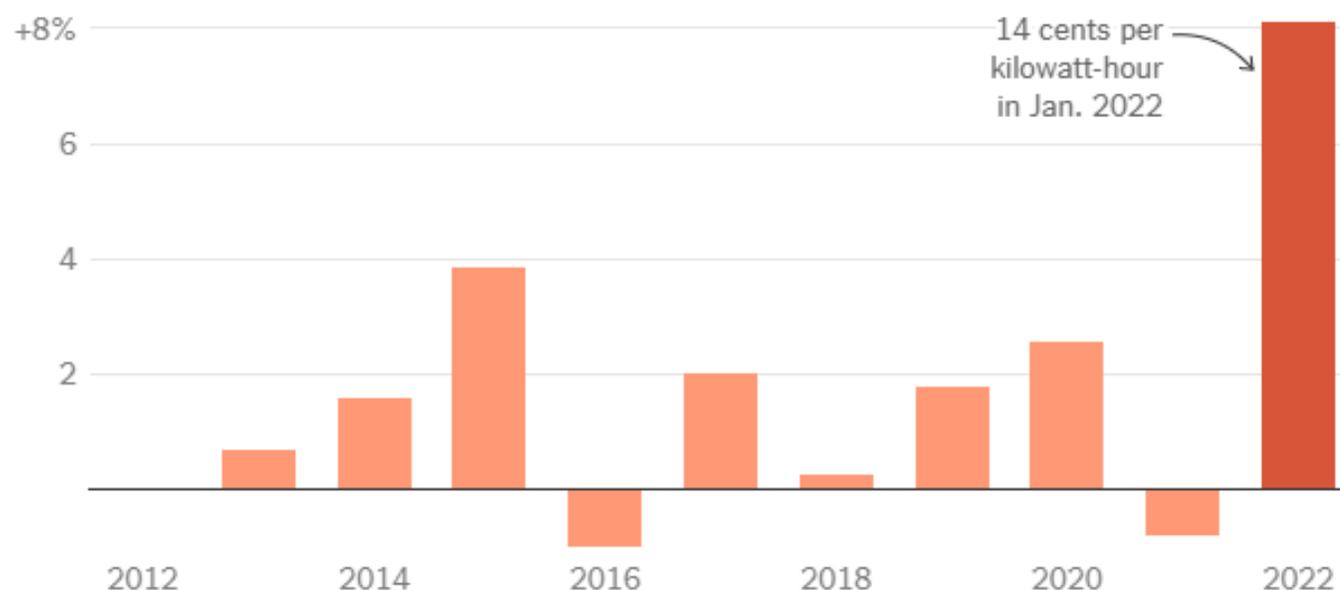
These demands have temporarily subsided because of the war. However, should prices stay elevated, demands to limit exports could resurface.

Higher natural gas prices also mean higher electricity prices

This is because natural gas is used to generate about 40% of America's electricity. High gas prices also come at a time when utilities are having to finance the cost of transitioning to green energy, retiring a growing number of fossil-fuelled power plants and modernizing the grid. For example, the U.S. Department of Energy estimates that the average age of large power transformers, which handle 90% of U.S. electricity flow, is over 40 years, which is when malfunctions begin to occur more frequently.¹¹ Natural gas is also an important backup to alternative energy when the sun is not shining, and the wind is not blowing.

The Rising Price of Home Electricity in the U.S.

Year-over-year change in average prices in January each year



Source: U.S. Energy Information Administration • By The New York Times

Source: "Get Ready for Another Energy Price Spike: High Electric Bills," New York Times, May 3, 2022

Water scarcity in the southwest threatens power supply

Yet another factor driving natural gas and electricity prices higher is the ongoing drought in the southwest, which is reducing river flows. This problem is particularly dire for the Colorado River, one of the region's most important sources of water. This means, for example, that less water is flowing into Lake Powell, the country's second-largest reservoir. Lake Powell has declined to just 24% of full capacity, its lowest point since first being filled in the 1960s.¹²

The more its water level drops, the less pressure there is to drive the turbines at the reservoir's Glen Canyon Dam. When operating at full capacity, the dam can generate power for as many as 5.8 million homes and businesses in seven states.¹³ For example, should drought conditions persist, the U.S. Energy Information Administration estimates hydro would account for only 8% of California's total electricity generation from June through September 2022, compared with 15% under normal water conditions.¹⁴

Less hydropower means greater reliance on natural gas.

¹¹ "Creaky U.S. power grid threatens progress on renewables, EVs," Reuters, May 12, 2022

¹² "Water shortages on Colorado River could eventually hit California, Arizona warns," Los Angeles Times, May 6, 2022

¹³ "Lake Powell officials face an impossible choice in the U.S. West's megadrought: Water or electricity," CNN, May 2, 2022

¹⁴ "California drought could reduce hydroelectric generation to half of normal levels," Energy Information Administration, June 1, 2022

Balancing today's energy needs with longer-term environmental goals

Before the Ukraine war, some countries had held off on building additional LNG infrastructure over fears that ever-tighter environmental regulations might threaten the long-term viability of these assets. Below are two examples:

- In 2019, Sweden blocked a permit that would have provided an LNG import terminal with access to the region's main power grid. The reason for this was that it would increase Sweden's dependency on fossil fuels.¹⁵
- In 2020, the French utility Engie SA scrapped plans to buy U.S. LNG because of environmental concerns.

Immediately following the start of the war, Engie reversed its position and signed the deal. Several other European countries have also recently signed agreements to bring American gas to European shores.

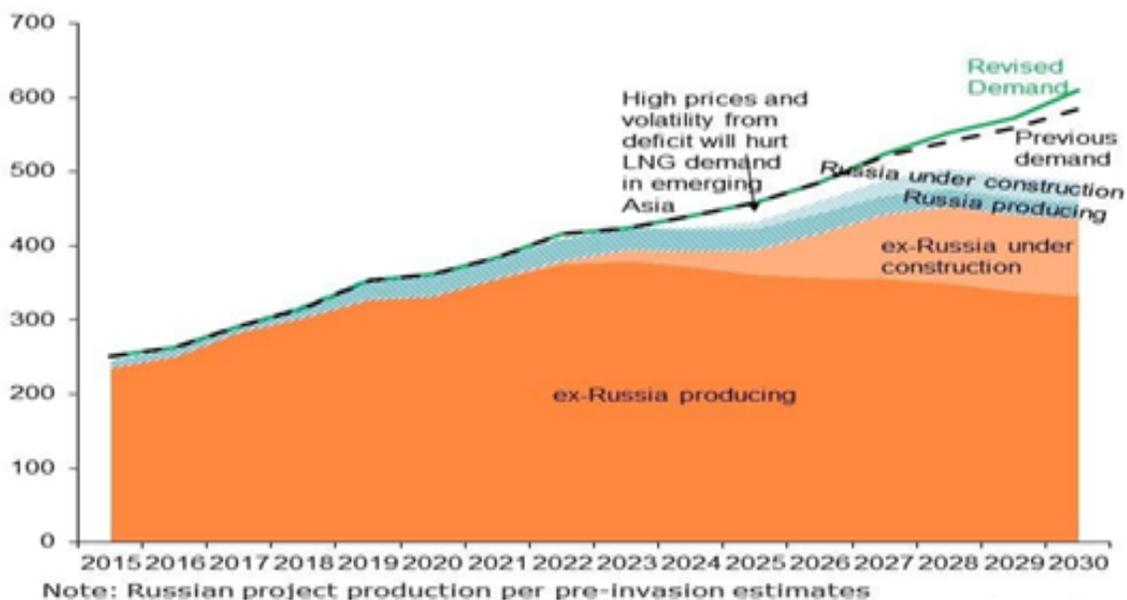
While the war has forced environmental concerns to take a back seat to energy security, concerns persist regarding the viability of building natural gas-related infrastructure with a decades-long lifespan. It is feared that these projects will become stranded assets as the West transitions toward renewables. The EU's plan to classify natural gas investment as green energy until only 2030 highlights these concerns. Largely because of these climate policies, Rystad Energy, an energy research company, has forecast that the EU's demand for gas will fall almost 40% by 2040.¹⁶

The environmental policies of a growing number of enterprises could add further momentum to this trend. For example, Allianz announced that, beginning in 2023, it would no longer issue property and casualty insurance for new oil and gas projects, and it would stop renewing existing contracts as of July 2023. Zurich-based Swiss Re has already implemented similar restrictions¹⁷

Global demand for LNG

Balancing the need for security of supply with environmental targets will become even more difficult this year because global demand for LNG is expected to outstrip supply. Indeed, demand is expected to hit 436 million tonnes in 2022, whereas projected available supply amounts to only 410 million tonnes. It is estimated that most new supply will not come online until 2024.¹⁸ In February 2021, the consulting firm McKinsey estimated that LNG's share of global gas supply will increase from 13% to 23% by 2050.¹⁹

Global LNG supply and demand outlook
Million tonnes



Source: "Europe May Face LNG Crisis This Winter," Rystad Energy, May 9, 2022

¹⁵ "Before Ukraine Standoff, U.S. Pitched Its 'Freedom Gas' to Europe and Found Few Takers," Wall Street Journal, January 30, 2022

¹⁶ "Ukraine war fuels European and Asian scramble for U.S. LNG," Nikkei Asian Review, May 20, 2022

¹⁷ "Insurer Allianz toughens oil & gas policy to help meet climate goal," Reuters, April 29, 2022

¹⁸ "A perfect and unavoidable storm: LNG supply crisis will make landfall in winter 2022," Rystad Energy, May 9, 2022

¹⁹ "Global gas outlook to 2050," McKinsey & Company, February 26, 2021



Conclusion

The United States has responded to the Russian invasion of Ukraine with strong commitments to help the EU wean itself off Russian natural gas. But what the geopolitics of the moment require cannot be accomplished without some negative side effects. The more LNG that the United States exports, the greater the risk that U.S. natural gas prices will increase. Complicating matters further is that natural gas production levels are not responding to high prices with a significant increase in production. Reasons for this include pipeline constraints, a focus on profitability over production, and climate-related concerns. As if all this wasn't enough, the drought in the southwestern part of the country will reduce the ability to generate hydroelectricity and increase reliance on natural gas-fired power plants.

This combination of strong demand and tight supply will add to inflationary pressures in the broader economy and consequently weigh on the approval ratings of the Biden administration as the midterm elections loom.

Ensuring the energy security of America and Europe in the short term while continuing to work toward longer term environmental targets requires high-level policymaking skills. Governments are trying to persuade the natural gas industry to build more infrastructure while actively pursuing environmental goals that could make such infrastructure obsolete in a decade or so -- well before most projects have had a chance to become profitable.

The policy solution to the dilemma may lie in some kind of promise of future compensation to the industry for building infrastructure today in the face of its possible obsolescence tomorrow. While any such promise would be expensive, the price would pale in comparison to the cost of a multi-year energy shortage and economic crisis if traditional energy industries are not equipped to meet demand before the transition to alternative energy is completed. This compromise should include allowing U.S. natural gas production to accelerate significantly in the short term to both help moderate price levels domestically and increase supplies to Europe.



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