

LNG Diplomacy: Why It Isn't Temporary

Presented to:
First Tuesday Lunch Group
Denver, CO

August 2, 2022



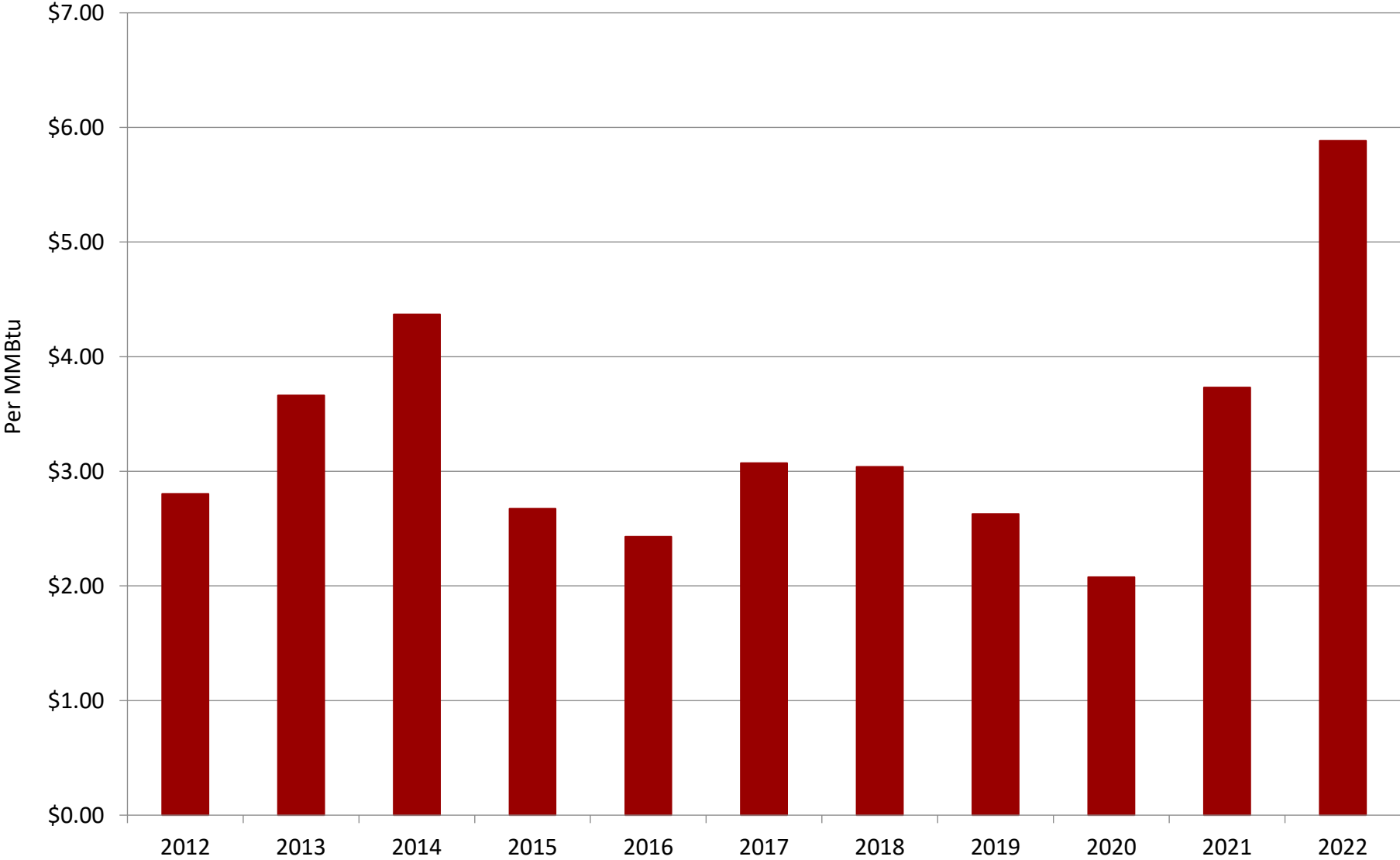
JOHN HARPOLE
PRESIDENT / FOUNDER
HARP@MERCATORENERGY.COM
303-825-1100

How did we get here?

This is a trap laid by Vladimir Putin 20 years in the making.



Historical NYMEX Henry Hub Index Prices (2012-July 2022)



Source: NYMEX – Average last 3 days of close as reported in Platts Gas Daily Report, An S&P Global Platts publication

One-Year Forward Strip

NYMEX Henry Hub	\$ 6.751
LNG Delivered Price to Asia	\$45.514
LNG Delivered Price to Europe	\$54.348

Three-Year Forward Strip

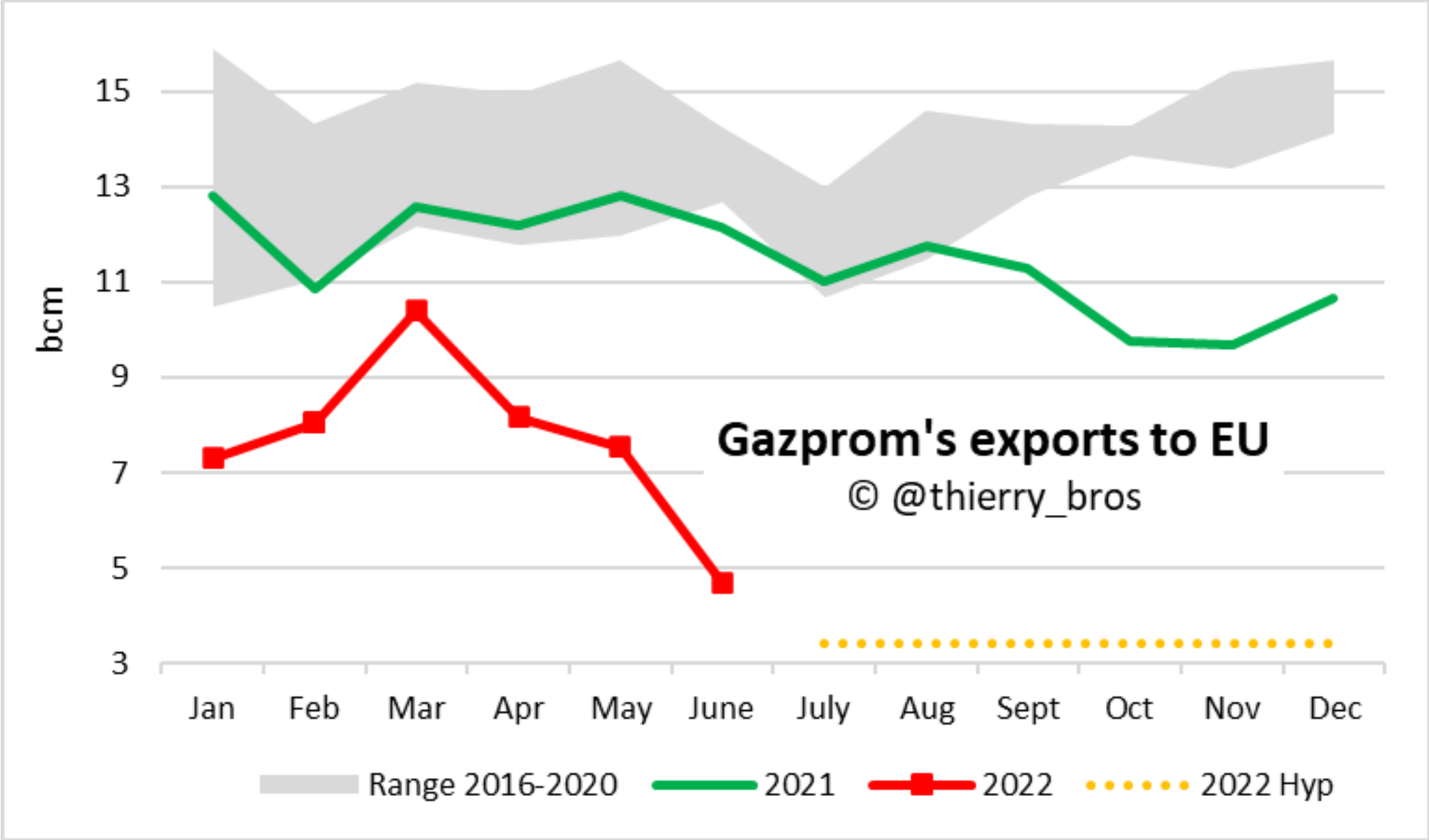
NYMEX Henry Hub	\$ 5.377
LNG Delivered Price to Asia	\$32.013
LNG Delivered Price to Europe	\$37.772

* Settled price as of August 1, 2022

- Putin's trap
- Germany and EU take the bait
- U.S. LNG to the rescue
- The 3-year impact on world LNG markets

- **Over reliance on renewables**
- **Retired coal and nuclear plants too early**
- **Under reliance on fossil fuels**
- **Bought oil and gas from an unreliable supplier (Russia)**

Russia, A Reliable Supplier?



Source: Thierry Bros



Closing Bell

The Glacial Pace Of LNG Exports

By John Harpole

September 2014

Closing Bell

The Putin Vortex

April 2014



By John Harpole

Closing Bell

Time To 'Out' Russia?

By John Harpole

January 2015

Closing Bell

LNG Diplomacy: Keystone XL Pipeline, Part 2?

October 2012



By John Harpole

The US Shale Gas Revolution & Its Impact on Vladimir Putin & Gazprom

Presentation to:
Broe Companies
Branding Retreat

By:
John Harpole



June 23-25, 2014

Merkel's Major Mistake – Trusting Putin



Angela Merkel, Chancellor of Germany from 2005 to 2021

“Germany’s reliance on Russian gas **surged to 55 percent** before Russia’s attack on Ukraine began in February, from 39 percent in 2011, amounting to 200 million euros, or about \$220 million, in energy payments every day to Russia.”



Russia's Energy Muscle

- Energy Used Over 55 times Against Former Soviet Nations Since 1990



Source: *Europe Doubles Down on Russian Gas to Feed its Energy Appetite*, by Andrew Haney, Ricardo Bracho, Nick Wolfe and Max Faith



The Former Chancellor Who Became Putin's Man in Germany – NY Times, April 23, 2022

Gerhard Schröder, Chancellor of Germany from 1998 to 2005

Title	Term	Income
Chancellor of Germany	1998 – 2005	\$9,000/mo. stipend
Nord Stream I Chairman	2005 – 2022	\$270,000/year
Nord Stream II Board Member	2011 - 2022	?
Rosneft Board President	2017 – 2022	\$600,000/year
Gazprom Board Member	2022 - 2022	?

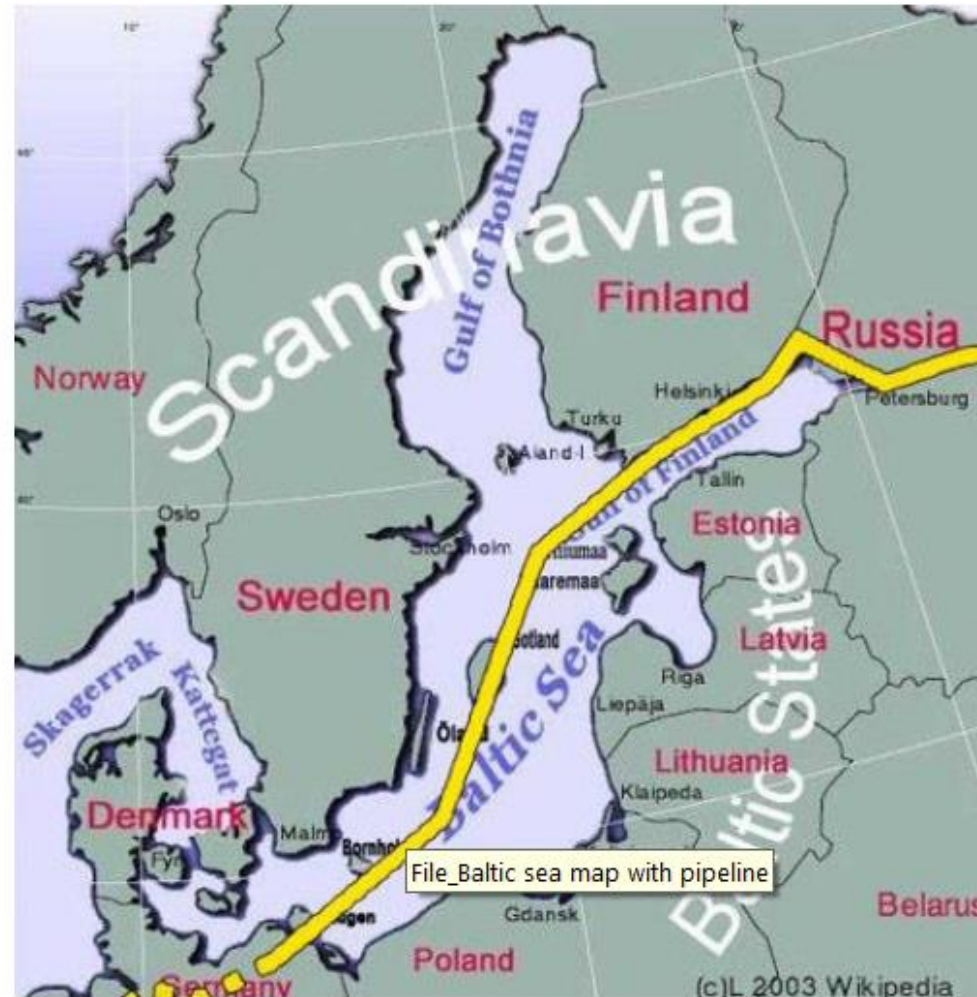
Gerhard Schröder served on the boards of two Russian companies, Rosneft and Gazprom, that represented 25%-40% of Russia's budget



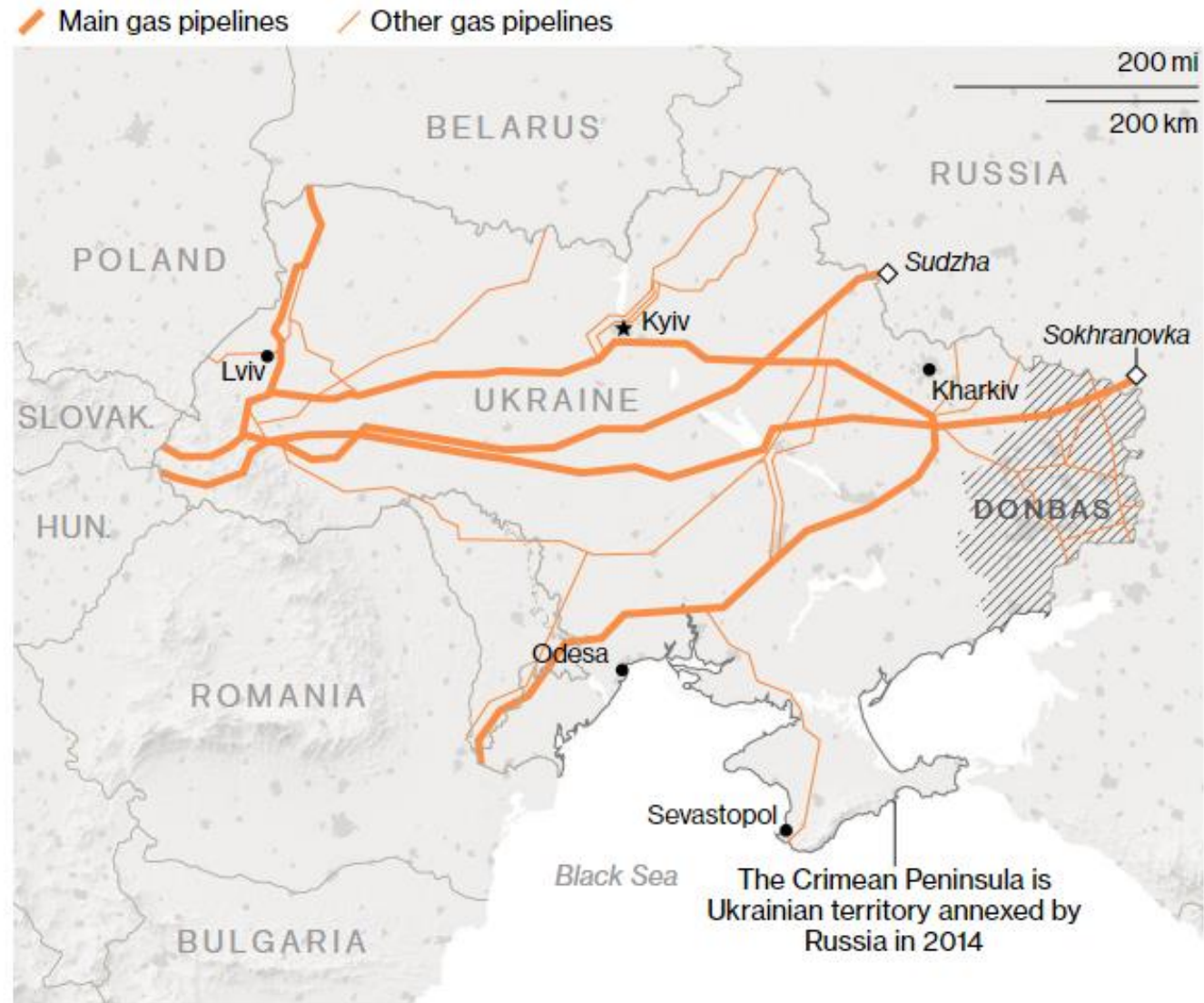
“Russia has succeeded in using the personal interests of prominent German political figures against Germany,” said Marcel Dirsus, Non-Resident Fellow at the Institute for Security Policy at Kiel University

“He took advantage of the reputation and influence of the chancellor’s office and offered himself up **as an agent for Russian interests** to get rich,” said Norbert Röttgen, a conservative lawmaker, former minister and longtime Russia hawk.

Linking the Super Powers

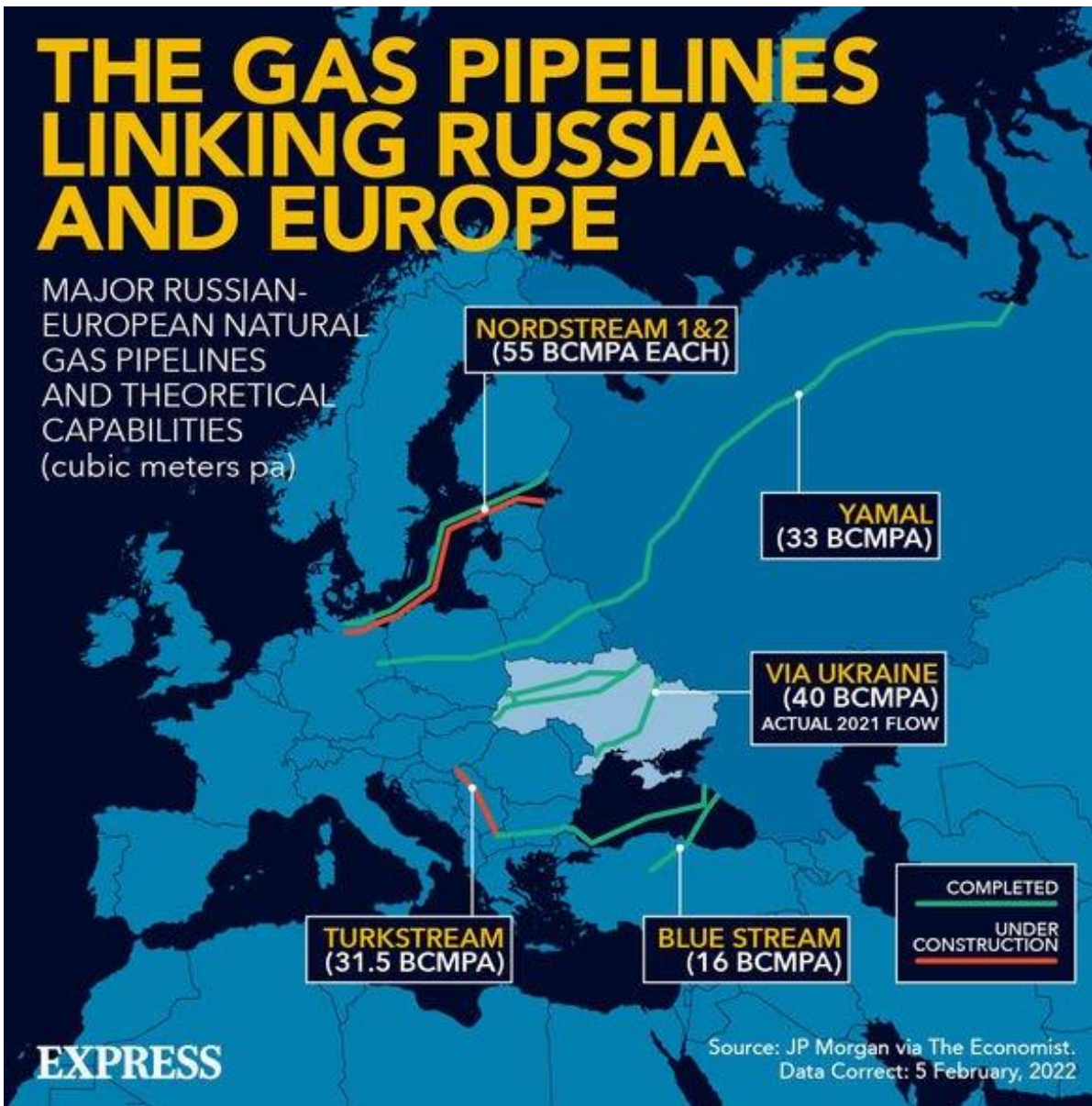


Natural Gas Runs Through Ukraine



Source: The Oxford Institute for Energy Studies

Note: Only the portion of pipelines that run through Ukraine are displayed on the map



Source: Europe's gas supply visualised: The route Russian gas travels from source to households, Express, March 9, 2022

Bloomberg

Putin Calls on Europe to Aid Ukraine
or Face Gas Supply Risk

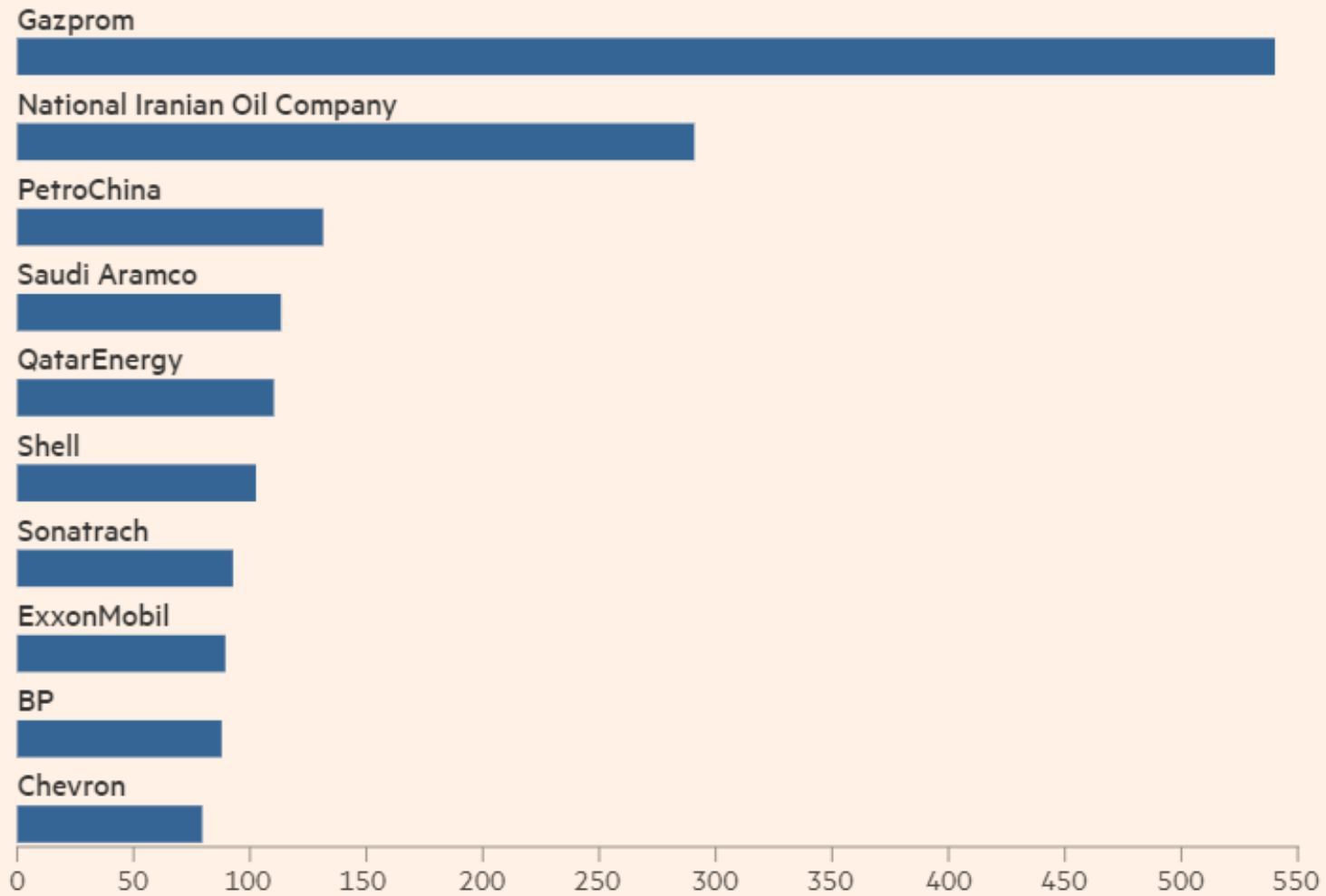


**Putin warns Europe about
Ukraine gas debt**



The 10 largest gas companies

Total gas production (bn cubic metres, 2021)



FINANCIAL TIMES

Source: Wood Mackenzie

How Important is Russian Natural Gas to Western Europe?

The SWIFT Bank Exceptions

Only two banks were exempted from SWIFT bank sanctions:



Characteristics of a Tyrant

- ***As European Leaders Visit Kyiv, Putin Cuts Their Gas Supply****



Germany's Angst

Germany's pursuit of peace in trade with Russia failed

“Roughly half of Germany’s homes rely on natural gas for their heating, and 55 percent of the country’s gas comes from Russia.”

A near-term cut-off of Russian gas supplies to Germany could cost their economy \$120 billion. Germany would be rationing natural gas.

Reign Through Terror and Uncertainty

- ***June 23, 2022, Germany Triggers Gas Alarm Stage, Accuses Russia of ‘Economic Attack’***

“We must not fool ourselves: The cut in gas supplies is an economic attack on us by (Russian President Vladimir) Putin”, “Germany’s Economy Minister Robert Habeck.”*

- ***June 16, 2022, Russia Slashes Gas Flows, Aiming Economic Weapon at Europe***

- World Europe

Reign Through Terror and Uncertainty

- **As Russia Cuts Gas, German Industry Grapples with Painful Choices**
- ***FRANKFURT, June 23 (Reuters)* - The German companies that drive Europe's biggest economy are contemplating painful cuts to their output and resorting to polluting forms of energy previously considered unthinkable as they adjust to the prospect of running out of Russian gas.**

Putin to Keep Gas Flowing, But Warns EU

Russian leader says sanctions threaten to reduce output;
Europe prepares for rationing

July 21, 2022

Wall Street Journal

Kremlin Opens Second Battlefield

While Vladimir Putin wages a conventional war in Ukraine, he has opened a second front in Europe that is coming to a head; A battle over natural gas.

July 21, 2022

Wall Street Journal

Natural Gas Soars 700%, Becoming Driving Force in the New Cold War

- Bloomberg.com, July 4, 2022

Entire industries in Germany could collapse due to Russian natural-gas supply cuts: union head

- Business Insider, July 3, 2022

E.U. urges gas rationing ahead of 'likely' cutoff by Russia

- Washington Post, July 20, 2022

Europe's Worst Energy Nightmare Is Becoming Reality

Russian outages and record-high prices threaten a “winter of discontent.”

- Foreign Policy, July 11, 2022

IEA Chief: Europe Has to Cut Gas Use or Face Brutal Winter

- Foreign Policy, July 21, 2022

Reign Through Terror and Uncertainty

Germany's About Face Gives Hope

“We must change course to overcome our dependence on imports from individual energy suppliers.”

- Chancellor Olaf Scholz



This will include building two liquefied natural gas (LNG) terminals, one in Brunsbuettel and one in Wilhelmshaven, and raising its natural gas reserves.



US LNG exports are a priority concern for Putin. US LNG bound for Europe undercuts Russia's domination of the European Gas Market.

Former NATO Secretary General Anders Fogh Rasmussen backs up the Romanian claim. He said in London recently,

“Russia, as part of their sophisticated information and disinformation operations, engaged actively with so-called nongovernmental organizations – environmental organizations working against shale gas – to maintain [Europe’s] dependence on imported Russian gas.”

- Former NATO Secretary General Anders Fogh Rasmussen

Putin spends \$95 million on fracking disinformation campaign

- Russia Today television ran endless anti-fracking stories, including one that said,

“Frackers are the moral equivalent of pedophiles.”



- 
- A map of Europe is shown in the background, with a list of seven countries overlaid in the center. The countries listed are France, Bulgaria, Netherlands, Germany, Ireland, United Kingdom, and Spain.
1. France
 2. Bulgaria
 3. Netherlands
 4. Germany
 5. Ireland
 6. United Kingdom
 7. Spain

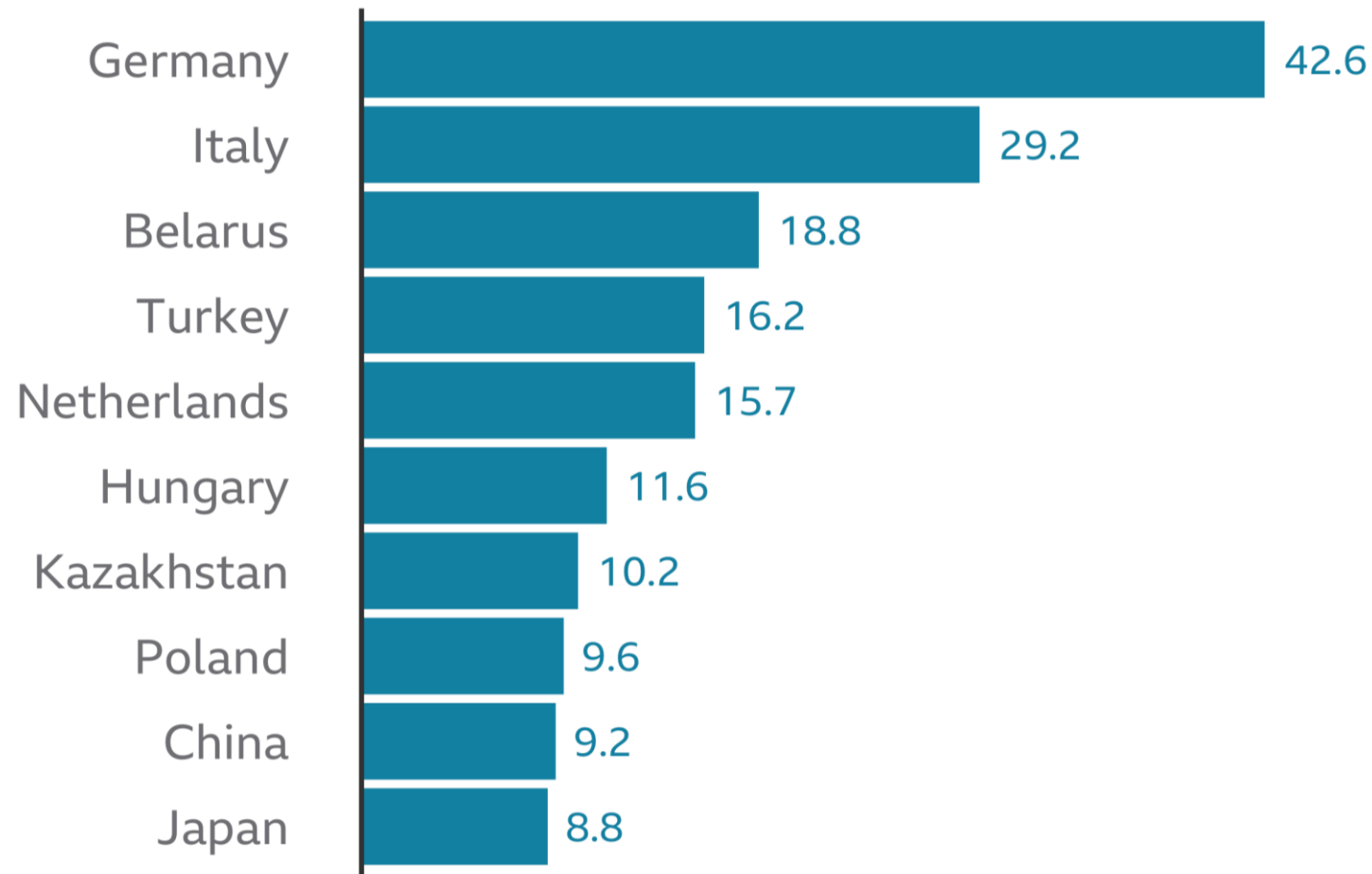
The total population of these countries exceeds 350 million

Energy Security?

- By the year 2020, Gazprom will supply nearly 70% of the European Union's natural gas.
- Would you pursue a conflict with a country that you depend on for the majority of your energy needs?

Russia's gas exports

Countries by billion of cubic metres imported from Russia



Source: IEA, Data for 2020



- When the Sakhalin II project is fully on stream, it will supply around 5% of the world's LNG and make a significant contribution to strengthening global energy security.” (February 18, 2009)
- Sakhalin, formerly owned by Shell Exploration, was “nationalized” by Gazprom. Gazprom currently owns 51% of the project.

April 4, 2009

- Reserves amount to 2 trillion cubic meters of natural gas (70 TCF)
- More than 600 million barrels of gas condensate
- 3-4 BCF gas/day

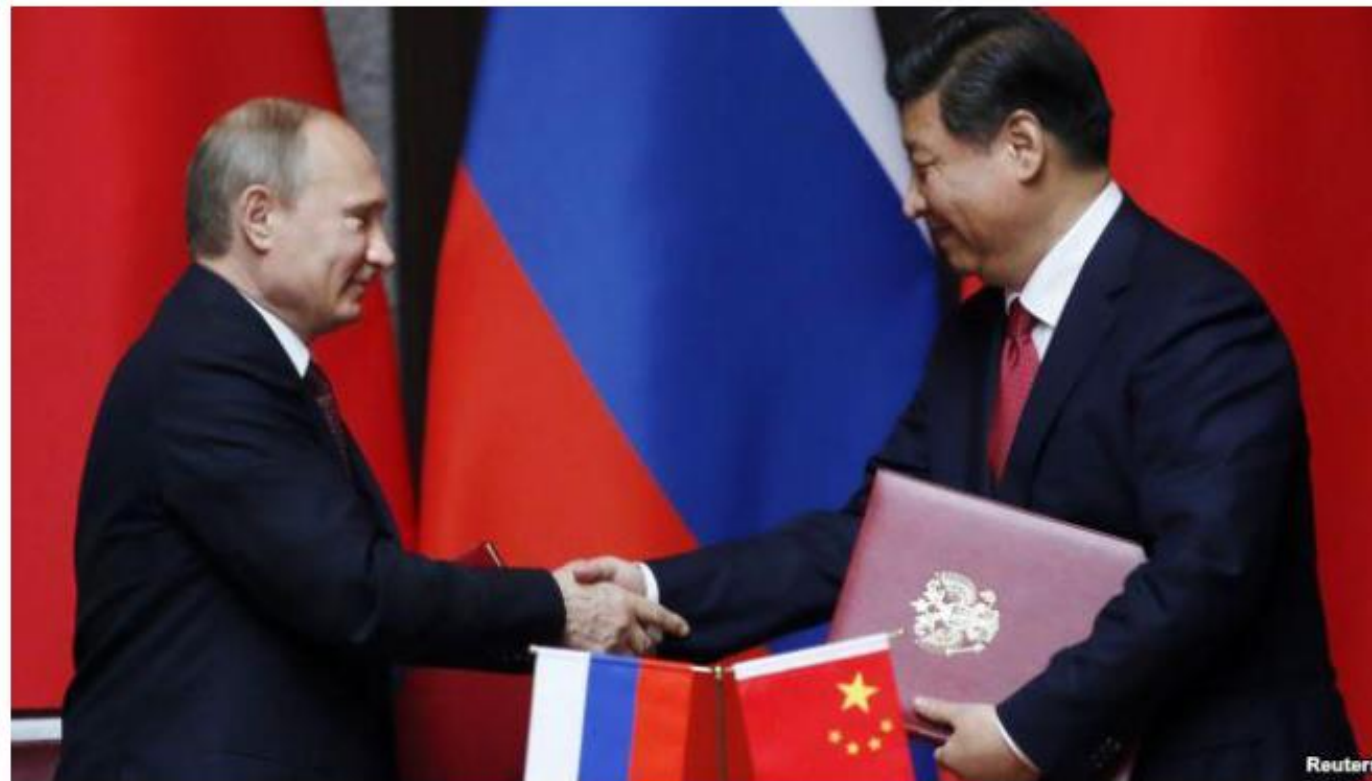


- **1987** – Kovykta discovered
- License to develop held by Russia Petroleum (Majority of RP owned by TNK-BP)
- **June 2006** – Top TNK-BP Engineer Enver Ziganshin murdered
- **June 2007** – TNK-BP offered to sell stake for \$700-\$900 million to Gazprom, but deal never materialized
- **June 2010** – Russia Petroleum filed for bankruptcy
- TNK-BP attempted to sell field to state owned Rosneft but failed
- **March 2011** – Gazprom bought Russia Petroleum's assets, including Kovykta, for \$711 million

May
2014 -

The Washington Post

China, Russia sign \$400 billion gas deal



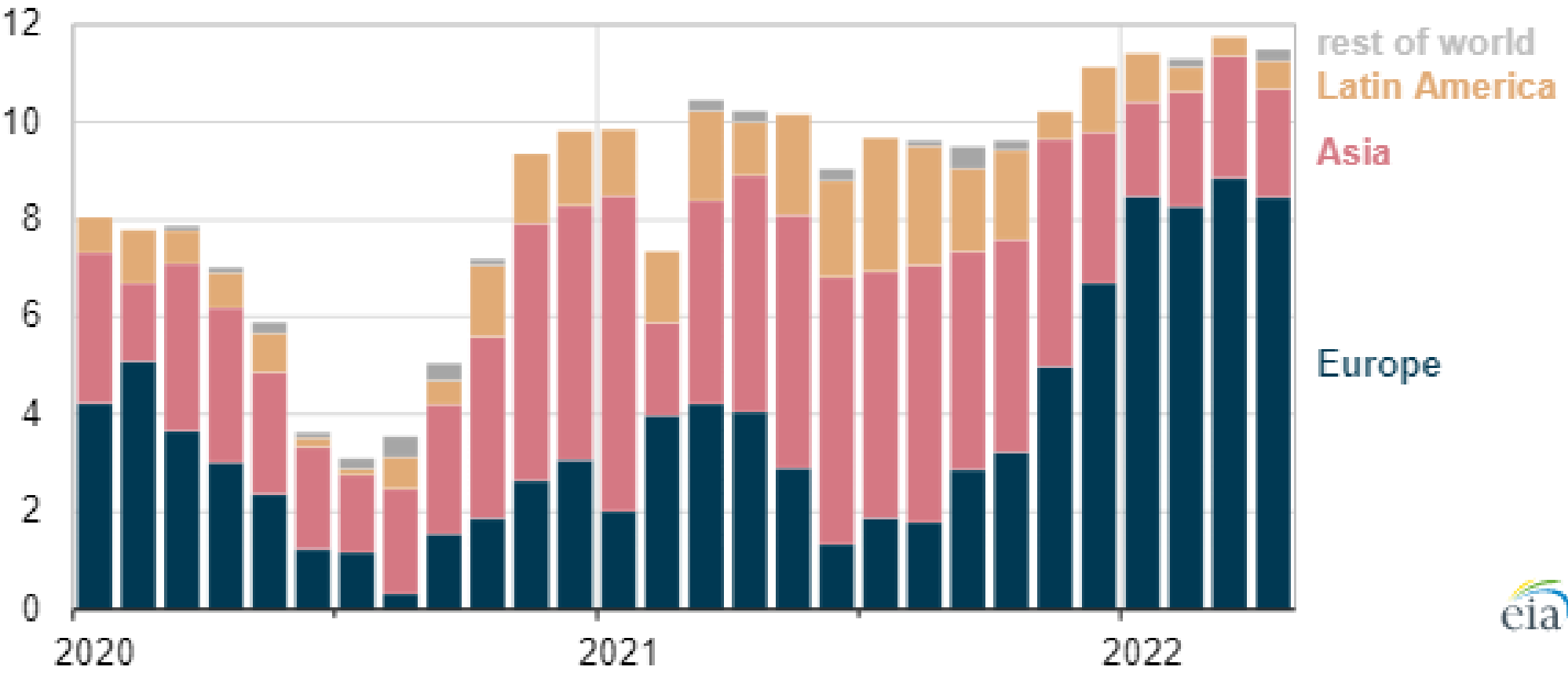
Power of Siberia Gas Pipeline Map



Source: wikipedia

U.S. liquefied natural gas exports to Europe increased during the first 4 months of 2022

Monthly U.S. liquefied natural gas exports by destination region (Jan 2020–Apr 2022)
billion cubic feet per day



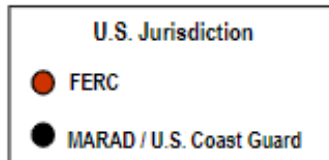
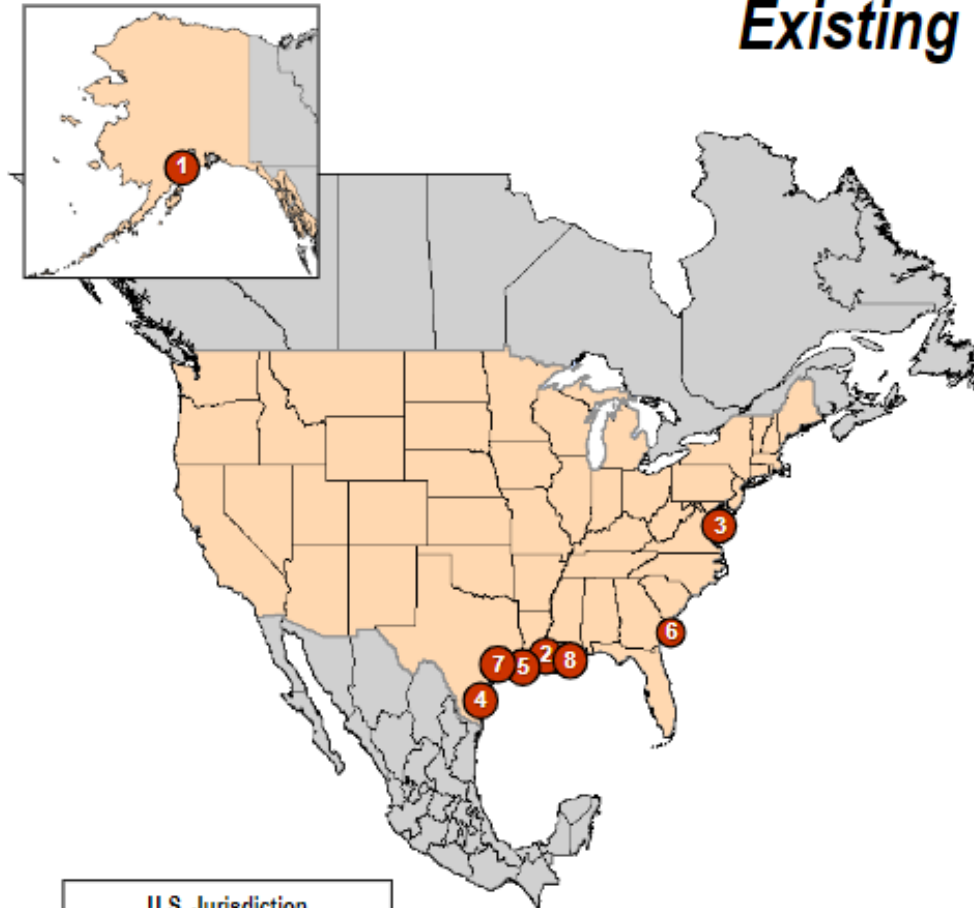
Note: Europe includes Turkey





North American LNG Export Terminals

Existing



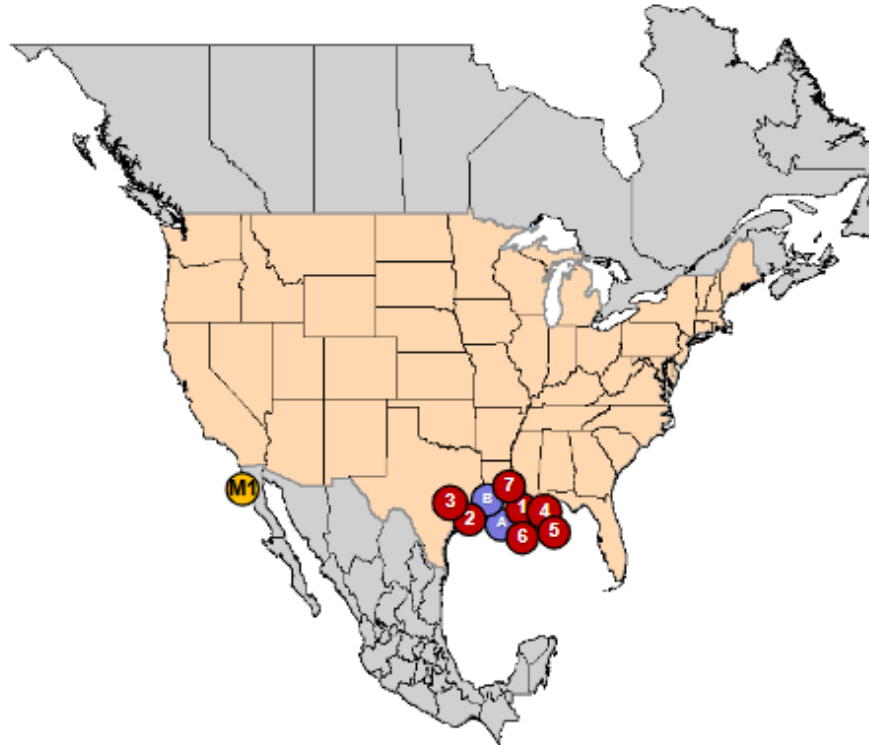
Export Terminals

UNITED STATES

1. Kenai, AK: 0.2 Bcfd (Trans-Foreland)
2. Sabine, LA: 4.55 Bcfd (Cheniere/Sabine Pass LNG – Trains 1-6)
3. Cove Point, MD: 0.82 Bcfd (Dominion–Cove Point LNG)
4. Corpus Christi, TX: 2.40 Bcfd (Cheniere – Corpus Christi LNG Trains 1-3)
5. Hackberry, LA: 2.15 Bcfd (Sempra–Cameron LNG, Trains 1-3)
6. Elba Island, GA: 0.35 Bcd (Southern LNG Company Units 1-10)
7. Freeport, TX: 2.14 Bcfd (Freeport LNG Dev/Freeport LNG Expansion/FLNG Liquefaction Trains 1-3)
8. Cameron Parish, LA: 0.74 Bcfd (Venture Global Calcasieu Pass Units 1-4)

As of June 7, 2022
No updates since previous issuance

North American LNG Export Terminals Proposed



UNITED STATES

PROPOSED TO FERC

Pending Applications:

1. Cameron Parish, LA: 1.18 Bcf/d (Commonwealth, LNG) (CP19-502)
2. Port Arthur, TX: 1.86 Bcf/d (Sempra - Port Arthur LNG Trains 3 & 4) (CP20-55)
3. Freeport, TX: 0.24 Bcf/d (Freeport LNG uprate) (CP21-470)
4. Cameron Parish, LA: 1.45 Bcf/d (Venture Global CP2 Blocks 1-9) (CP22-21)
5. Cameron Parish, LA: .057 Bcf/d (Venture Global Calcasieu Pass) (CP22-25)
6. Hackberry, LA: -0.45 Bcf/d (Sempra - Cameron LNG Vacate T5 & modify T4) (CP22-41)
7. Plaquemines Parish, LA: 0.45 Bcf/d (Venture Global Plaquemines) (CP22-92)

Projects in Pre-filing:

- A. LaFourche Parish, LA: 0.65 Bcf/d (Port Fourchon LNG) (PF17-9)
- B. Plaquemines Parish, LA: 2.76 Bcf/d (Delta LNG - Venture Global) (PF19-4)

CANADA

For Canadian LNG Import and Proposed Export Facilities:

<https://www.nrcan.gc.ca/energy/natural-gas/5683>

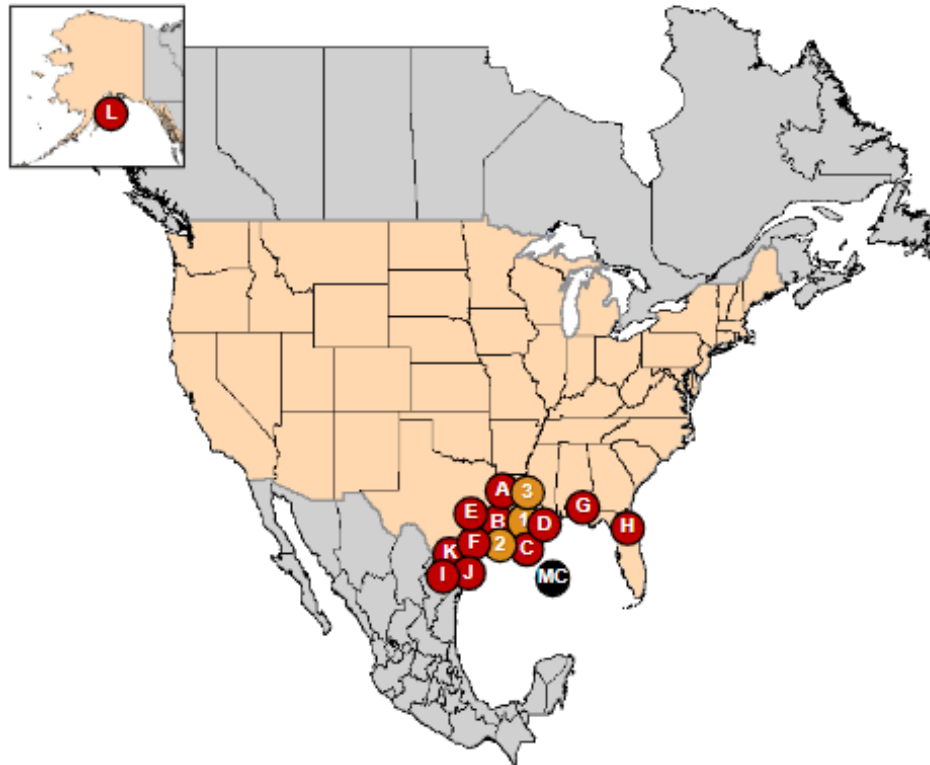
MEXICO (Projects in advanced planning/development stages)

- M1. Baja California, MX: 0.4 Bcf/d (Sempra - Energia Costa Azul Phase 1)

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No updates since previous issuance

North American LNG Export Terminals

Approved, Not Yet Built



U.S. Jurisdiction & Status

- FERC - Approved, Under Construction
- FERC - Approved, Not Under Construction
- MARAD / U.S. Coast Guard

Export Terminals

UNITED STATES

FERC – APPROVED, UNDER CONSTRUCTION

1. Cameron Parish, LA: 0.92 Bcf/d (Venture Global Calcasieu Pass Units 5-9) (CP15-550)
2. Sabine Pass, TX: 2.26 Bcf/d (ExxonMobil – Golden Pass) (CP14-517, CP20-459)
3. Plaquemines Parish, LA: 3.40 Bcf/d (Venture Global Plaquemines) (CP17-66)

FERC – APPROVED, NOT UNDER CONSTRUCTION

- A. Lake Charles, LA: 2.2 Bcf/d (Lake Charles LNG) (CP14-120)
- B. Lake Charles, LA: 1.186 Bcf/d (Magnolia LNG) (CP14-347)
- C. Hackberry, LA: 1.41 Bcf/d (Sempra - Cameron LNG Trains 4 & 5) (CP15-560)
- D. Calcasieu Parish, LA: 4.0 Bcf/d (Driftwood LNG) (CP17-117)
- E. Port Arthur, TX: 1.86 Bcf/d (Sempra - Port Arthur LNG Trains 1 & 2) (CP17-20)
- F. Freeport, TX: 0.72 Bcf/d (Freeport LNG Dev Train 4) (CP17-470)
- G. Pascagoula, MS: 1.5 Bcf/d (Gulf LNG Liquefaction) (CP15-521)
- H. Jacksonville, FL: 0.132 Bcf/d (Eagle LNG Partners) (CP17-41)
- I. Brownsville, TX: 0.55 Bcf/d (Texas LNG Brownsville) (CP16-116)
- J. Brownsville, TX: 3.6 Bcf/d (Rio Grande LNG – NextDecade) (CP16-454)
- K. Corpus Christi, TX: 1.86 Bcf/d (Cheniere Corpus Christi Stage III) (CP18-512)
- L. Nikiski, AK: 2.63 Bcf/d (Alaska Gasline) (CP17-178)

MARAD/USCG – APPROVED, NOT UNDER CONSTRUCTION

- MC. Gulf of Mexico: 1.8 Bcf/d (Delfin LNG)

CANADA - LNG IMPORT AND PROPOSED EXPORT FACILITIES

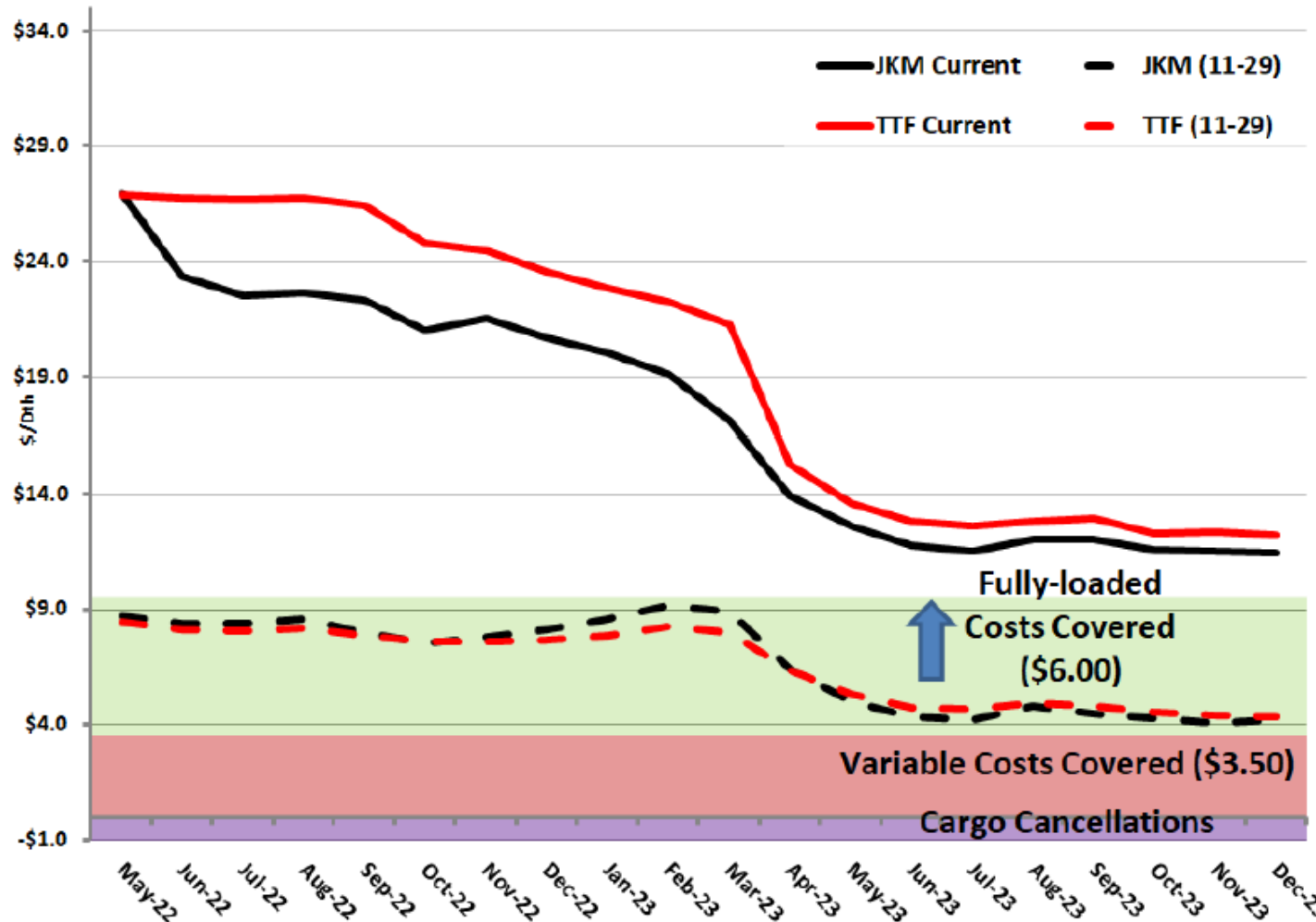
<https://www.nrcan.gc.ca/energy/natural-gas/5683>

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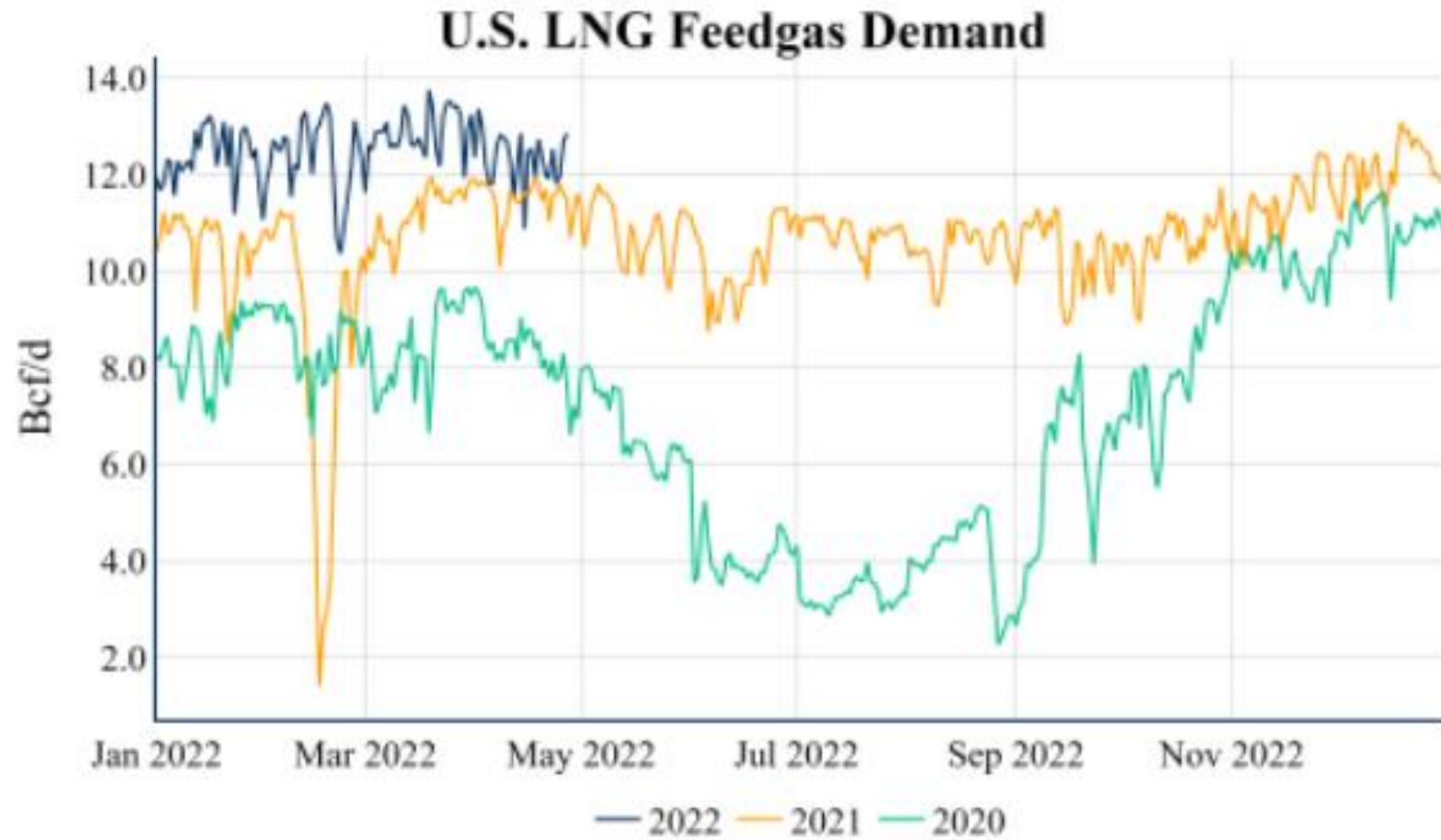
LNG Export Trends

Near Term Outlook Margins



Margins through '23 well above fully loaded costs. Supply demand balance remains tight due to greater demand in Asia and Europe. Competition for cargos between Asia and Europe and Russia/Ukraine conflict sustaining elevated prices in both markets.

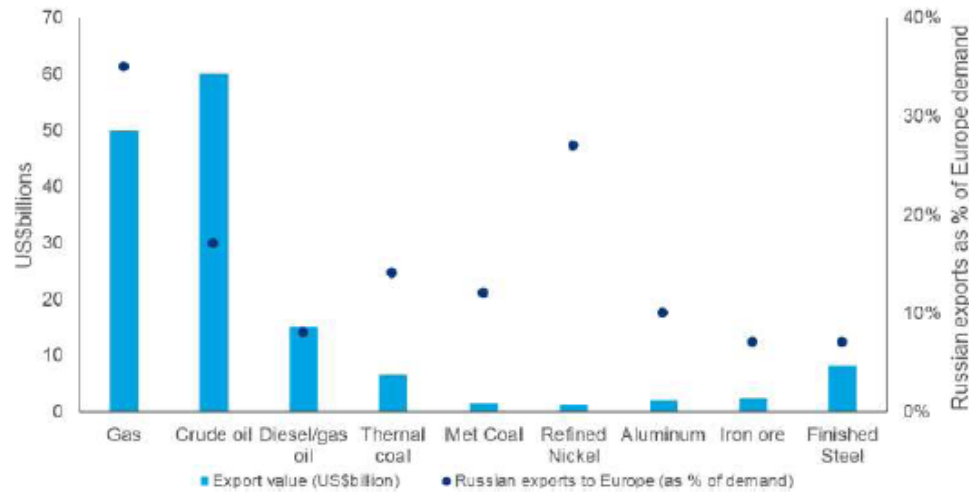
Nord Stream 2 will not enter service for the foreseeable future with current situation in Europe



LNG Export Trends

Russian gas supply to Europe and China

European exposure to Russian commodity imports and its monetary value (2021)

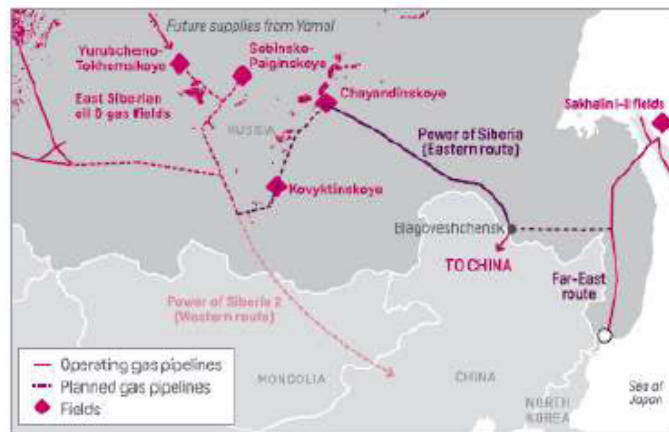


- Russian gas and oil have a significant share of the EU Mkt.
- Russian gas supplies ~38% of European demand
- Russia supplies ~50% of Germany's demand and ~30% of Italy's demand
- May be limits to increase pipe supply from non-Russian sources

- Russian piped gas flows to Europe on the following routes;
- Nord Stream 1 flowing at capacity 5 Bcfd
- Nord Stream 2 (uncertain outcome), capacity of 5 Bcfd
- Yamal (via Poland) capacity of 3.2, not flowing at capacity
- 3 pipes thru Ukraine, capacity 8.1 Bcfd, limited flow currently due to higher cost of transport. Russia has a 3.8 Bcfd flow or pay kt. with Ukraine thru '24
- TurkStream and Blue Stream (via Turkey to Italy /southern EU), capacity of ~3 Bcfd

- Russia currently supplies China and is looking to expand
- Russia supplies China via the Power of Siberia PL; 3.9 Bcfd, supplying ~7% of its gas demand
- In discussions to develop Power of Siberia 2, 5.1 Bcfd
- Entered into new long-term gas agreement with China's CNPC for 1 Bcfd

RUSSIAN GAS LINKS TO CHINA



Source: S&P Global Platts, Gazprom

European LNG infrastructure

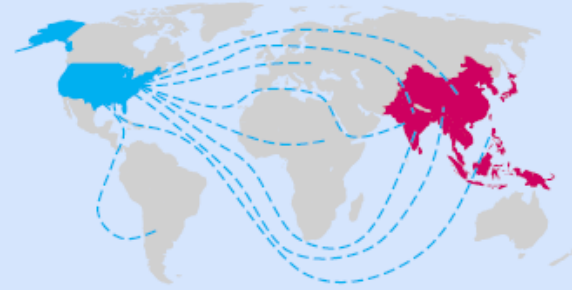


Source: European Commission 2022, Clean Energy Wire



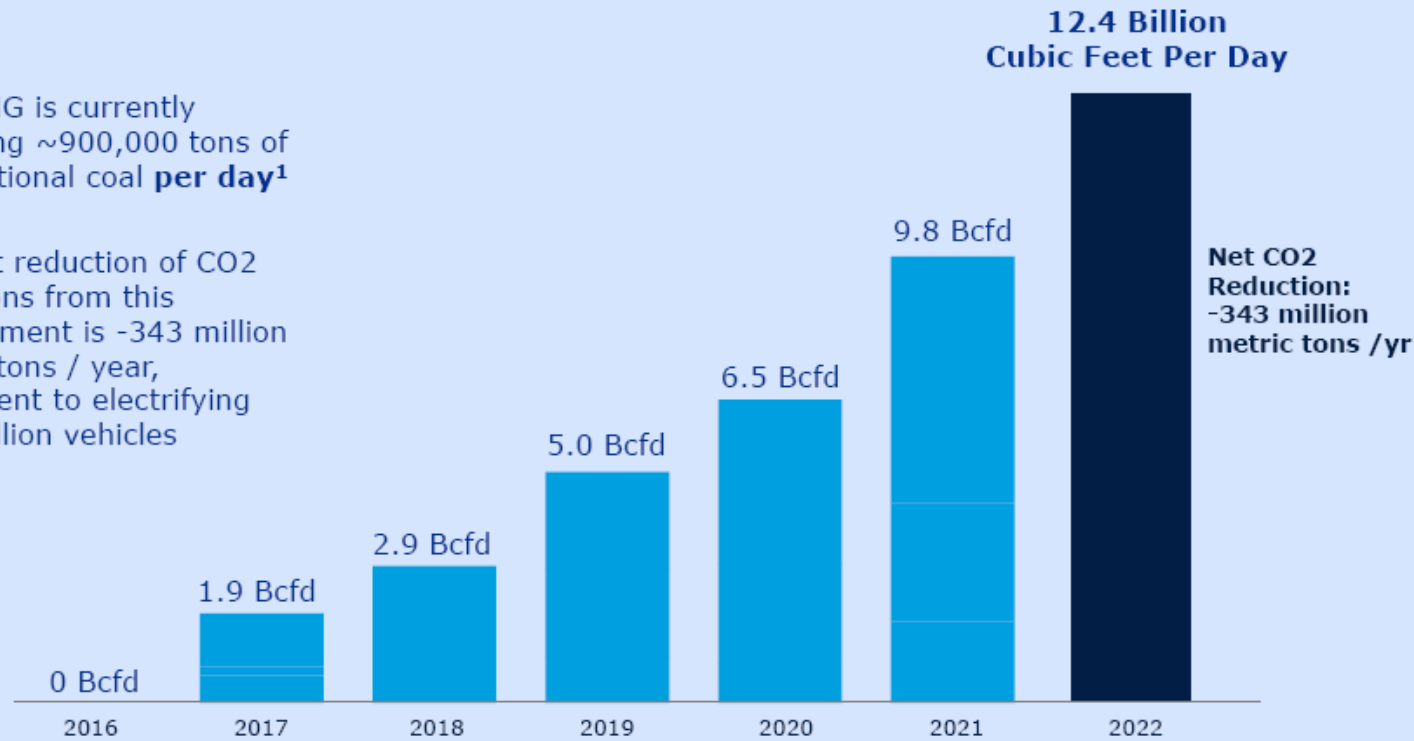
U.S. LNG Export Capacity

LNG export facilities are currently located predominantly on the Gulf Coast



U.S. LNG is currently replacing ~900,000 tons of international coal **per day**¹

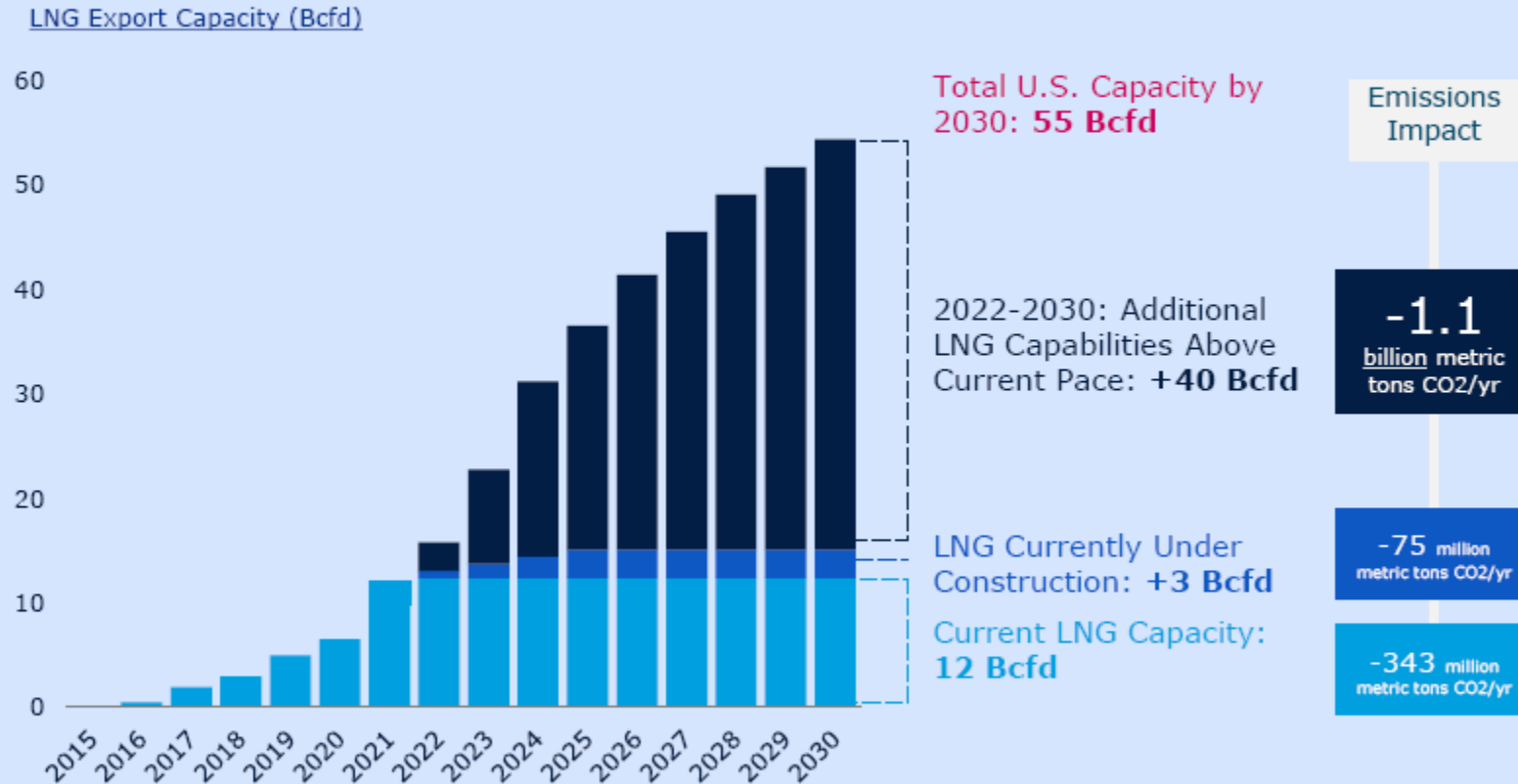
The net reduction of CO₂ emissions from this replacement is -343 million metric tons / year, equivalent to electrifying 125 million vehicles



1. International coal displaced is calculated by total thermal unit generated by gas divided by average heating content of coal (~19.8 mmbtu/short ton) // Net GHG reduction is calculated based on the emission differential between coal and natural gas (~560 CO₂e kg/MWh) based on a study from ICF.

Source: EIA U.S. Natural Gas Exports and Re-Exports by Point of Exit, Reuters, EIA CO₂ emission coefficient.

Projected LNG Export Capacity Through 2030¹



1. Based on an internal study, U.S can produce 40 bcf production surplus by 2030. 2. There is 3 bcf capacity currently under construction, and another 3 bcf anticipated. Therefore, projected incremental capacity is 6bcfd. To reach an additional 40 bcf, the incremental needs to be 6x, which is in line with non-obstructed pace. 3. Assuming 3 bcf under construction, and 40 bcf additional capacity by 2030.

Source: ICF Update to the life-cycle analysis of GHG emissions for U.S. LNG exports analysis to calculate emissions saving from coal to gas; EQT analysis for additional production (based on Enverus data)

Ukraine Invasion – Putin Miscalculated



U.S. LNG Responded



Germany's pursuit of peace in trade with Russia failed

“Roughly half of Germany’s homes rely on natural gas for their heating, and 55 percent of the country’s gas comes from Russia.”

A near-term cut-off of Russian gas supplies to Germany could cost their economy \$120 billion. Germany would be rationing natural gas.

1. Why is Putin courting Iran?

Which countries have the biggest natural gas reserves?

1. Russia – 38 trillion cubic metres. ...
2. Iran – 32 trillion cubic metres. ...
3. Qatar – 24.7 trillion cubic metres. ...
4. Turkmenistan – 19.5 trillion cubic metres. ...
5. United States – 12.9 trillion cubic metres.



Russia, Iran sign \$40-billion oil, gas MOU

Gazprom would make \$40 billion dollars of direct investments in Iran's oil and gas industry

- Oil & Gas Journal, July 22, 2022

2. A Tidal Shift?

EU Votes to Label Natural Gas as Climate Friendly



3. For the First Time, US Is Sending More Gas to Europe Than Russia

US LNG volumes were higher than Russian piped gas last month (June 2022)



Source: Bloomberg, Anna Shiryayevskaya, July 1, 2022

The far green left still doesn't understand scale.

Daniel Yergin: "... this is a \$90 trillion world economy that gets 80% of its energy from hydrocarbons. It's not going to change overnight."

John Harpole

President

Mercator Energy

26 W. Dry Creek Circle, Suite 410

Littleton, CO 80120

harp@mercatorenergy.com

(303) 825-1100 (work)

(303) 478-3233 (mobile)

