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Gas Market Outlook for 2024

Amid a looser LNG Market, uncertainty persists with challenges to stabilize the market

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Key Points of the Report

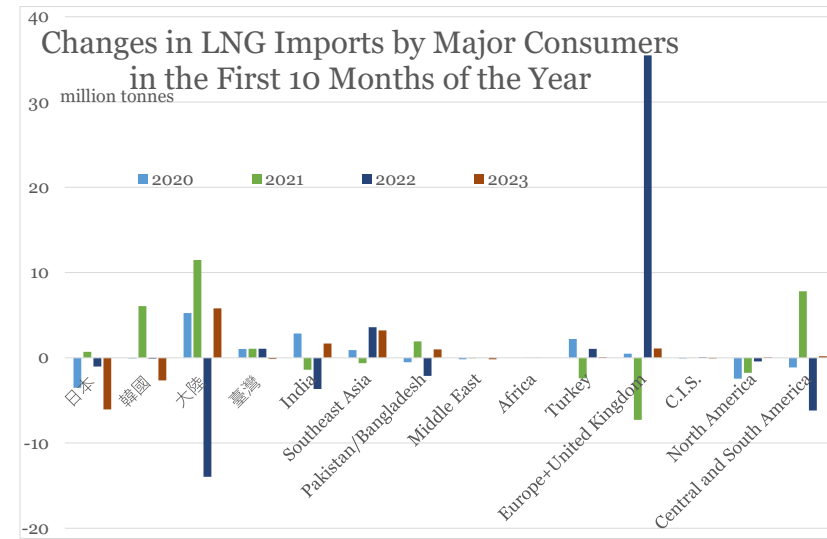
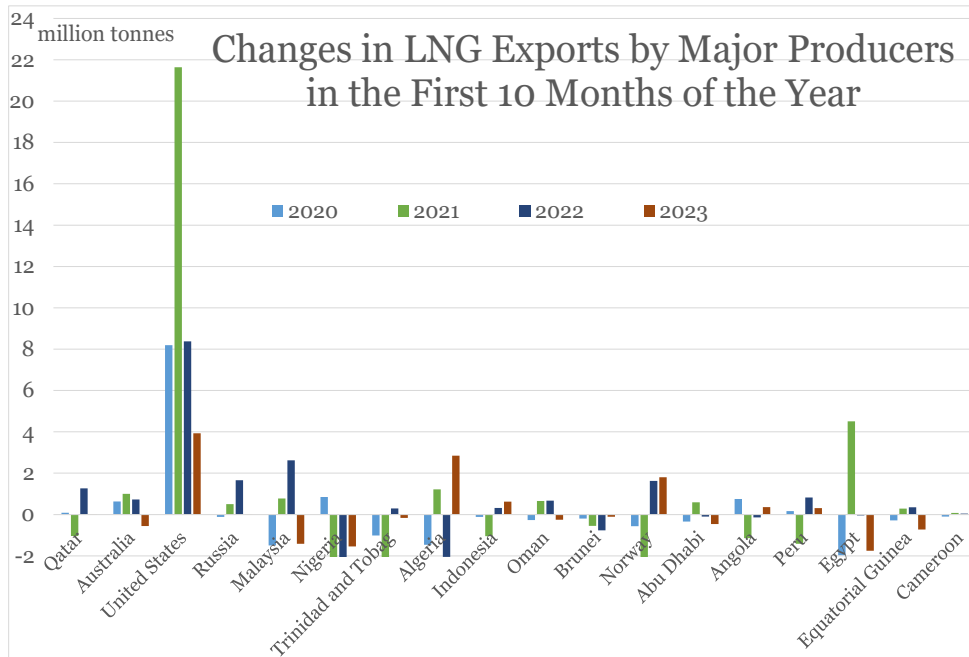
- I. Outlook for LNG prices
 - 1. The average LNG import price in Japan is expected to be around USD 12.1 in 2024, down from an estimated USD 13.4 per million BTU in 2013, while spot LNG prices to Northeast Asia are expected to average USD 14 or less in 2024, also down from USD 16 in 2023
 - 2. Relaxed market trends in 2023 are expected to continue in 2024
- II. Outlook for LNG supply and demand
 - 3. The global LNG market is expected to expand to 430 and 460 million tonnes in 2024 and 2025, respectively, up from 400 in 2023
 - 4. Although new LNG production projects are expected to start operations in North America, Africa and Asia, the pace of supply expansion is expected to be modest. The slim supply capacity margin may lead to seasonal tightness
- III. Factors affecting the LNG market balance in 2024 and 2025
 - 5. New and expansion LNG production projects to start and ramp up as anticipated or not
 - 6. European and Chinese gas markets holding the key to balance the global LNG market
- IV. Issues surrounding the future of the LNG market
 - 7. Risks accompanying LNG supply project development around the world
 - 8. Delays and cost overruns after FIDs and troubles after operations start
 - 9. Frameworks enabling long-term commitment and clearer standard of transition-proof LNG
- V. Notable developments in 2023 and issues to watch in 2024 in the LNG market
 - 10. Progress of additional LNG projects in the United States, already the new top LNG exporter
 - 11. Further progress of LNG marketing and potential new equity partners in the Qatari expansion plans

LNG Exports and Imports (10 Months in 2023) Flat from 2022

● Global LNG trades grew 1% during the 10 months

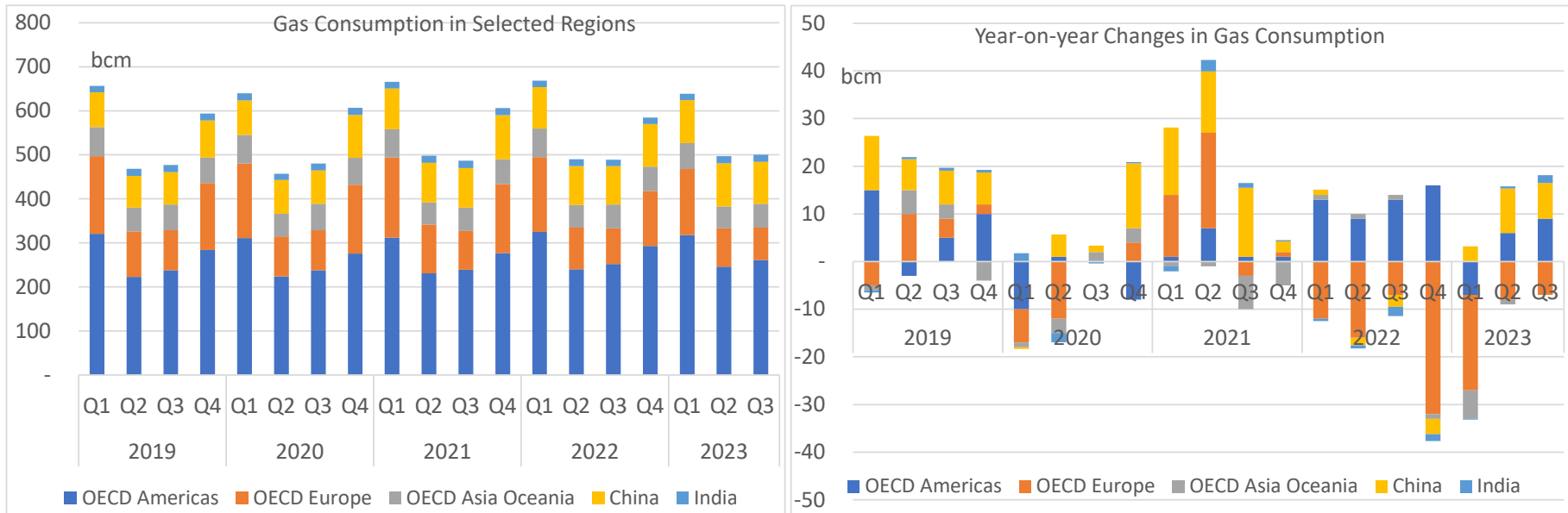
- USA leads export growth, though the growth rate is modest
- China and SE Asia increase imports but Japan reduces
- EU+GB maintain the level after a big increase in 2022

		EU + GB	Japan	China
2021	1-10	54.91	61.42	64.41
2022	1-10	89.79	60.39	50.46
2023	1-10	90.30	54.32	56.25
2023-2022	+/- mt	+0.50	-6.06	+5.79
2023/2022	+/- %	+0.6%	-10.0%	+11.5%
2023-2021	+/- mt	+35.39	-7.09	-8.16
2023/2021	+/- %	+64.4%	-11.5%	-12.7%



Contrasts Between Big Gas Consuming Markets

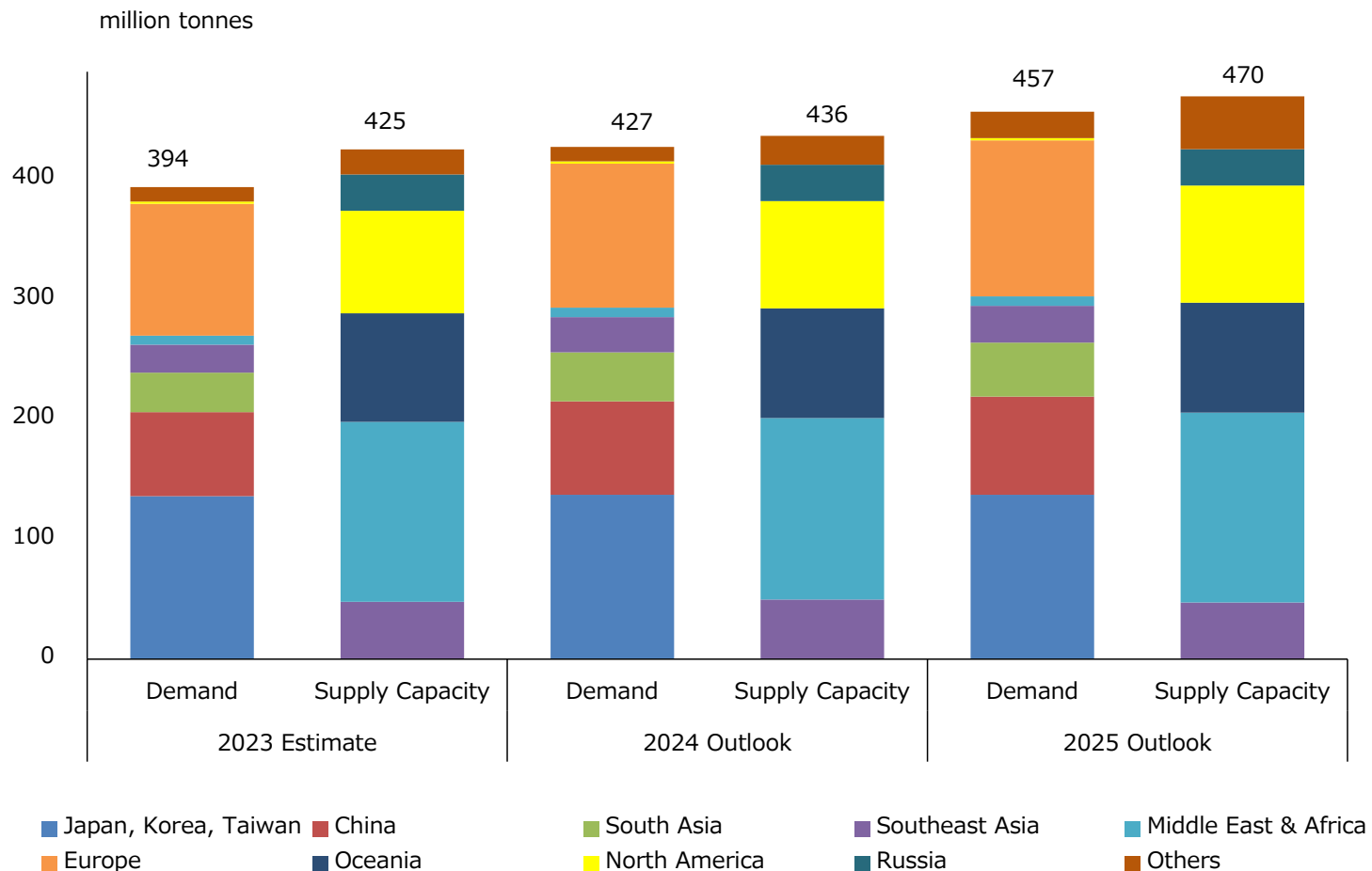
- Total gas consumption in OECD Americas, Europe, Asia Oceania, and China and India slightly decreased in the first three quarters in 2023 (-1%)
 - The United States and China consume more gas in 2023 compared to 2022
 - OECD Europe and OECD Asia Oceania consume less gas in 2023 compared to 2022



(Source) Based on data of IEA's Natural Gas Monthly, National Statistics Bureau of China, and Ministry of Petroleum & Natural Gas of India

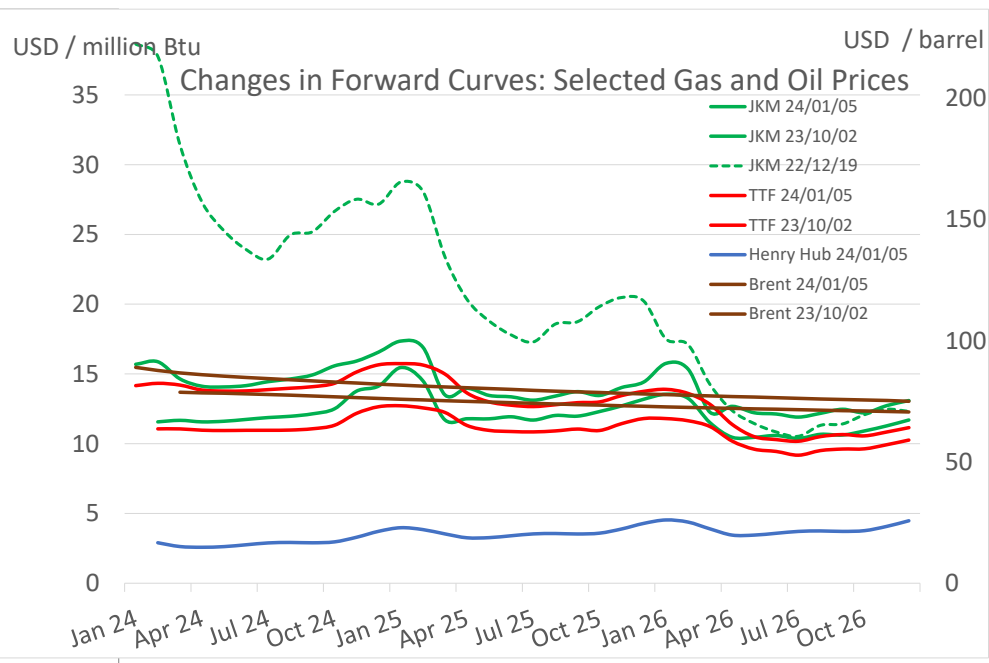
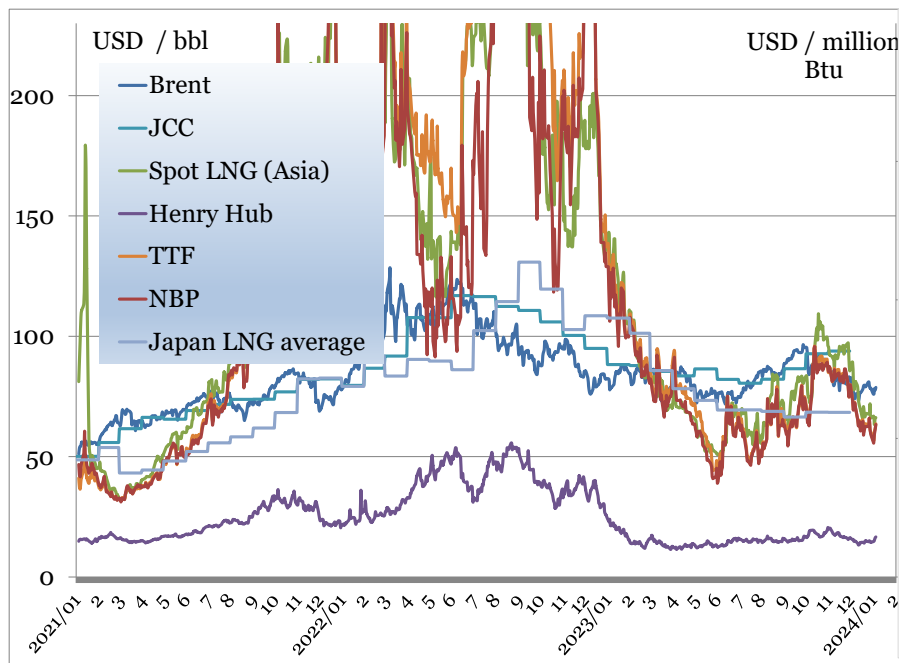
The LNG Market to Expand with Slim Supply Margin

- Global LNG trades are expected to grow by 7% - 8% per year in 2024 - 2025
- Although new LNG production projects are expected to start operations in North America, Africa and Asia, the pace of supply expansion will be modest.
- The slim supply capacity margin may lead to seasonal tightness
- European and Chinese gas markets hold the key to balance the global LNG market



Yet, the Market Anticipate Relaxed Balance

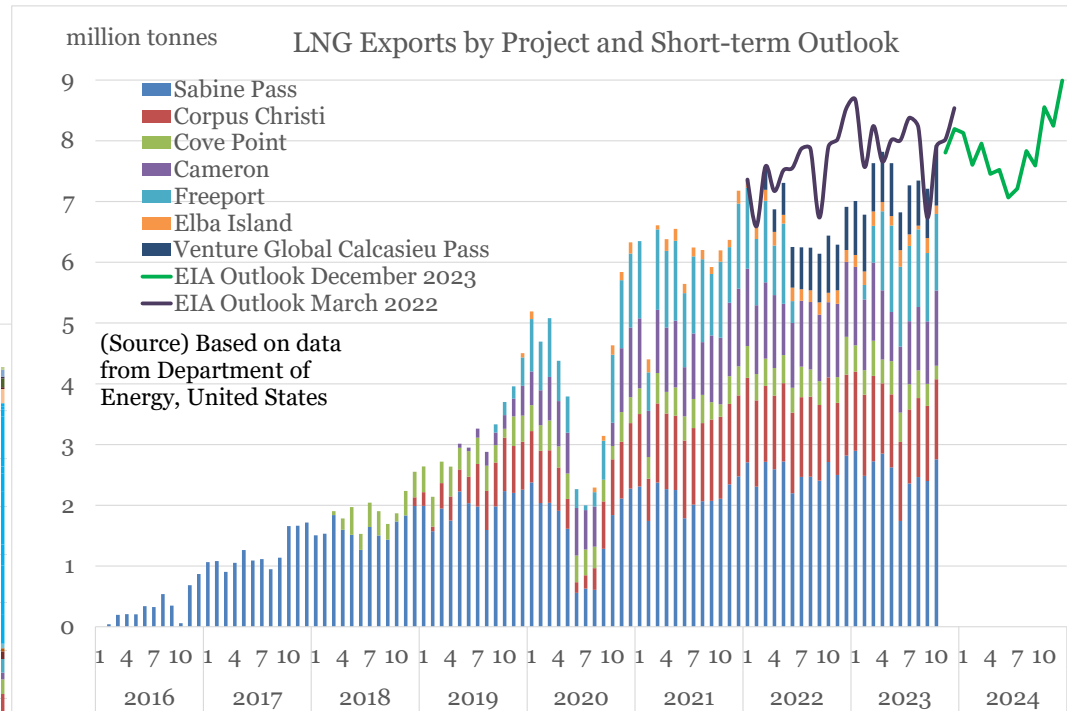
- Views on the market have changed dramatically since the end of 2022 (from USD 40 down to USD 12 for winter 2023/2024)
 - Gas demand has been weak in the Northern Hemisphere, especially in Europe thanks to measures to lower gas consumption, as well as demand destruction due to higher prices
 - LNG supply has been ample without significant troubles notably from the United States



(Source) Based on Japan's Trade Statistics, CME, ICIS LNG Edge

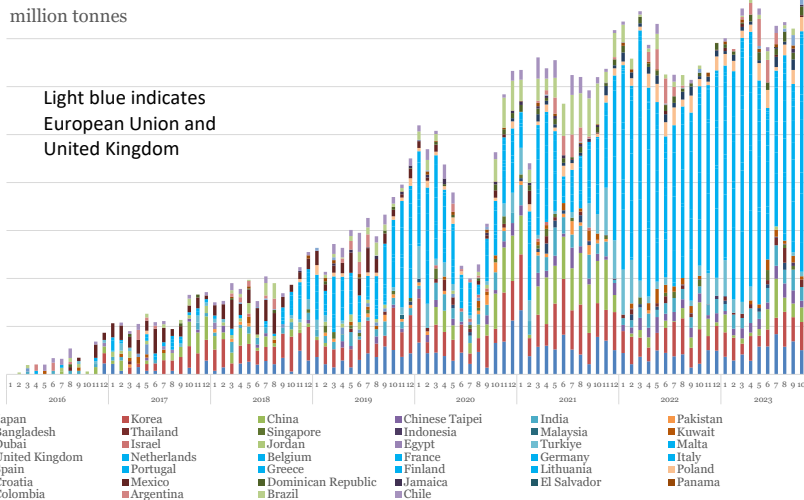
U.S. LNG Exports Focus on the European Markets

- ✓ With lower European spot gas prices and Asian spot LNG prices, the supply of LNG from the United States to Asia increased slightly in 2023
- ✓ However, the share of EU+GB as destinations of LNG supply from the United States remained over 60% in 2023 compared to 64% in 2022
- ✓ Asia represented 25% in 2023 compared to 23% in 2022



- ✓ LNG production in the United States has been resilient coming from multiple projects
- ✓ However, a supply glitch at an individual large-scale project could have a global impact

LNG Exports from the United States by Destination



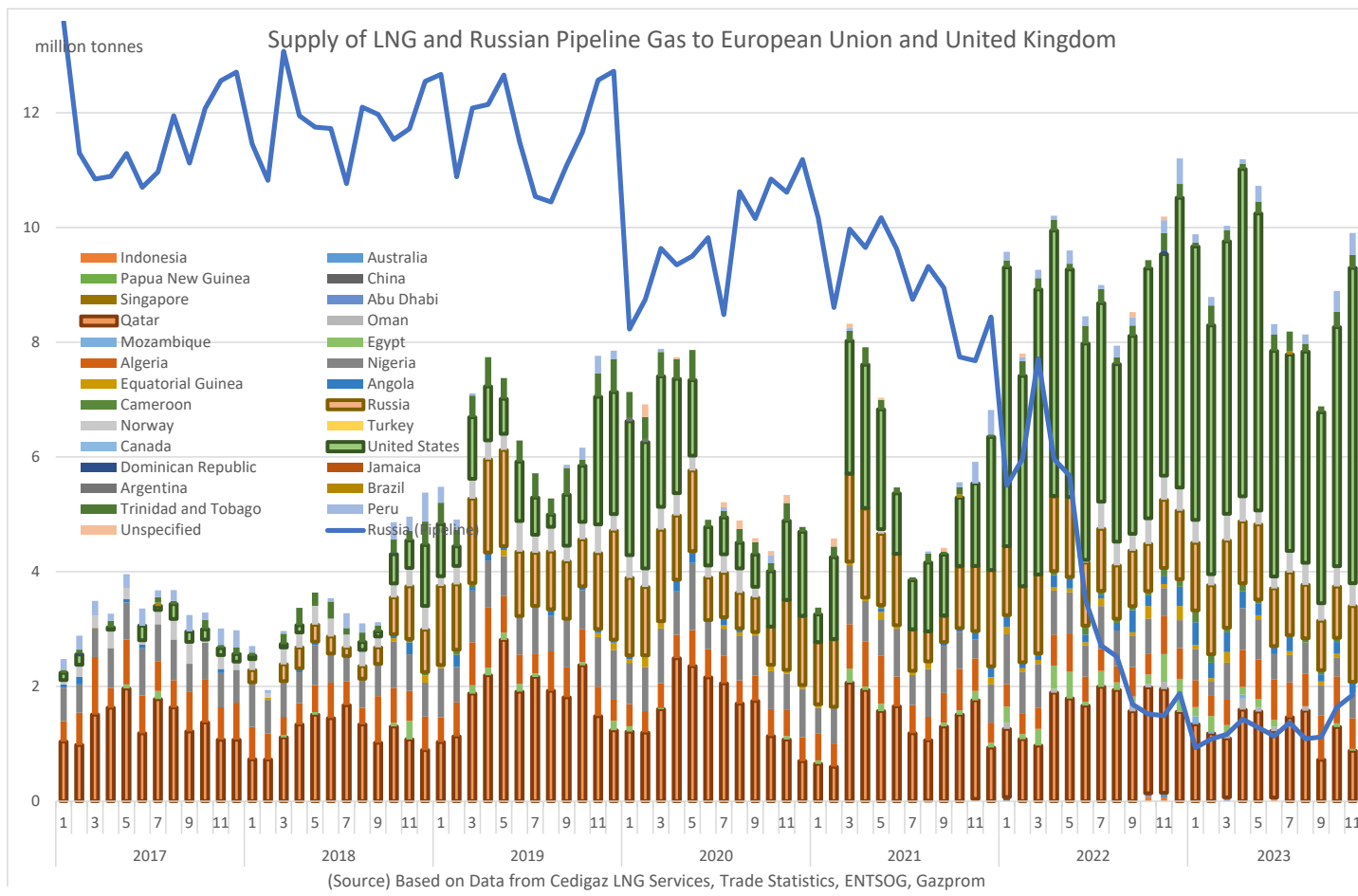
(Source) Based on data from Department of Energy, United States

The Shale Revolution Interacts with International Markets

- The shale revolution in the United States has evolved reacting to each other with the LNG market
- The USA has become the largest LNG exporter, contributing to EU's phase out from Russian supply
- Incremental LNG production projects are expected to underpin further LNG market development

	The gas market in the United States	The global LNG market	Interactions between the two
- 2007	Higher prices stimulate development	Higher gas and oil prices	More investment in LNG production
2008 -	The revolution comes to gas first expanding gaps between gas and oil prices	LNG exports increase from Qatar and Russia	Asian premium of LNG prices becomes evident after the nuclear crisis in Japan
2014 -	LNG exports begin and expand, as gas production further expands associated with increasing oil production	LNG export projects advance and expand notably from Australia	Emergence of LNG supply from the United States promotes more flexible international LNG transactions
2019	U.S. projects represent 30 million tonnes per year out of global total 70 mt/y FIDs	Increases of supply lead to lower LNG and gas prices	Price gaps between USA and global markets stimulate LNG FIDs
2020	Many LNG export cargoes are cancelled in the Northern Hemisphere summer	The lowest LNG and gas prices in history converge	Extremely low global gas prices lead to U.S. LNG cargo cancellations in summer
2021	The United States effectively dominates global incremental LNG supply	Extremely high prices sticks around after the latter 2021	LNG investment activities slows down amid uncertainty over the future
2022 - 2023	USA becomes top LNG exporter, as more LNG projects advance Prices surge in 2022 affected by the global market, then stabilize	Reduction of Russian piped gas export High EU LNG import Volatility increases	High prices in international markets stimulate LNG production development elsewhere

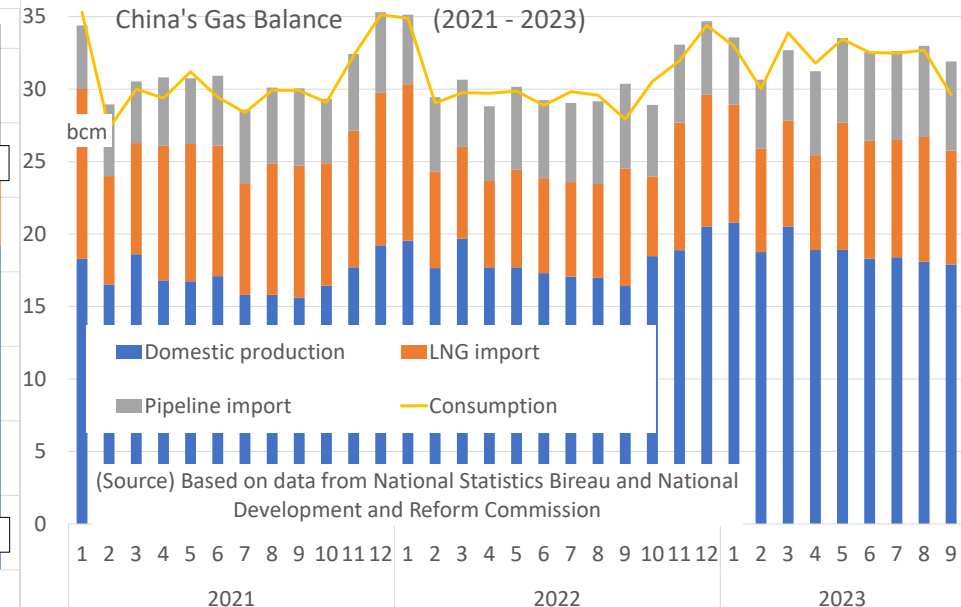
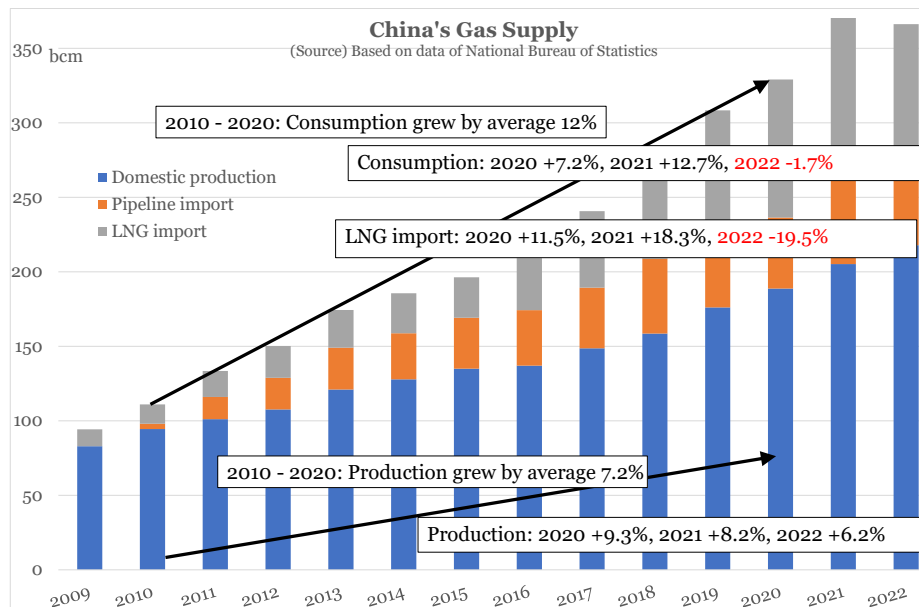
Loss of Russian Pipeline Gas in Europe is Filled by LNG from the United States and Russia



- ✓ Russian pipeline gas supply to the European Union decreased from 8 million tonnes in December 2021 to 1-2 million tonnes per month in 2023
- ✓ The loss has been largely filled with LNG from the United States
- ✓ Russian LNG export to Europe has been steady

China's Gas Market Returns to Modest Growth

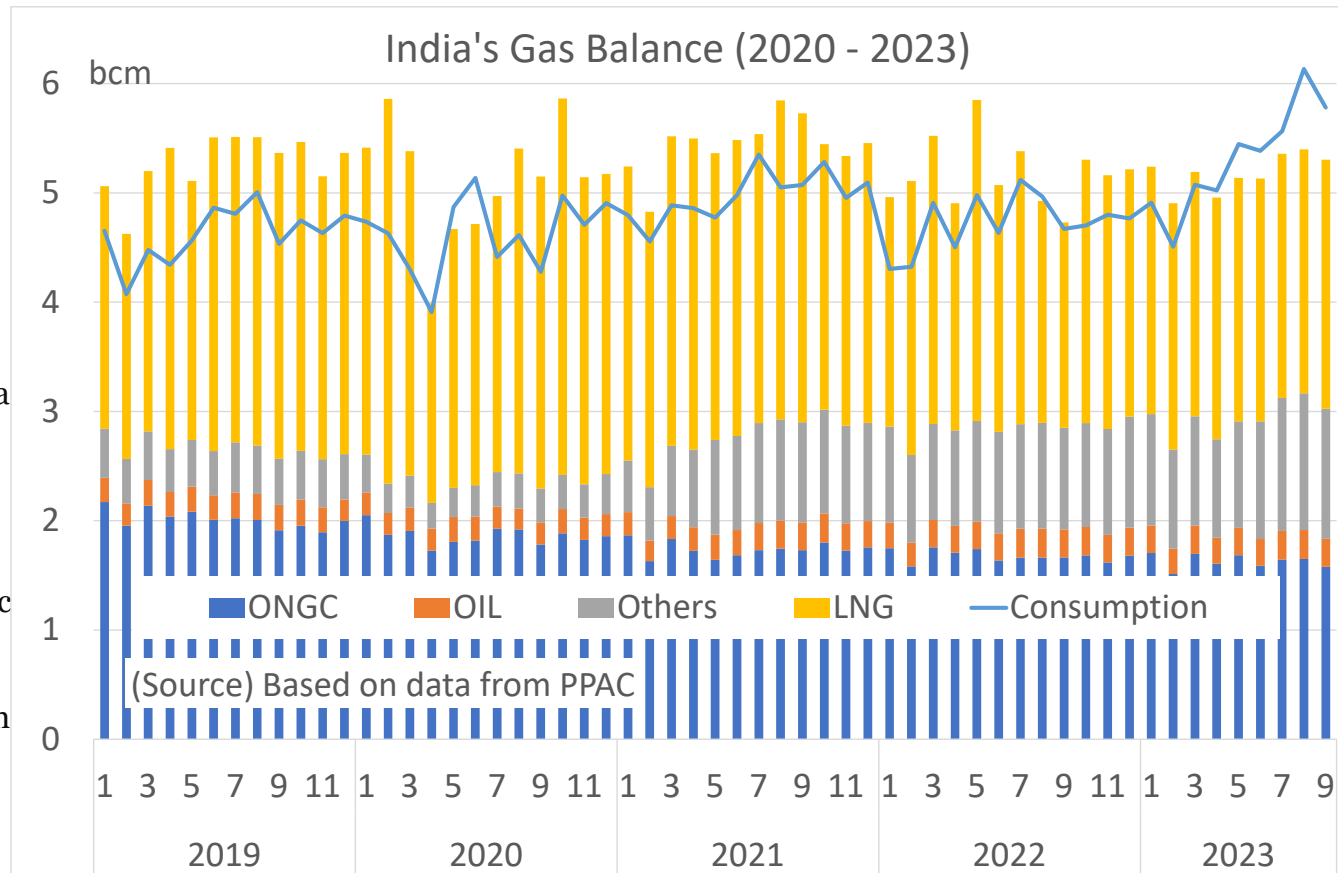
- China's gas market returned to growth in 2023 after the first-ever contraction in 2022
 - However, the latest growth has been modest, containing the consumption in 2023 smaller than in 2021
 - As pipeline gas imports and domestic gas production increase, LNG imports have grown only modestly



India's Gas Market Also Returns to Growth

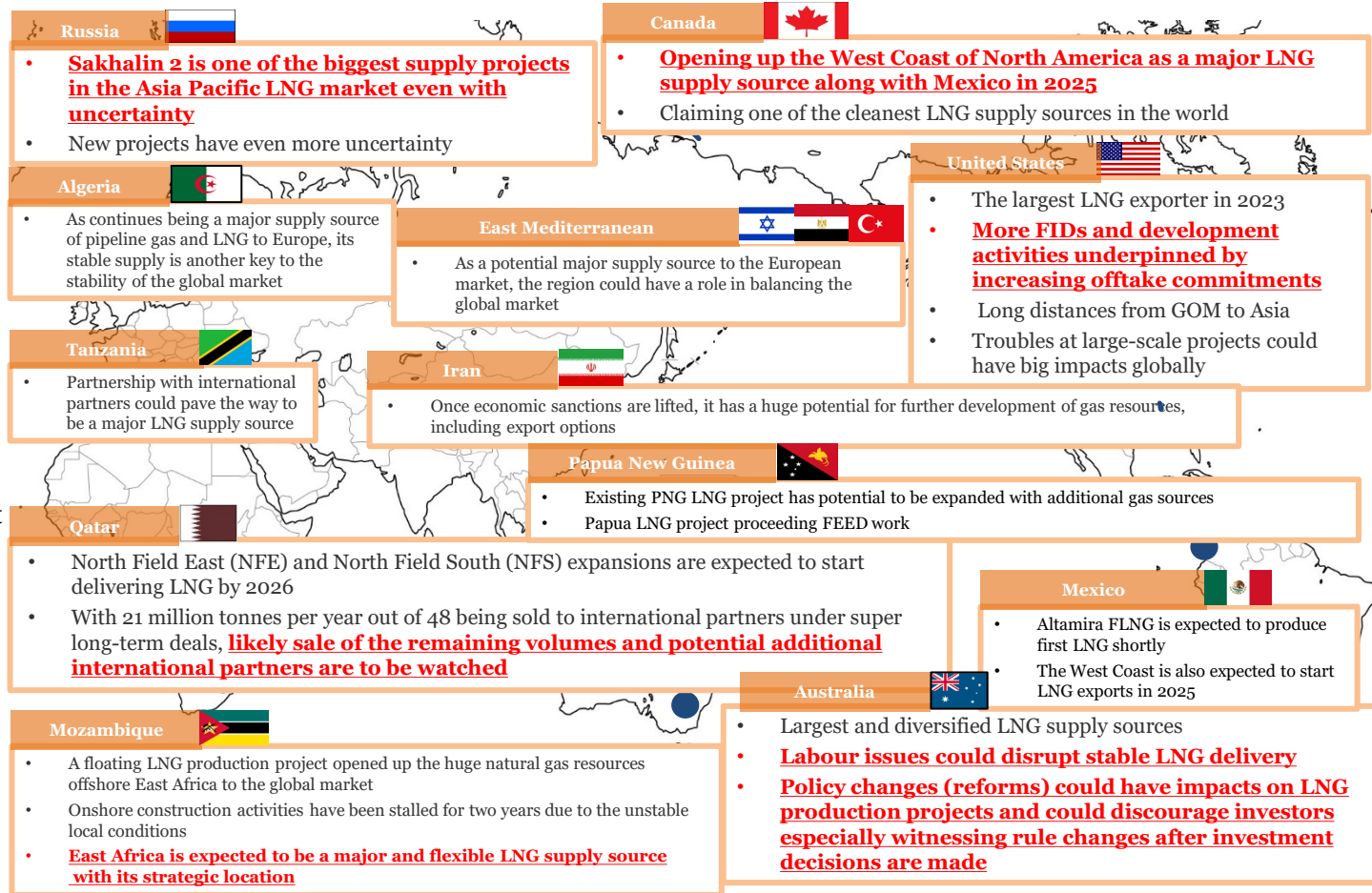
- India's gas market also returned to growth in 2023, too, after shrinking in 2022

- While domestic gas production increases led by a significant increase of production from the private sector, production by state-owned ONGC decreases
- With the increasing domestic gas supply, LNG import slightly decreased in 2023, after a significant decrease in 2022



Major Current and Future LNG Supply Sources

- ✓ New LNG sources are expected in Canada
- ✓ Next steps of Qatari LNG marketing is in focus
- ✓ Australian LNG needs to secure stability and risk mitigation measures
 - ✓ Projects advance around the world to increase LNG supply
 - ✓ Risks are here and there with development
 - ✓ Projects become more difficult in frontier areas as relatively accessible ones have been already developed
 - ✓ Expansion at existing sites (brownfield) and feedgas supply replacement projects (backfill) are considered economically advantageous



Short- and Long-Term Challenges for LNG Projects

- Transition-compatible LNG project standards could enable long-term commitment and stable procurement
- The role of portfolio players is expected to be more significant in the future

	Notable issues to be considered from the perspective of LNG consumers
Supply	<ul style="list-style-type: none"> ✓ Measures to cope with Russian pipeline gas reduction and LNG supply disruption risks ✓ Measures to cope with feedgas shortages and other troubles in LNG production ✓ Steady realisation of LNG production projects in the future ✓ Effective utilisation of LNG sources that do not have a fixed final destination
Demand	<ul style="list-style-type: none"> ✓ How much and how fast China's LNG demand recovers ✓ Nuclear developments in Japan, Korea, and France having impacts on the global LNG demand ✓ EU gas demand reduction (demand reduction efforts and demand destruction) ✓ Demand fluctuation in emerging markets responding to higher and lower prices ✓ Private and public sector efforts enabling long-term LNG offtake commitments ✓ Demand aggregation, portfolio players, and joint procurement efforts
Pricing	<ul style="list-style-type: none"> ✓ Measures to mitigate volatility, partly amplified by gas-on-gas pricing ✓ Appropriate balances between oil-linked and gas-hub linked pricing
Climate	<ul style="list-style-type: none"> ✓ Clarification of LNG project standards that are compatible with energy transition (methane and GHG emission mitigation measures) is necessary ✓ Promoting CC(U)S and green electricity in LNG liquefaction contributes to greening LNG
Financing	<ul style="list-style-type: none"> ✓ Financing arrangements that can accommodate shorter LNG sale contracts are needed for both matured and emerging markets in the Asia Pacific region ✓ It is also important to ensure the creditworthiness of new buyers entering the market ✓ It is important to present economic and environmental advantages of LNG as an area of investment and lending

Topics in 2023 and Focal Points in 2024 in the LNG Security

- The big 3 LNG exporting countries hold the key to LNG market stability in 2024
- Initiatives to manage methane emissions in the LNG value chain gain momentum

Topics in 2023	Issues to watch in 2024
Relaxing market balance and lower spot prices	Will stability continue without troubles?
USA becomes the top LNG exporter	Production expected to increase albeit slower pace
LNG projects advance in USA (FIDs / SPAs)	Regulatory processes and additional FIDs
EU continues attracting volumes with more FSRUs	Will EU continue high volume LNG imports?
Continental China returns to LNG import growth	With more LT volumes, stable growth is expected
Emerging Asia expands LNG markets	LNG import growth is expected to accelerate
Qatar expansion: deals with partners	More sales activities to non-partner buyers
More smaller-scale offshore LNG production plants	More LNG production sites are expected
New risks emerge in Australian LNG	Measures to keep stable LNG exports
Initiatives to manage methane emissions	International standards: GHG (methane)
More bottlenecks emerge in LNG transportation	Streamlining/optimizations of transportation
Stronger presence of portfolio players	Portfolio players' contribution to development
Progresses of proposals of e-methane projects	How fast and far those e-methane project advance