Asia-Pacific Economic Cooperation

APERC Asia Pacific Energy Research Centre

2-3. Recommended topic for OGSS21

The Energy Security Implications of Declining LNG Investment

EGCFE 2024 Meeting
23 May 2024 - Nanjing, China

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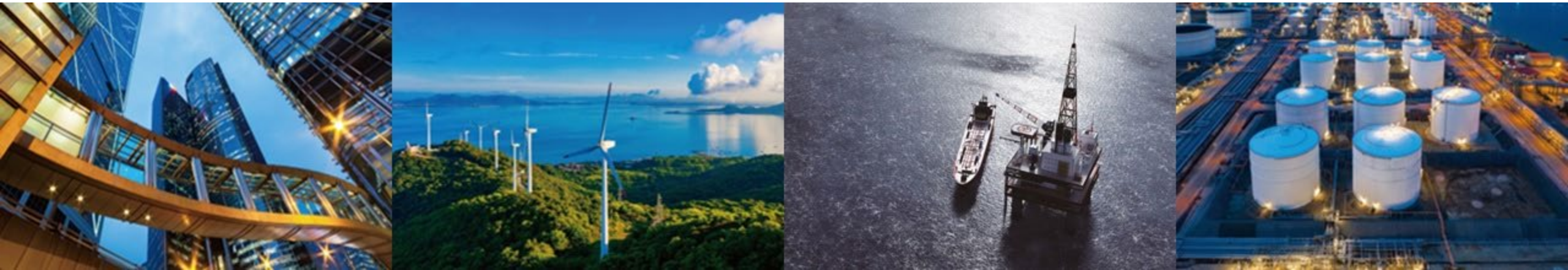
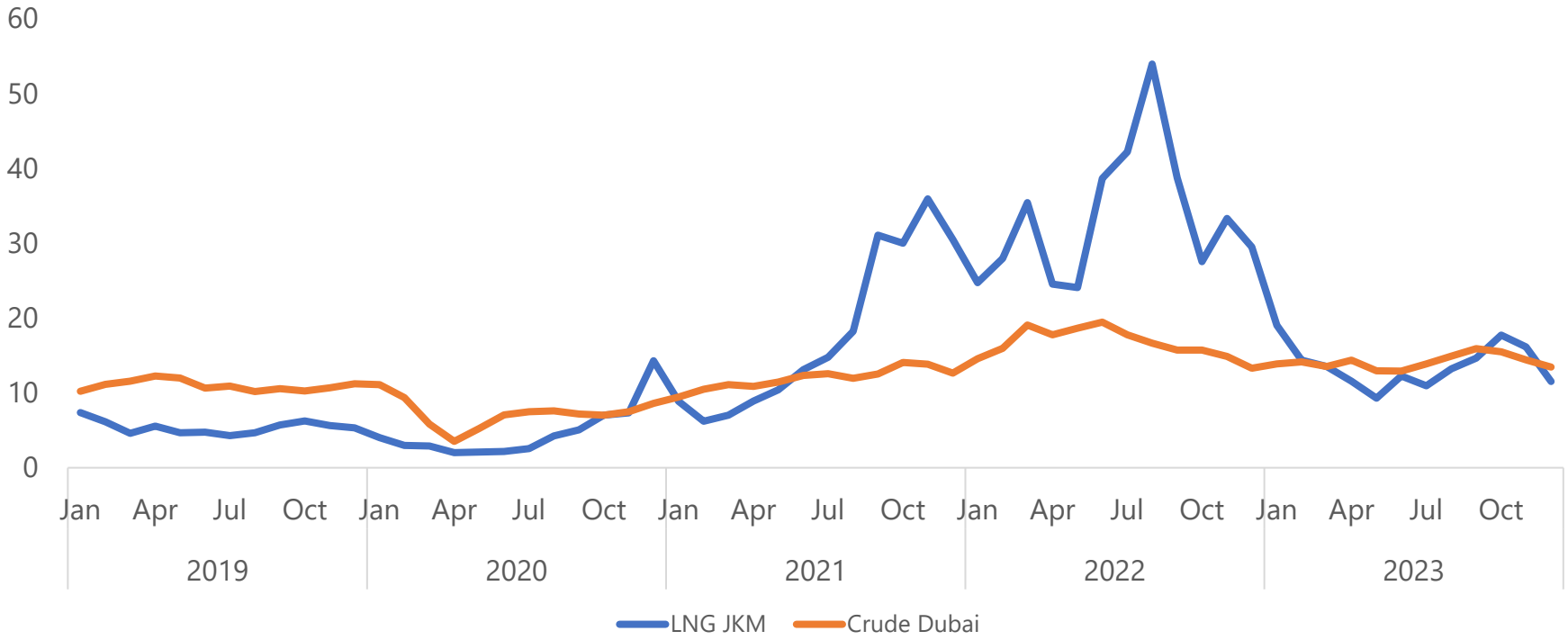


Recent LNG price volatility demonstrates adverse impact of gas supply disruptions.

Monthly LNG and oil prices, 2019 – 2023 (USD per MMBtu)

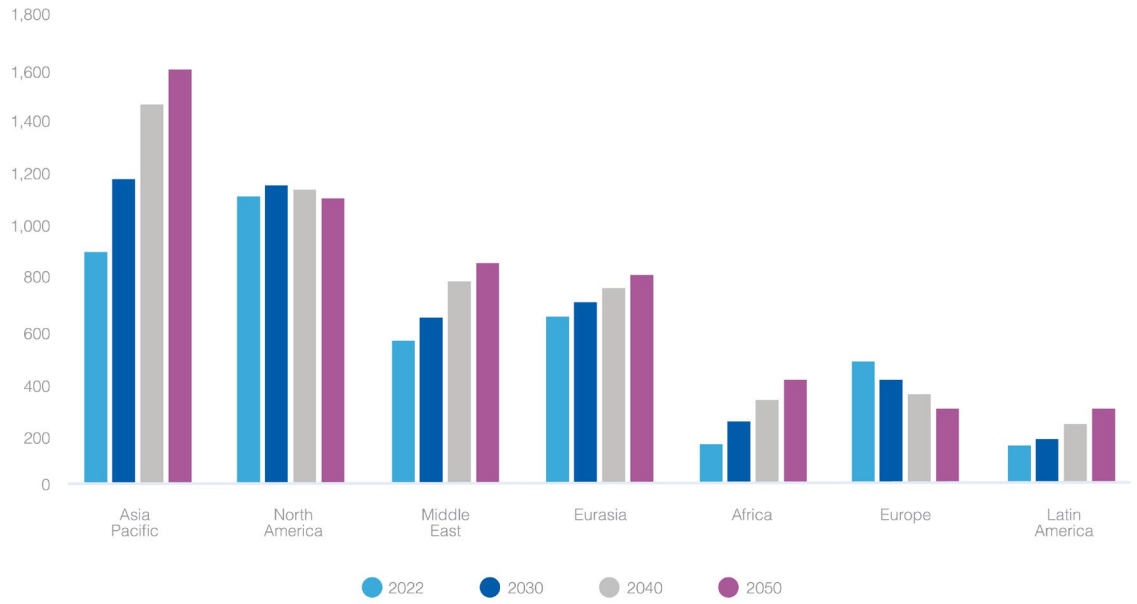


Source: Investing

- The COVID-19 pandemic depressed prices in 2020. By first half of 2021, prices had recovered.
- Substantial price volatility in the second half of 2021 and 2022 was due to a variety of factors.

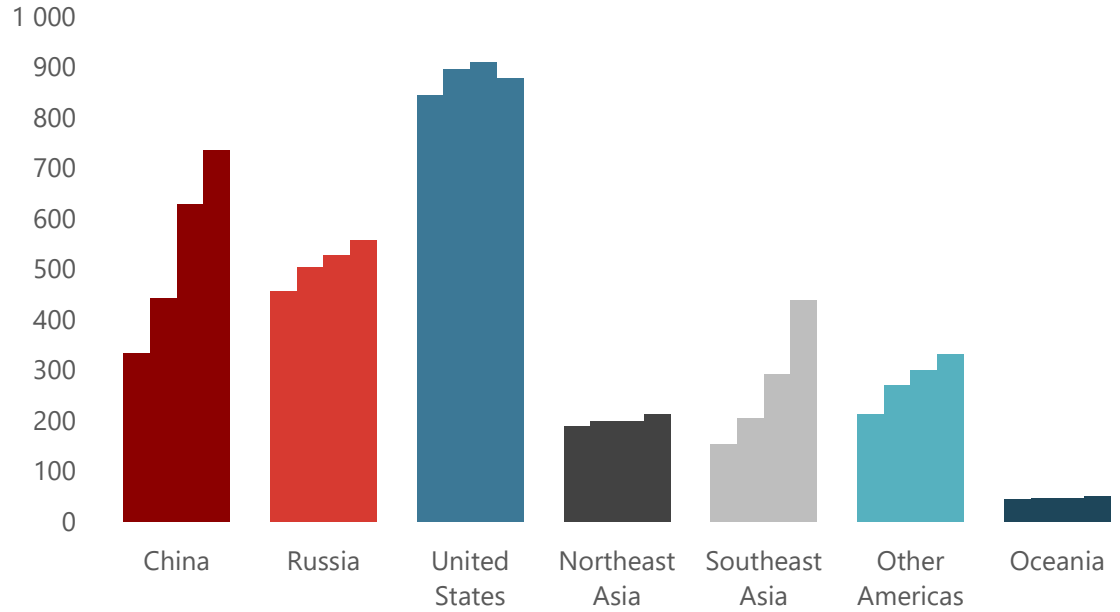
Global and APEC gas demands are expected to grow in the future.

Global natural gas demand outlook by region, 2022 – 2050 (bcm)



Source: GECF (2023)

APEC natural gas demand outlook by subregions (REF), 2021 – 2050 (bcm)

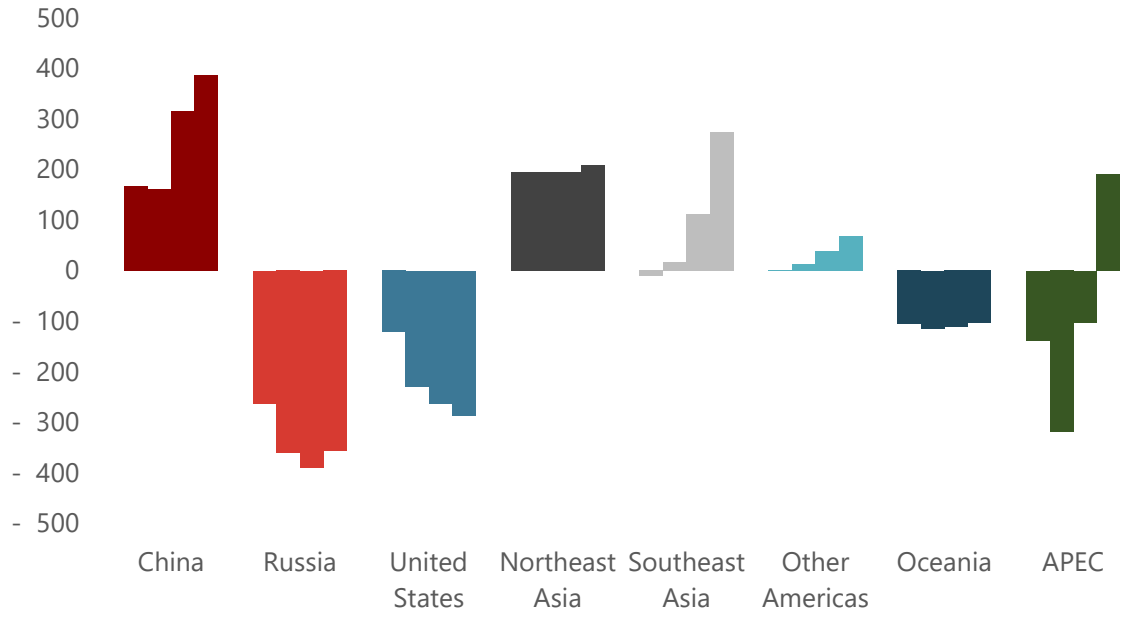


Source: EGEDA (2023), APERC (2022)

- Overall gas demand is anticipated to be strong in most regions. Asia Pacific accounts for over 50% of the global increase from 2022 to 2050.
- Within APEC, China and Southeast Asia more than doubled their gas demands by 2050 from 2021 levels.

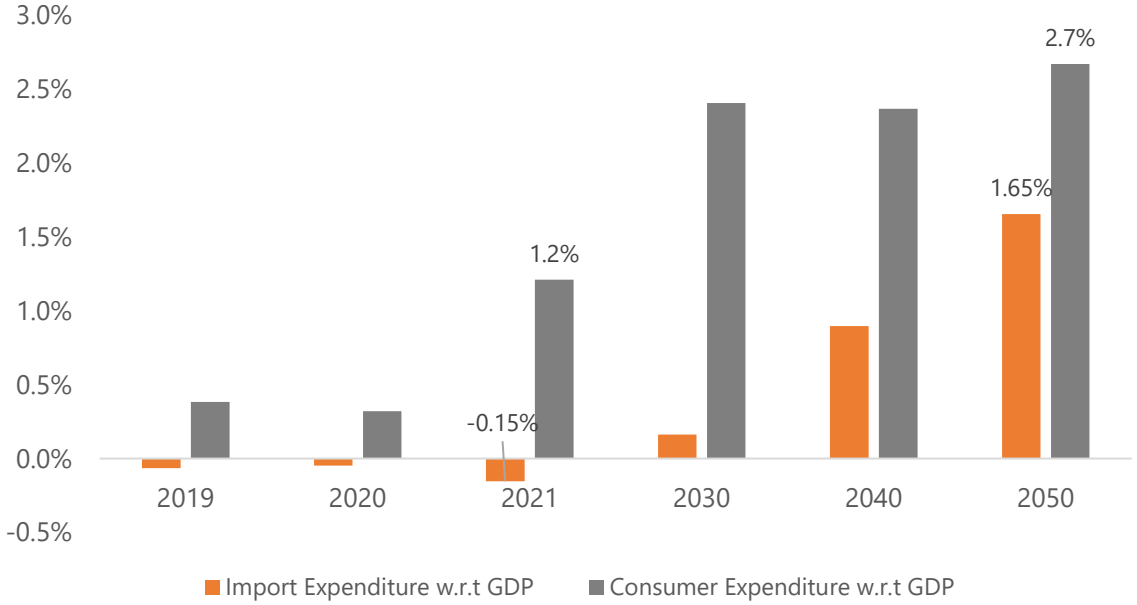
APEC transitions into a net LNG importer by 2050, and hence exposed to gas price volatility impact.

APEC net gas import outlook by subregion, 2021, 2030, 2040 and 2050 (bcm)



Source: APERC (2022)

Share of Southeast Asia's net import and consumer expenditures in gas relative to GDP (%)

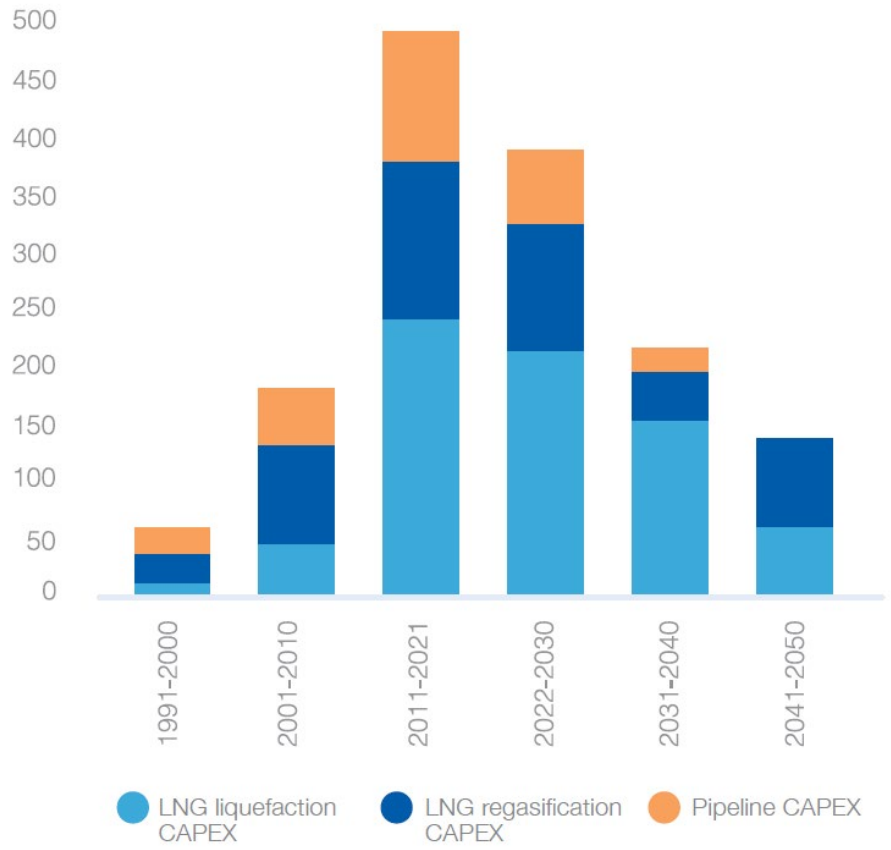


Source: APERC (2022)

- Most APEC subregions (China, NEA, SEA, and OAM) are anticipated to be net LNG importers by 2050.
- With 20% increase in spot LNG price relative to 2022 level (USD 33 to USD 40 per MMBTu), SEA's share of LNG import and consumer expenditures are 1.65% and 2.7% relative to its GDP in 2050 in REF.

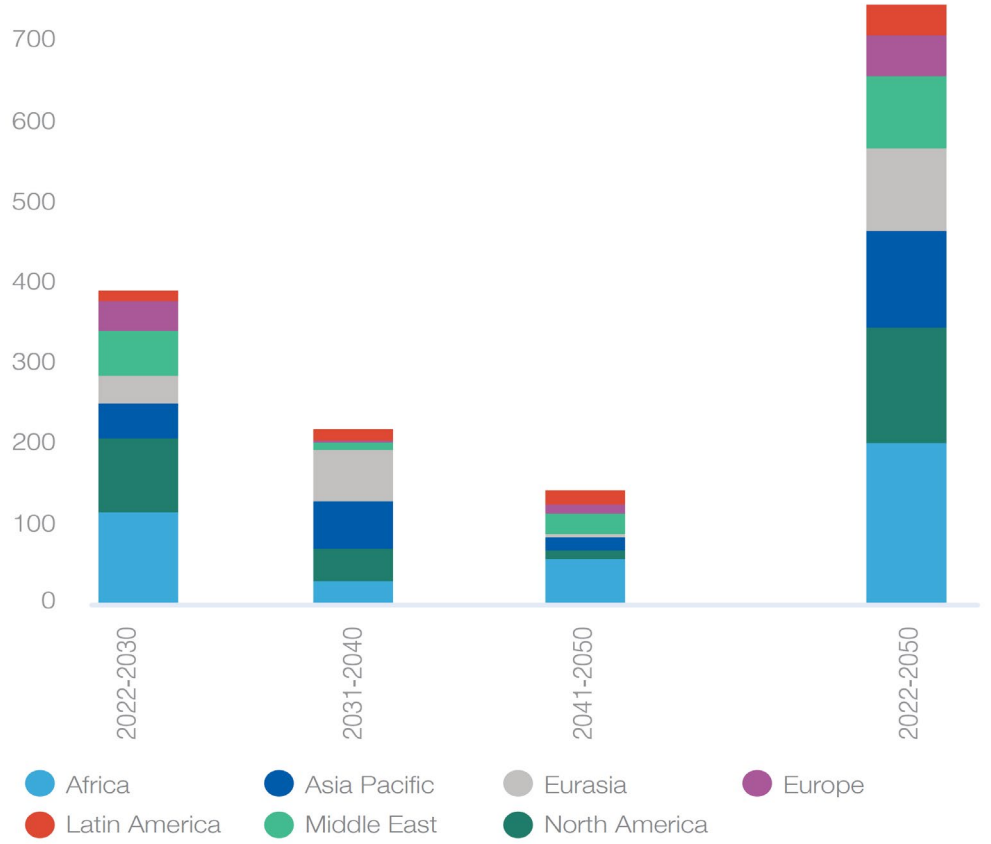
Substantial midstream LNG investment expected over the coming decades

Global midstream LNG investment, 1991 – 2050 (real billion USD)



Source: GECF (2023)

Global midstream investment outlook by region, 2022 – 2050 (real USD billion)

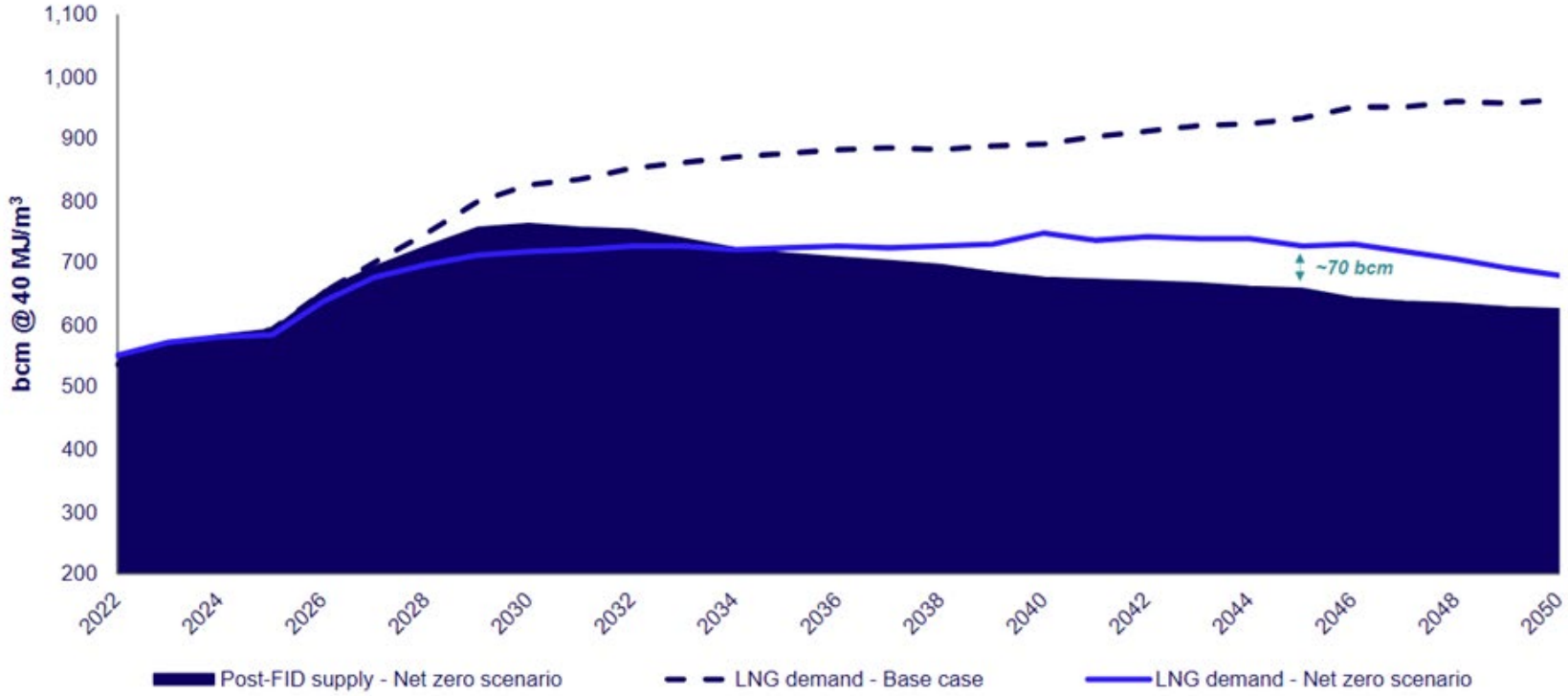


Source: GECF (2023)

- Global midstream investment stands at USD 386 billion from 2022 to 2030. Beyond that, a decline by almost 3 times is anticipated in the period 2041-2050.
- Cumulatively, the period 2022-2050 projects a significant investment of USD 740 billion to satisfy the demand for gas globally.

However, there is a justifiable concern that the needed investment will not be made

Post-FID LNG Supply and Demand Scenarios, 2022 – 2050 (bcm)



Source: Wood Mackenzie (2023)

- Wood Mackenzie estimates that the post-FID global supplies of LNG will be 200 bcm (base case) and 70 bcm (net zero scenario) short of the expected demand by 2045.
- ". . .[currently] the total commitments to procure LNG exceeds additional capacity with FID by 65 Mt per year. It is clear that the market believes that there needs to be more investment than what has already been decided through FID."
  – IEEJ Chairman's Message for March 2024

OGSS 21: Key questions

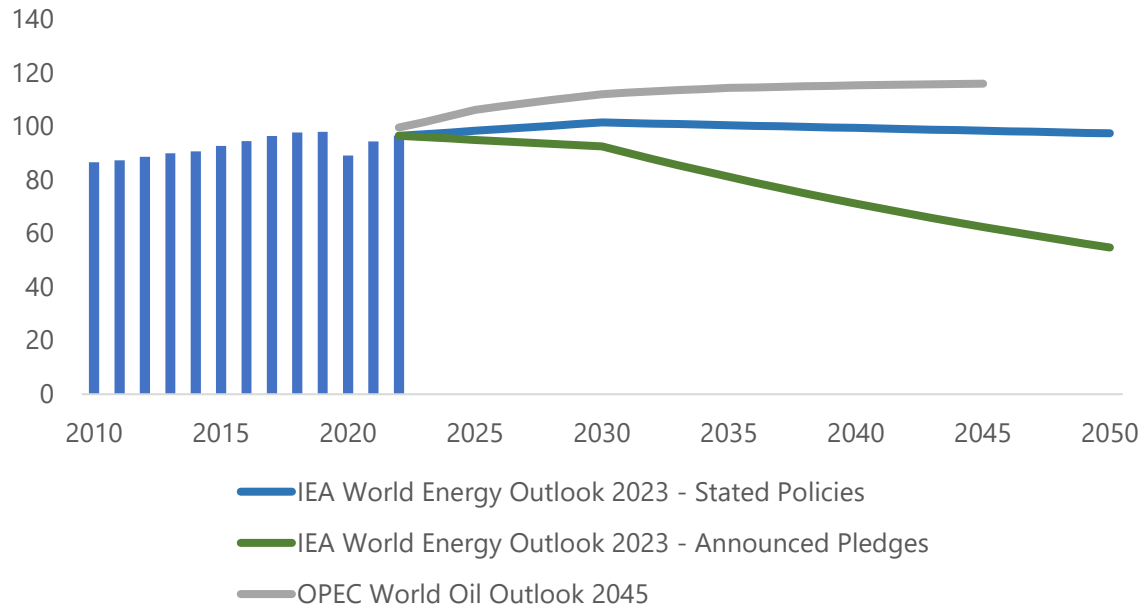
- Although the near-term outlook for LNG supply is positive, what is the outlook for global and APEC demand and supply of LNG after 2030?
- What are the potential challenges and constraints, now or in the near-term, that could reduce gas supplies after 2030.
- Have the recent supply disruptions and gas price volatility slowed the needed investment in natural gas/LNG facilities?
- How will decisions made today affect LNG capacity in the early 2030s?
- What measures can APEC economies take today to improve the adequacy and security of natural gas and LNG supplies after 2030?

Potential OGSS22 topic:

The Implications of Underinvestment in Upstream Oil Sector Chain to Oil Supply Security of APEC

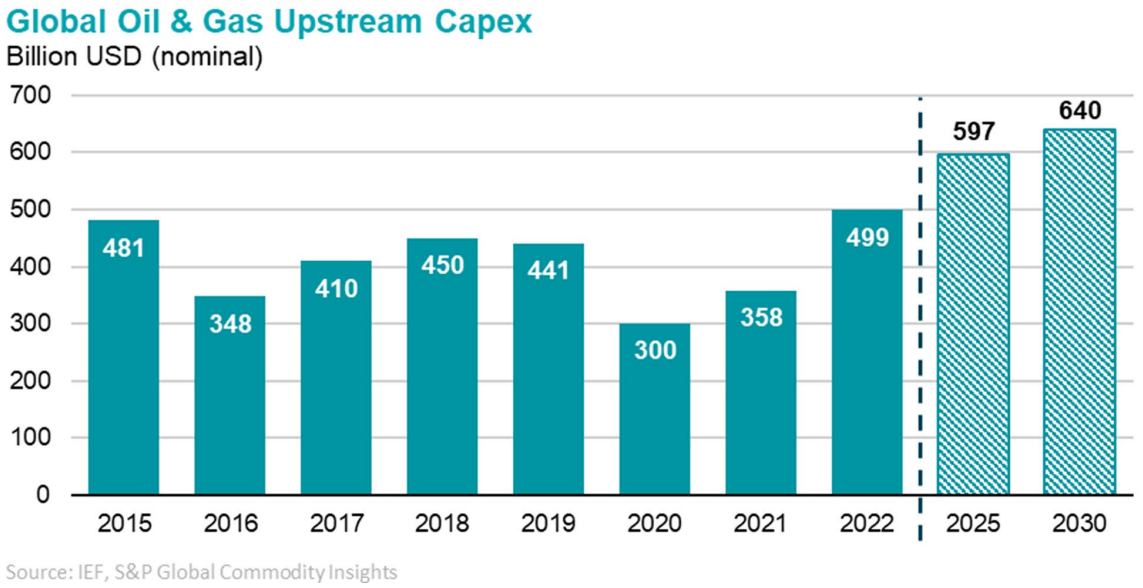
Uncertainty about future oil demand could slow needed oil industry investments

Global oil demand, 2010 – 2050 (mb/d)



Source: EI (2023), IEA (2023), OPEC (2023)

Global oil and gas upstream CAPEX, 2015 – 2030 (billion USD)

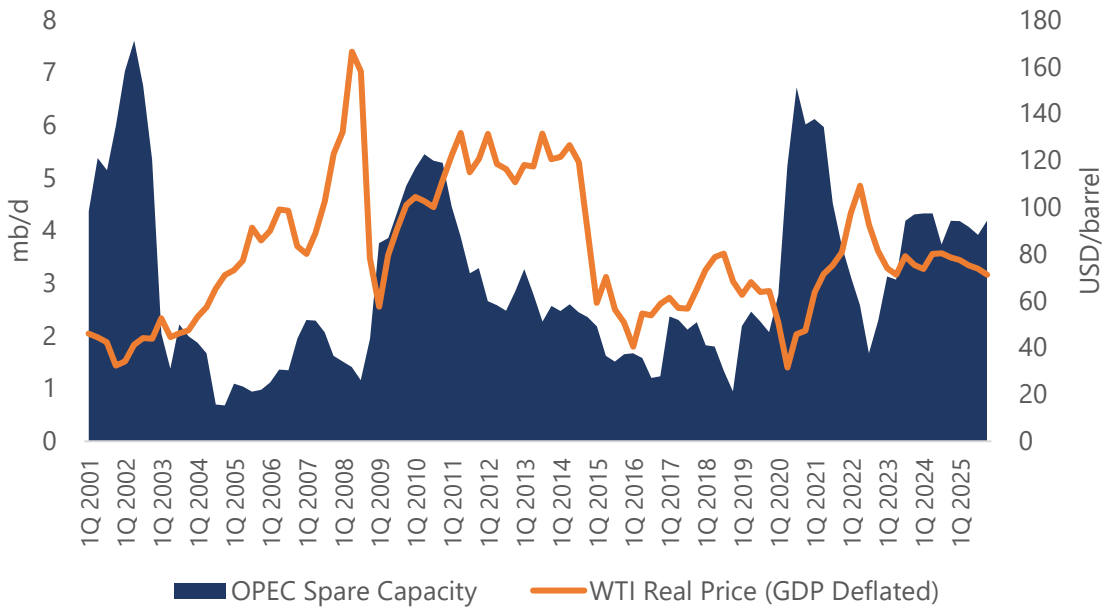


Source: IEF, S&P Global Commodity Insights (2023)

- In 2045, world oil demand is estimated at 92 ± 26.8 mb/d.
- The IEF and S&P projects annual upstream investment to grow to USD 640 billion in 2030 to meet future demand and offset declining production.
- Wood Mackenzie expects most investment growth from existing and new greenfield assets.

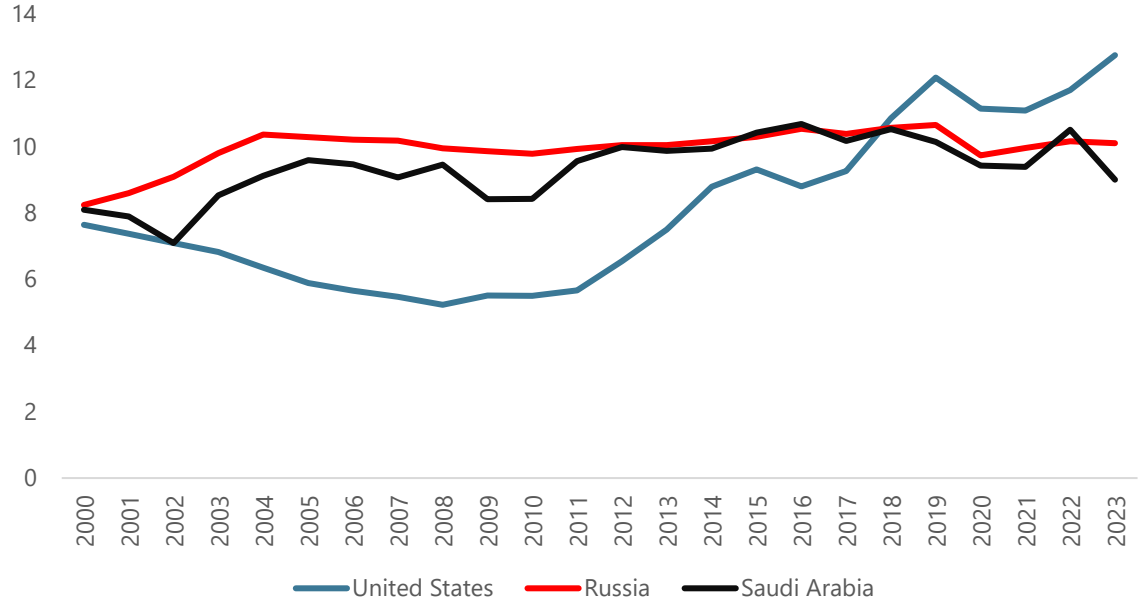
Surplus spare capacity and increased US production help deflate oil prices

OPEC spare production capacity (left) and WTI crude prices (right)



Source: EIA (2024)

Crude oil production in US, Russia and Saudi Arabia (mb/d)



Source: EGEDA (2023), EI (2023), EIA (2024)

- EIA estimates that the OPEC spare capacity will be around 4 mb/d through 2025. This pushes down the oil price to below USD 80/barrel.
- US crude oil output increased to a new high (12.7 mb/d in 2023), amid continued production cuts by OPEC+ members.

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Thank you.

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