

- **CAREC Energy Outlook 2030**: major flagship deliverable published in December 2022
 - The report analyzes options for future energy market development in CAREC.
 - Principal goal of report is to facilitate sustainable investments in energy infrastructure by equipping stakeholders with insights of regional energy market trends.
- Substantial amount of resources and collaborative efforts to realize this project.
- Based on 2020 data, does not capture major changes in global energy markets since 2022.

Rystad Energy will try to close the gap



RystadEnergy

Energy outlook: from Macro drivers to Energy transition

May 2023

CAREC Energy Coordination Committee

Oil and Gas Markets Research



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Agenda

Introduction and context

Oil market outlook

- Balances and trends from 2022
- Fundamentals and macro drivers
- Oil in the energy transition

Gas market outlook

- 2022 review and short-term outlook
- Medium term gas balances and pricing views
- Gas in the energy transition

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Oil market outlook

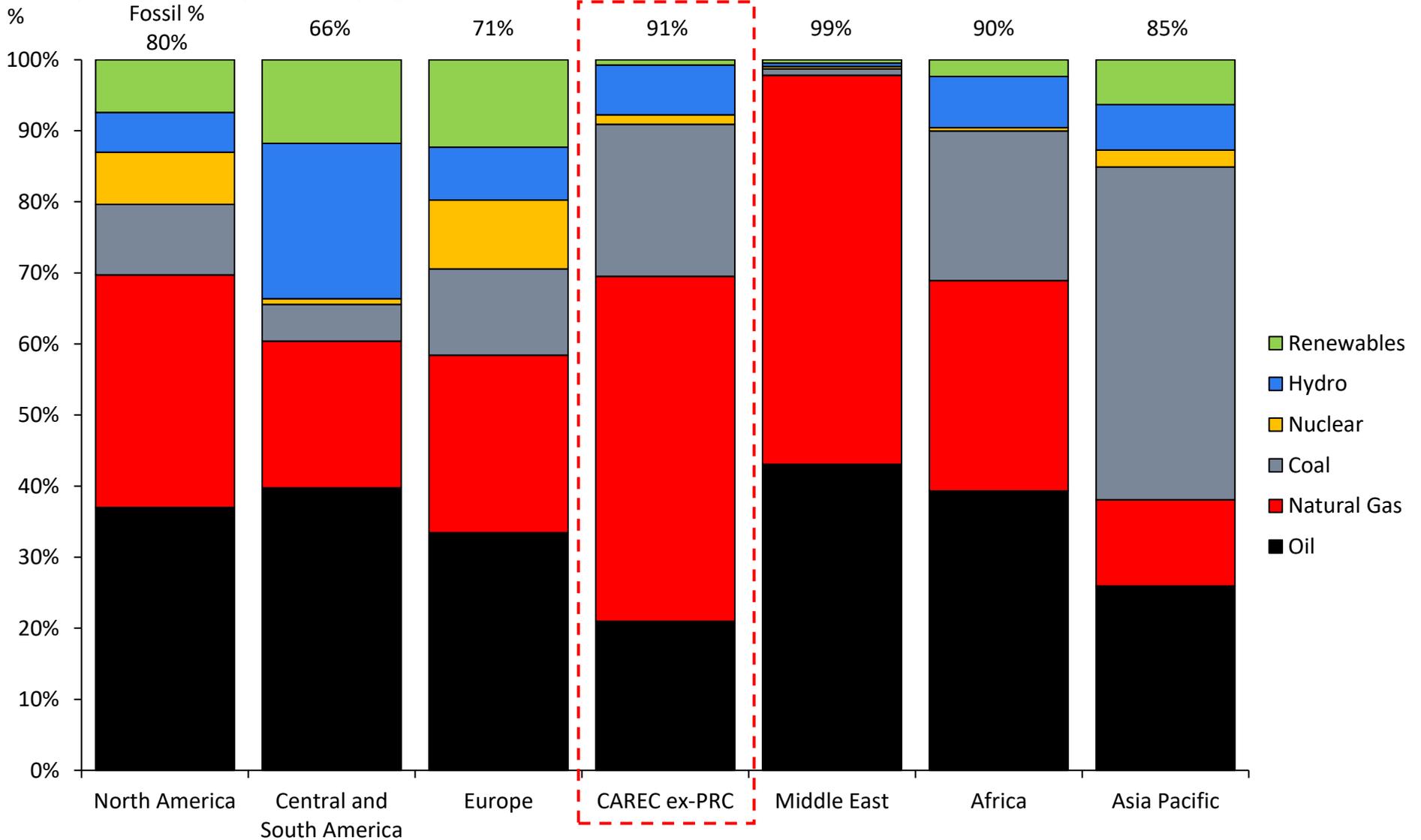
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More than 80% of global primary energy consumption is still from fossil fuels

Primary energy consumption mix by region, 2021



Source: BP Statistical Review of World Energy 2022, IEA, ADB, Rystad Energy research and analysis

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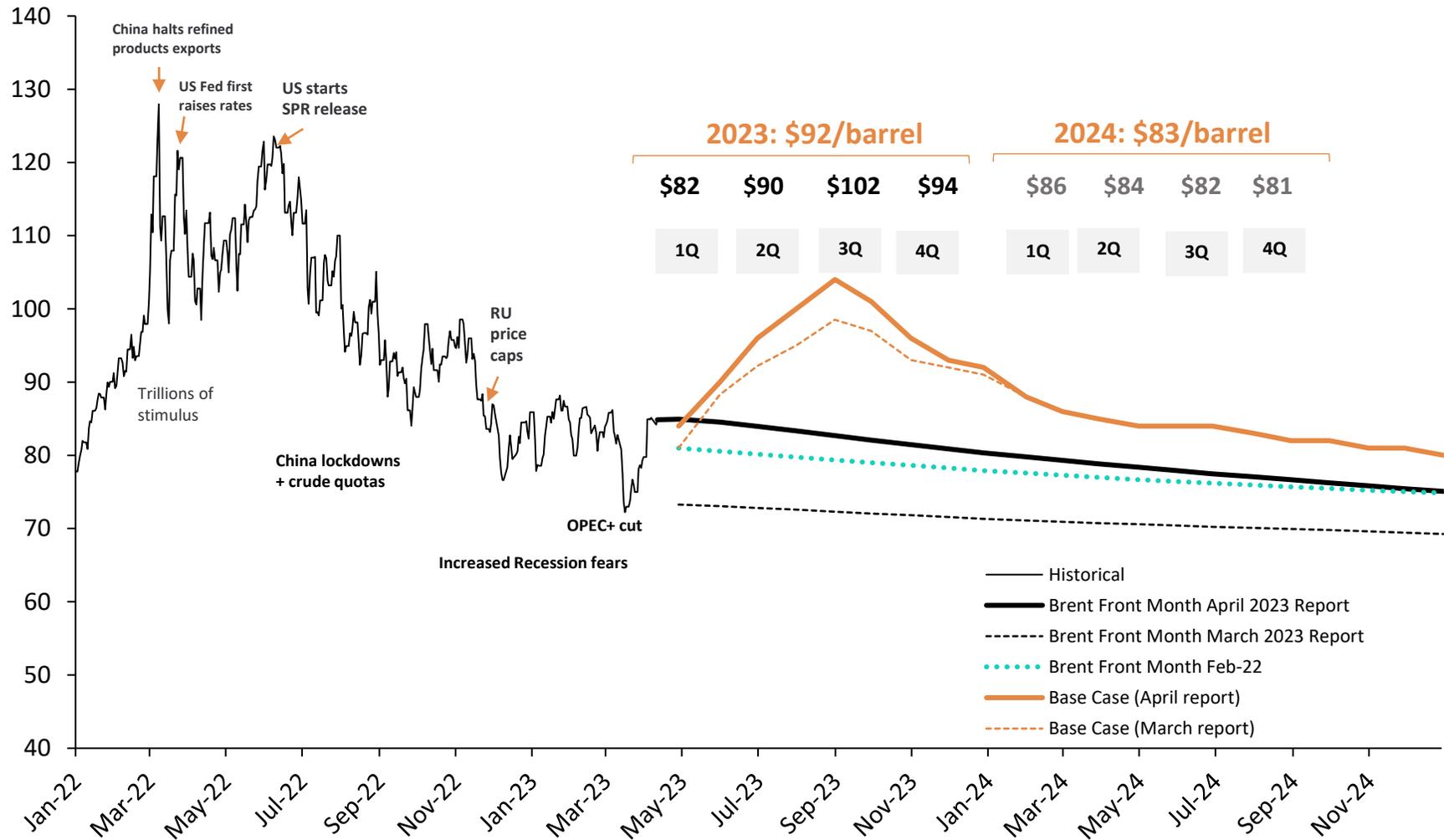
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Oil price on the balance between OPEC+ supply cuts and economic uncertainty

Oil price, daily

US dollars per barrel

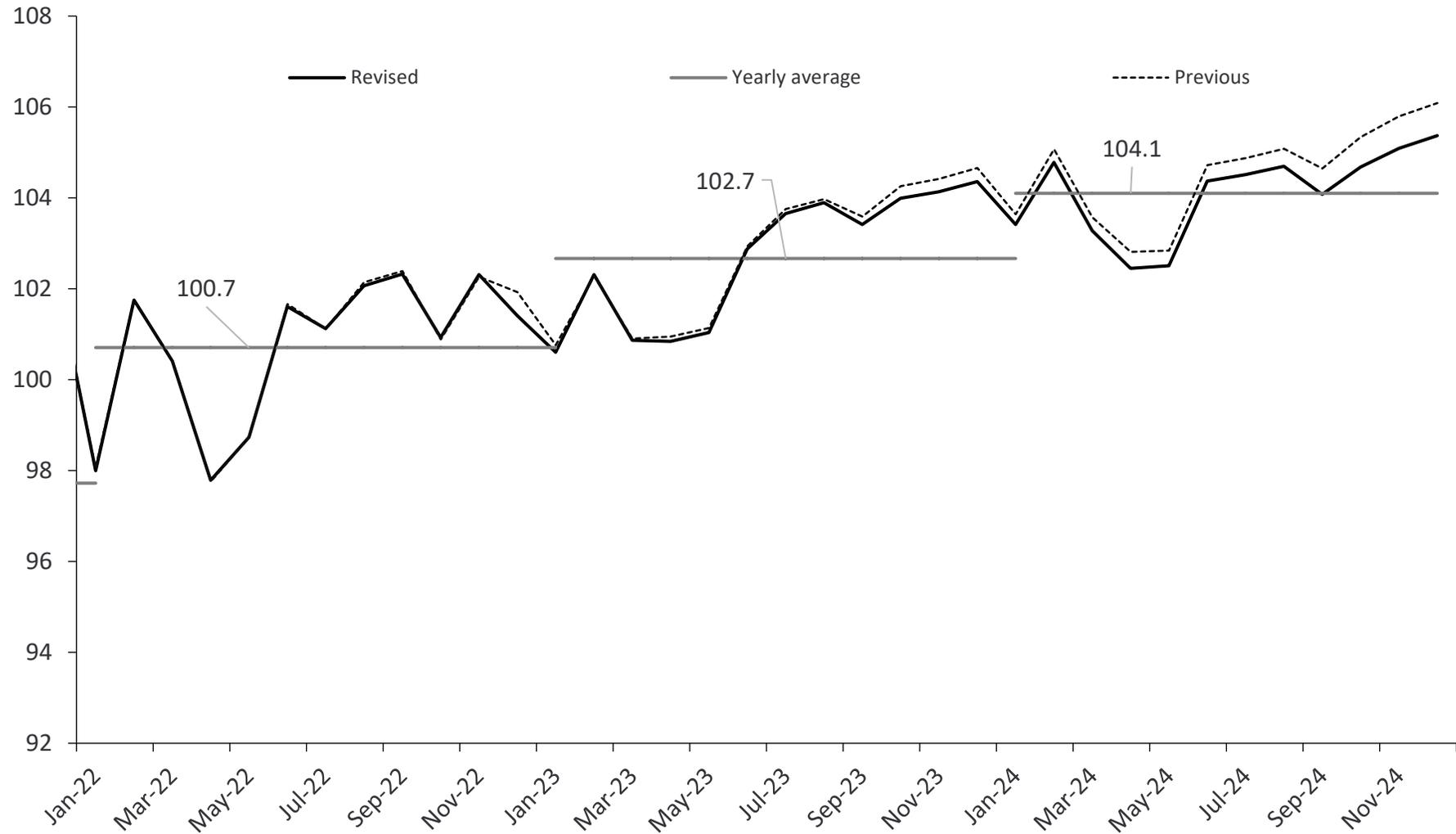


Sources: Rystad Energy research and analysis; Rystad Energy Dynamic Oil Price Model; Bloomberg

2023 demand growth still robust, downside risks from financial turmoil and aviation

Global monthly oil products demand by scenario

Million barrels per day

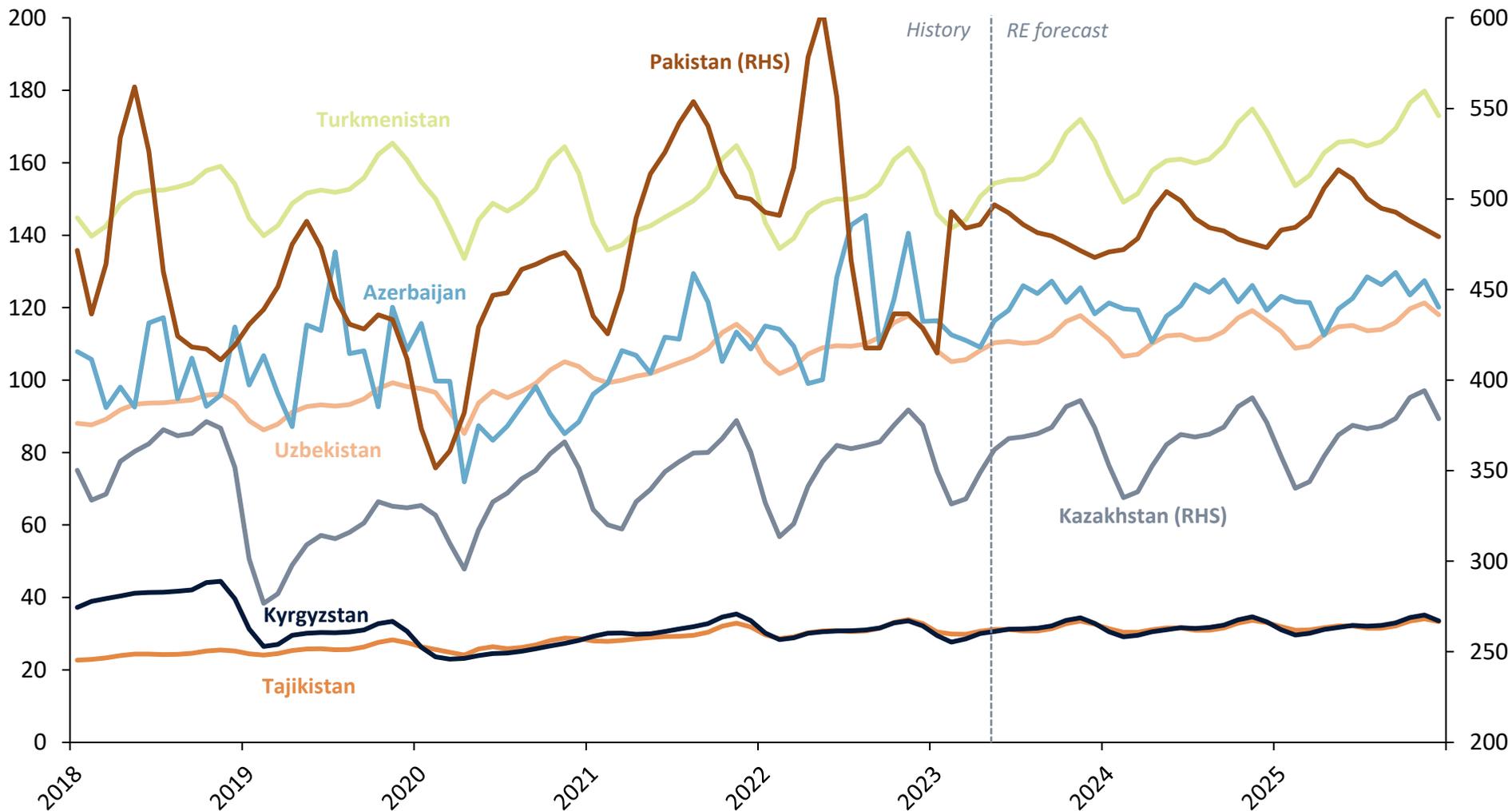


Sources: Rystad Energy research and analysis; Rystad Energy Oil Trading Analysis Solution; Rystad Energy OTAS DemandCube

Petroleum products are still playing an important role in the CAREC countries

Monthly oil products demand in Central Asia by country

Thousand barrels per day



Sources: Rystad Energy research and analysis; Rystad Energy Oil Trading Analysis Solution; Rystad Energy OTAS DemandCube

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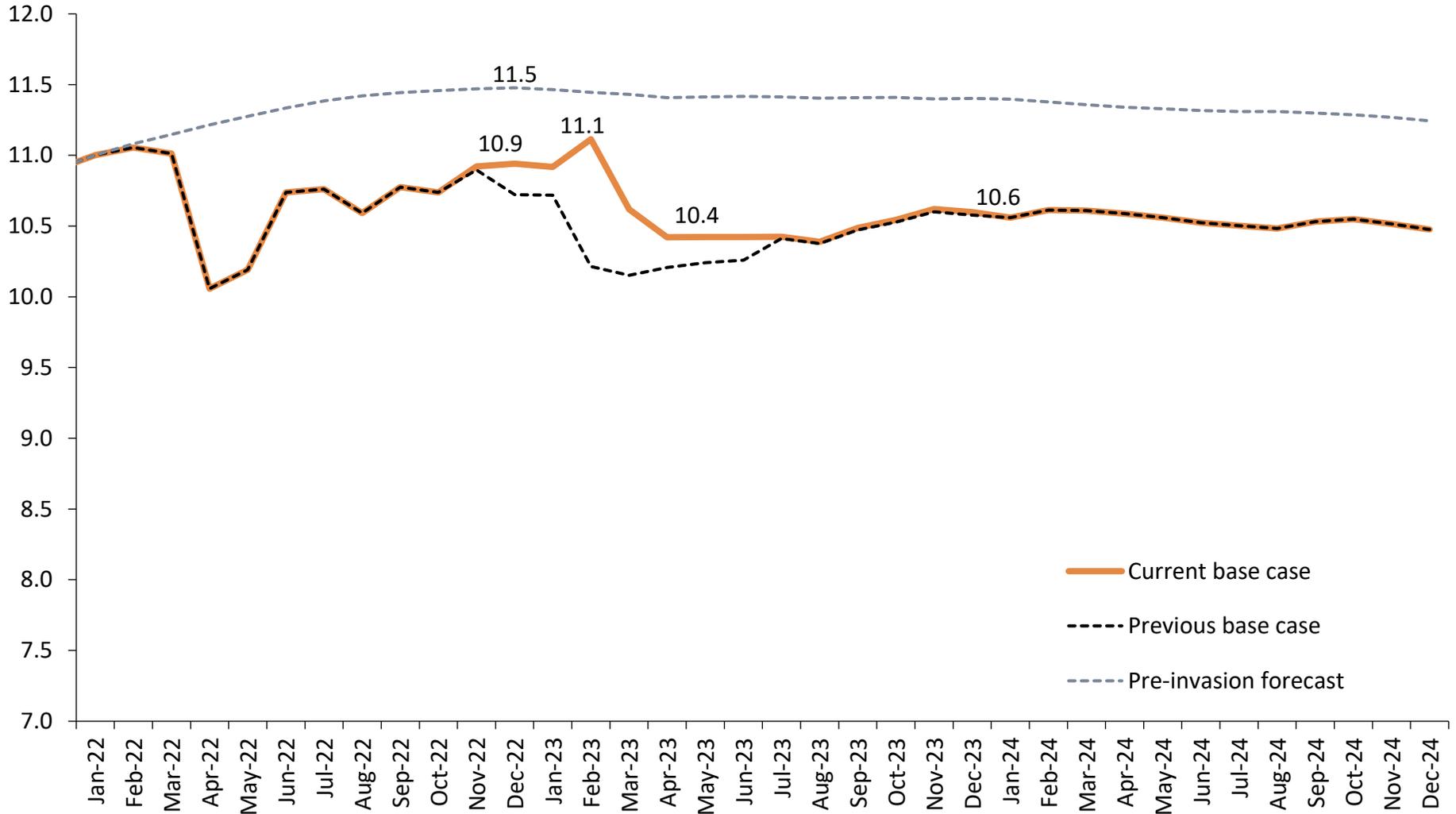
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Russian oil production stays strong due to successful rerouting of oil products exports

Russia crude and lease condensate production: Base Case, previous revisions

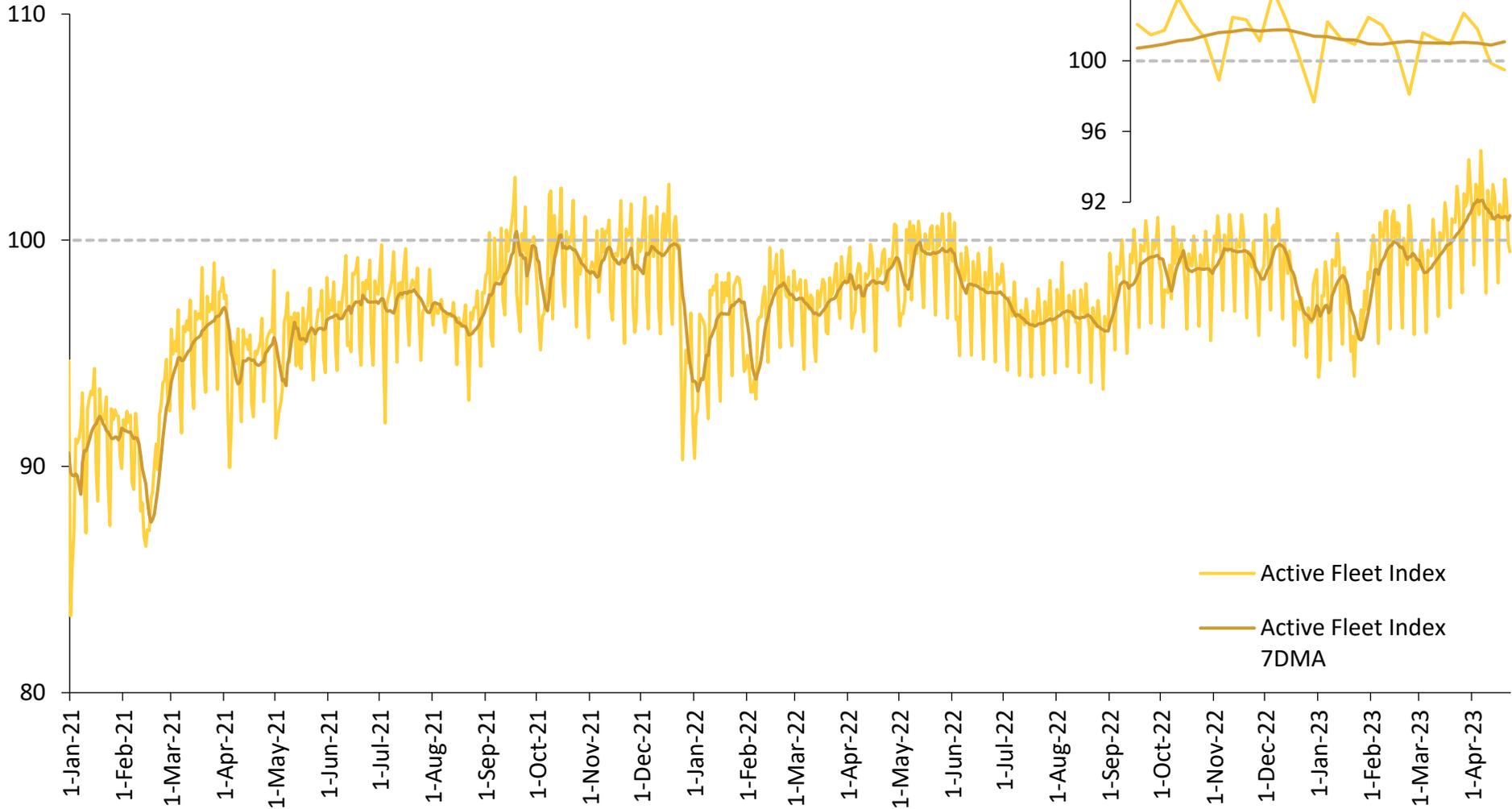
Million barrels per day (bpd)



Sources: Rystad Energy research and analysis; Rystad Energy Dynamic Oil Price Model; Rystad Energy OTAS SupplyCube

Global road traffic activity indicators

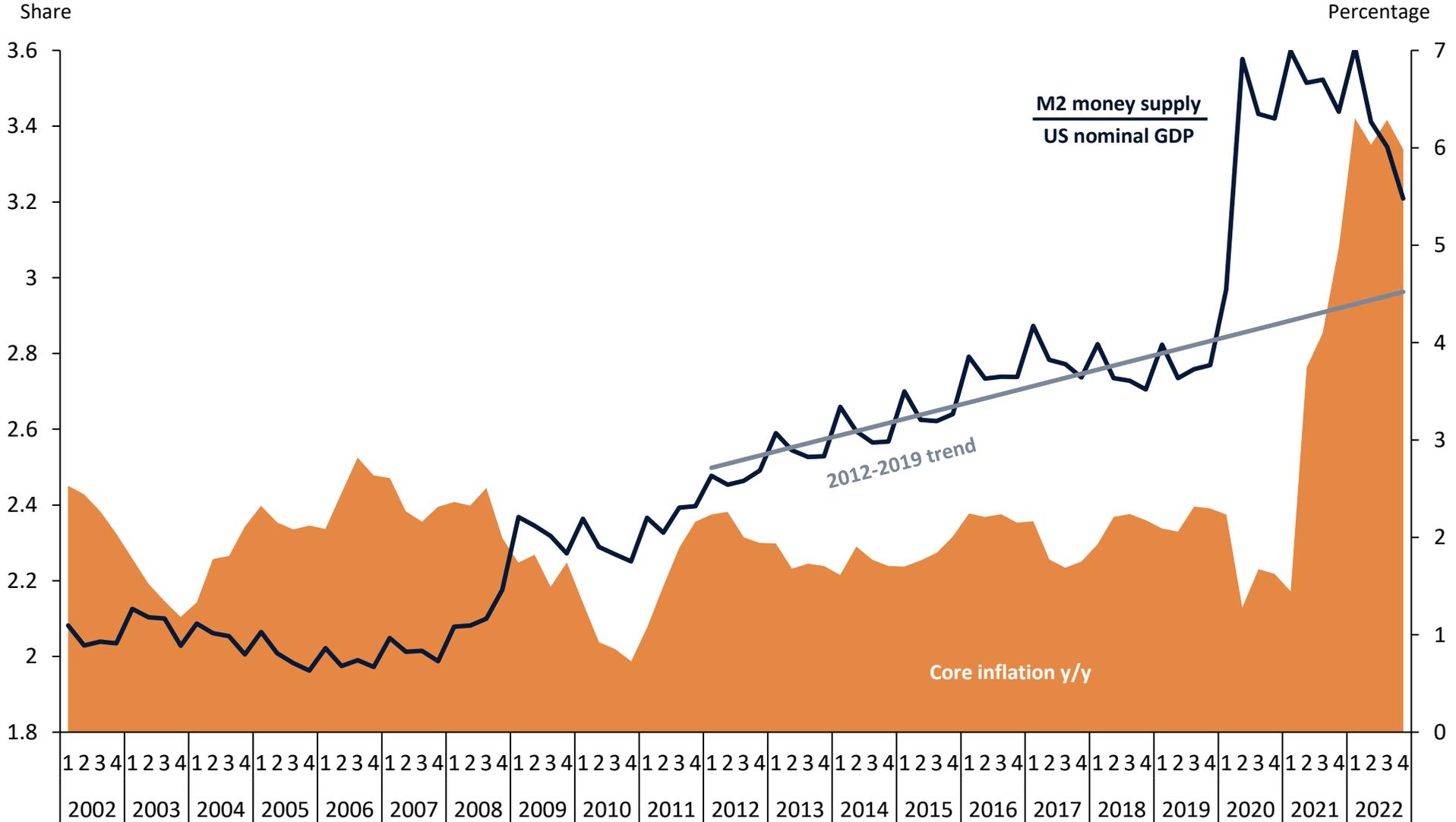
Global daily road traffic index (active fleet this year/active fleet in 2019)
Percentage (%)



*Normal level is the average level observed during 2019, indexed to 100.
Source: Rystad Energy RealtimeCube

Inflation will remain a problem in foreseeable future due to excess money supply

US monetization (money supply divided by nominal GDP) versus core inflation, quarterly

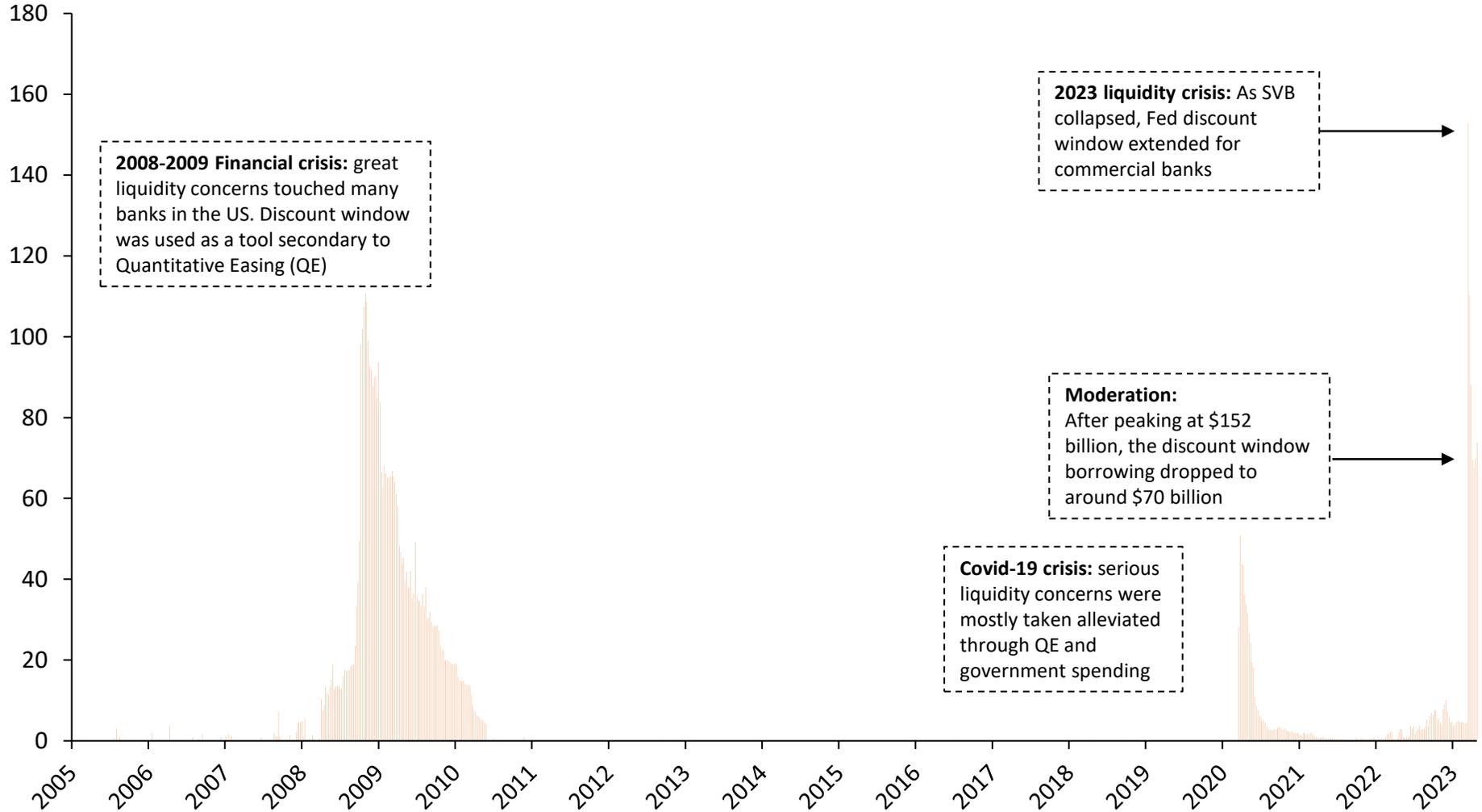


Source: Rystad Energy research and analysis, St. Louis FRED

US Fed helps banks meet their liquidity needs and avert a crisis... for now

US Federal Reserve Discount window borrowing volumes, weekly

Share



Source: Rystad Energy research and analysis, US Bureau of Economic Analysis; US Federal Reserve System.

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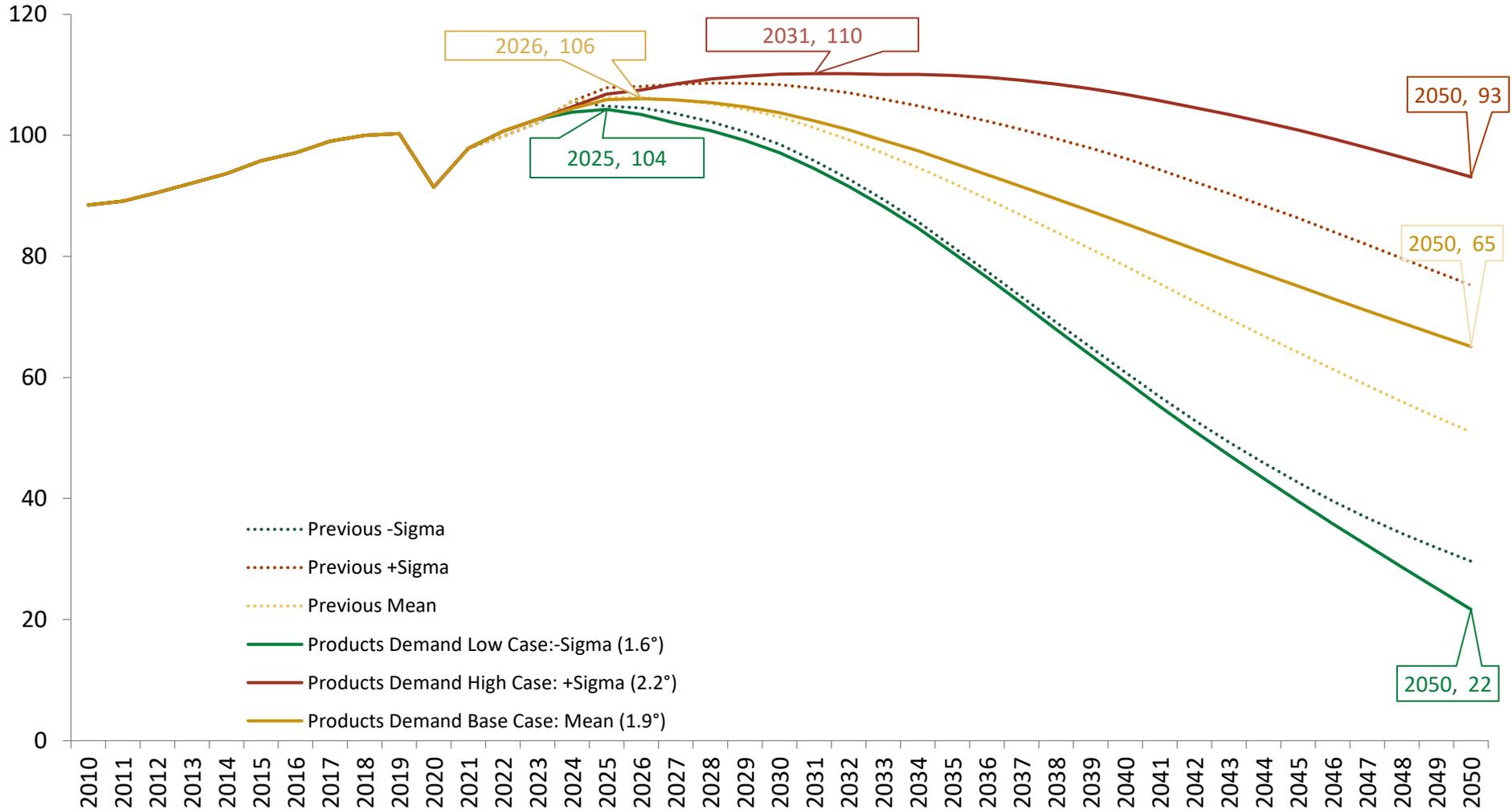
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We revise our long-term scenarios to capture increased transition uncertainty

Long-term oil demand scenarios

Million barrels per day



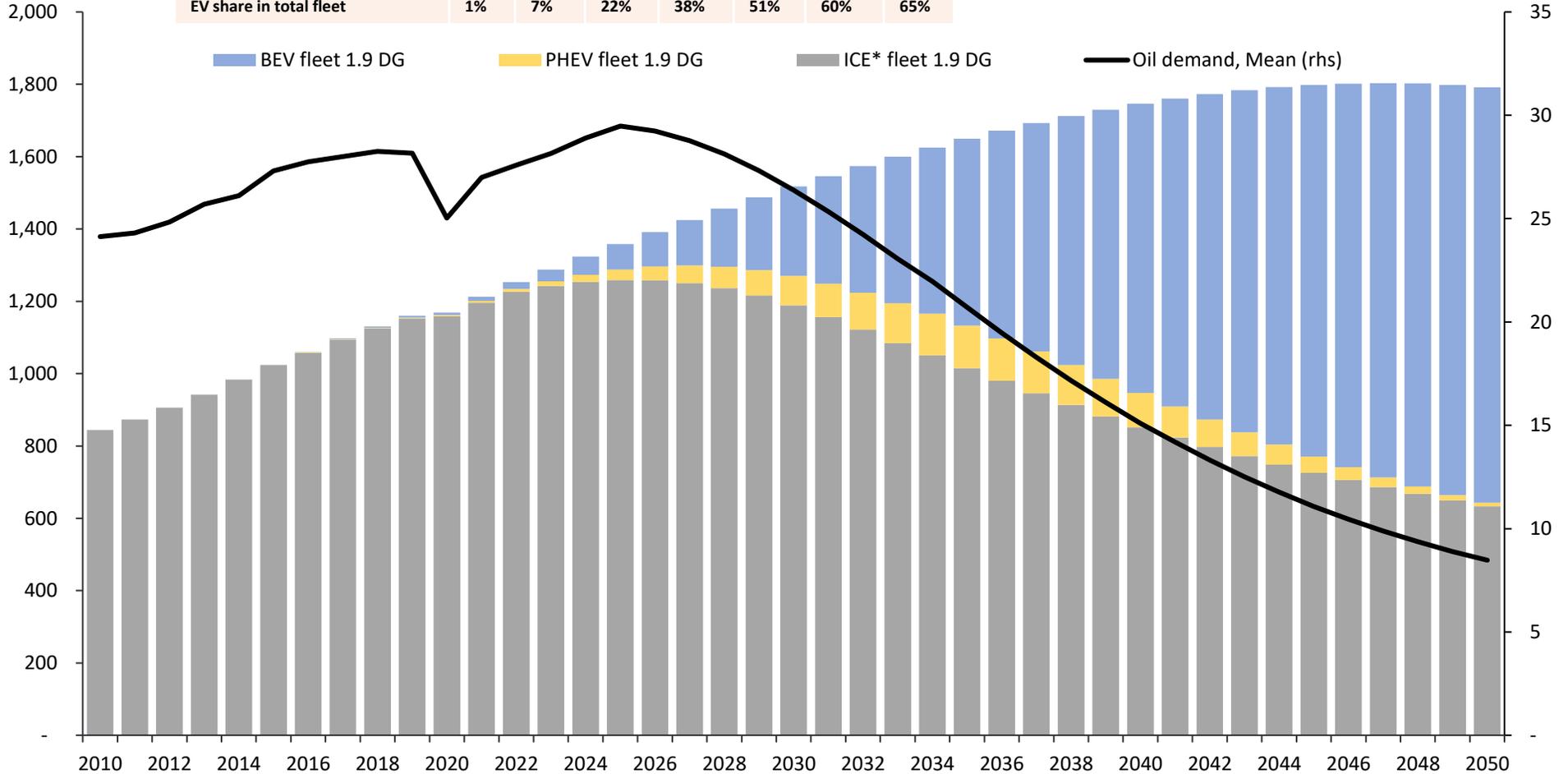
Source: Rystad Energy Oil Market Transition Solution, Rystad Energy OilMarketCube

Vehicles electrification is unfolding quickly and will disrupt gasoline demand in 1.9°C

Global passenger vehicle fleet
Million vehicles

Global passenger vehicle oil demand
Million barrels per day

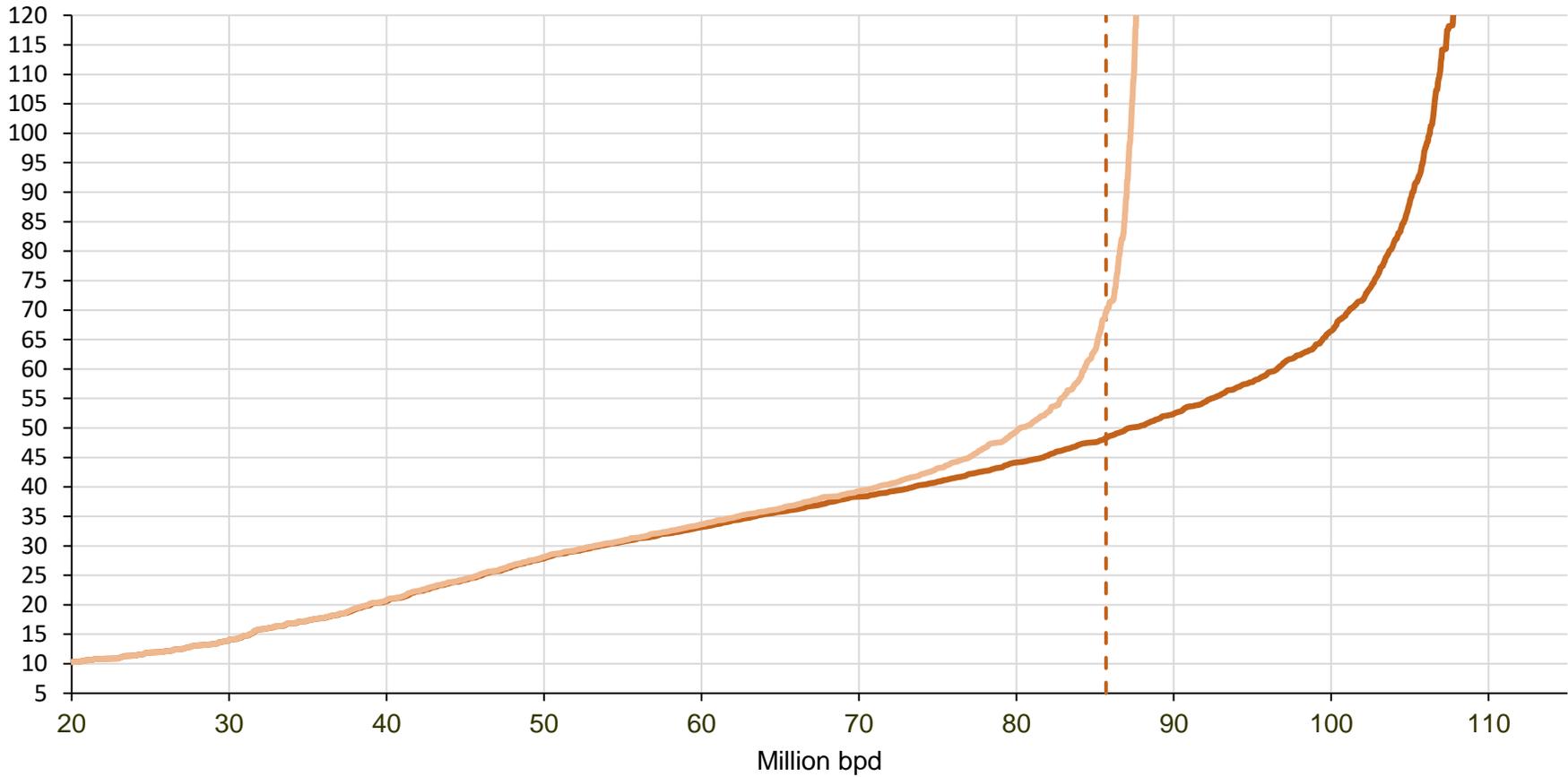
	2020	2025	2030	2035	2040	2045	2050
EV share in total sales	5%	30%	57%	74%	84%	87%	90%
EV share in total fleet	1%	7%	22%	38%	51%	60%	65%



Source: Rystad Energy Oil Market Transition Solution, Rystad Energy OilMarketCube

Equilibrium oil price at \$70 Brent for 2040 if we exclude uncommercial assets

Cost of liquids supply curve for 2040 with and without uncommercial assets
 USD per barrel (real), Brent-equivalent



- - - Demand Mean (1.9 DG) 2040

— Cost of Supply

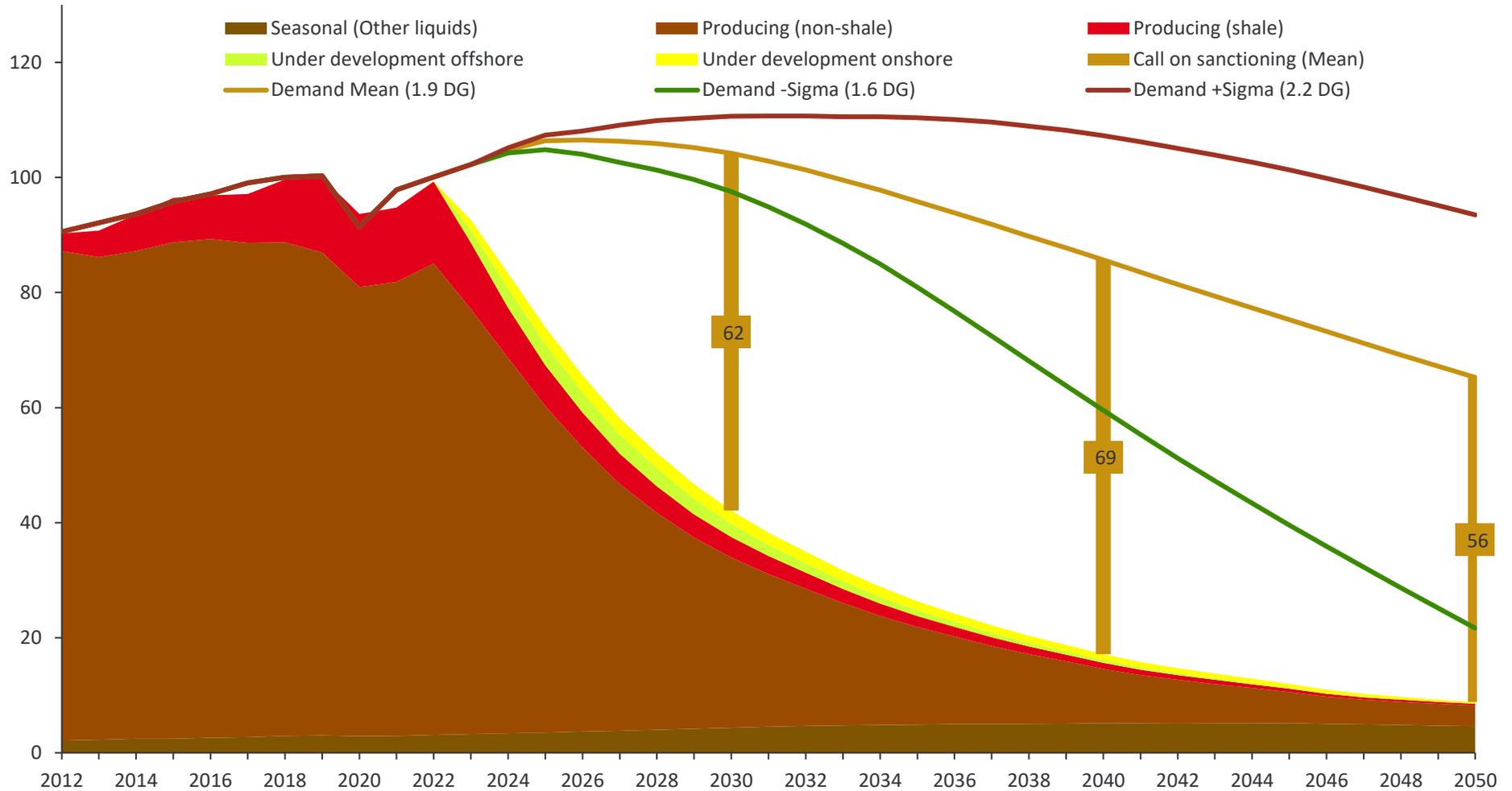
— Cost of Supply (commercial wells only)

* Commercial if NPV > 0 and (PV(CAPEX)+NPV)/PV(CAPEX) > 1.5 for oil fields
 Source: Rystad Energy research and analysis, OilMarketCube, UCube

Mean demand scenario calls for 62 million bpd from new wells by 2030

Liquids supply from producing wells and developments* vs total liquids demand

Million barrels per day



* Includes conventional wells under development. Drilled but not yet completed (under development) Shale / LTO wells are not included in the base production as we classify them as pre-FID.

Source: Rystad Energy research and analysis, OilMarketCube, UCube

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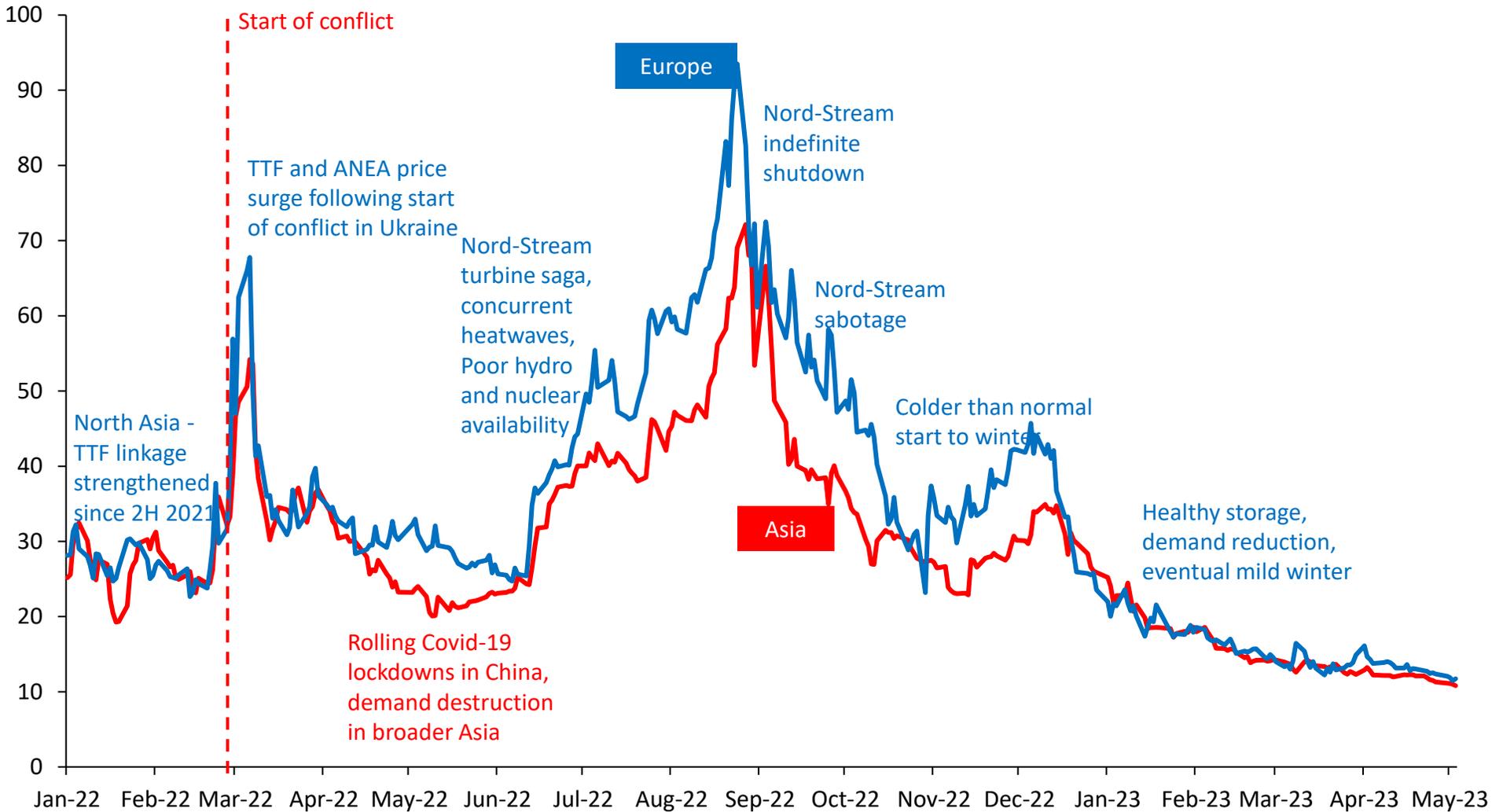
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Natural gas prices have retreated to normal after a turbulent year

International spot gas prices

USD per Mmbtu

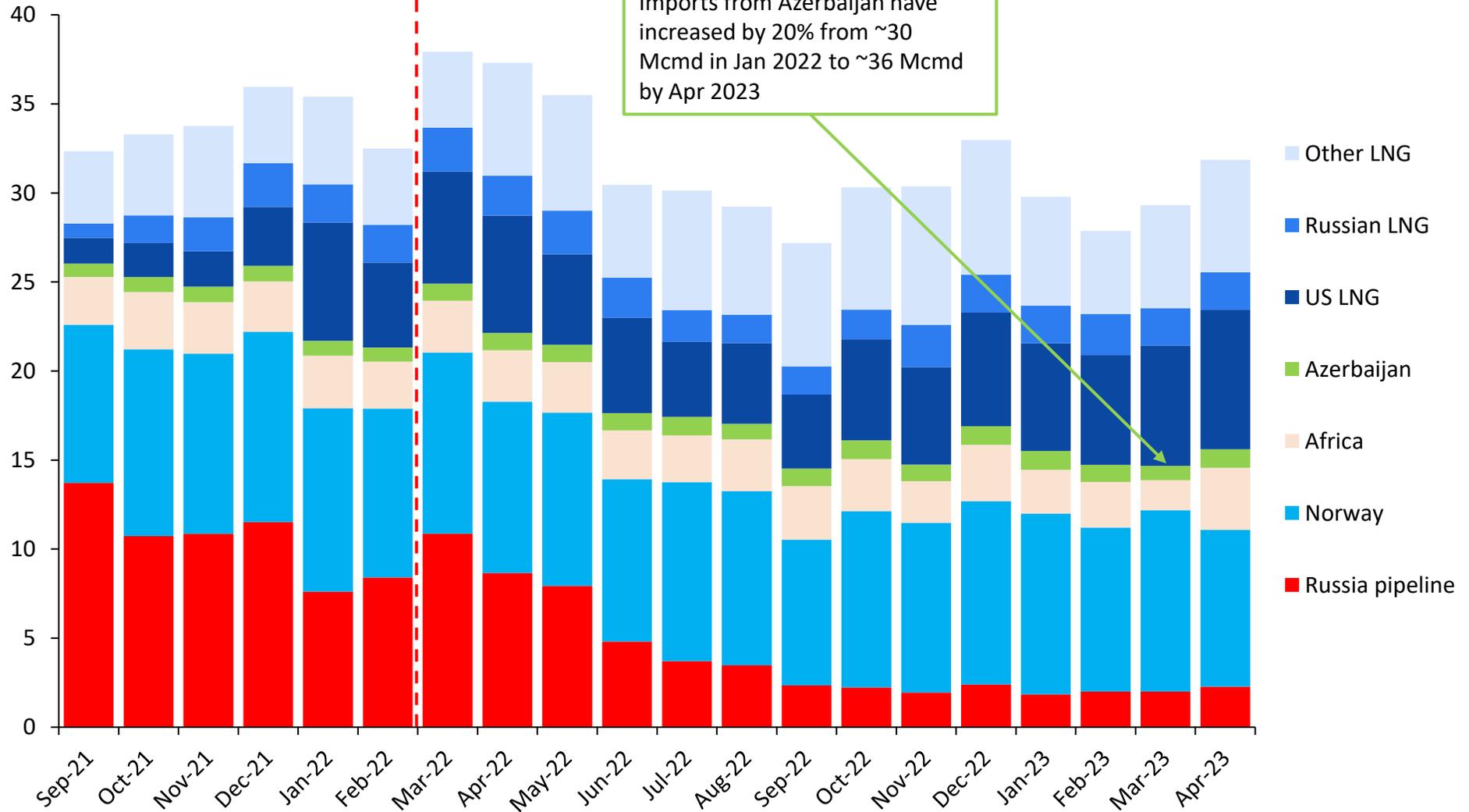


Source: Rystad Energy research and analysis, Argus

As Russian pipeline gas volumes dwindled, Europe bought LNG at very high prices

Europe gas imports by source*

Billion cubic meters (Bcm)



Source: Rystad Energy European Gas Flows Monitor, *does not include flows to Turkey

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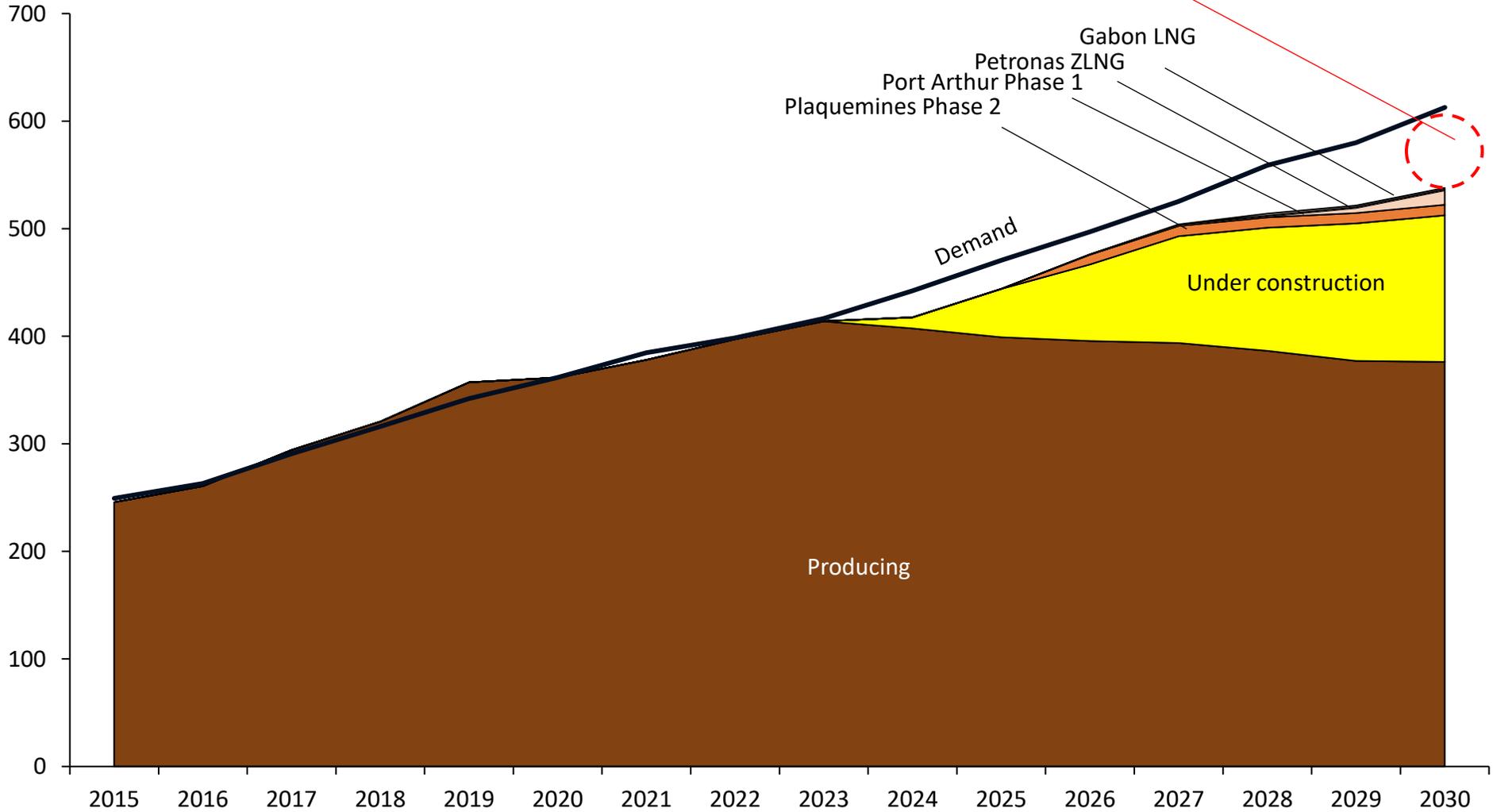
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71 Mt more to balance the LNG market in 2030

Global LNG supply-demand balance
Million tonnes



2030 supply gap: 71Mt

Gabon LNG
Petronas ZLNG
Port Arthur Phase 1
Plaquemines Phase 2

Demand

Under construction

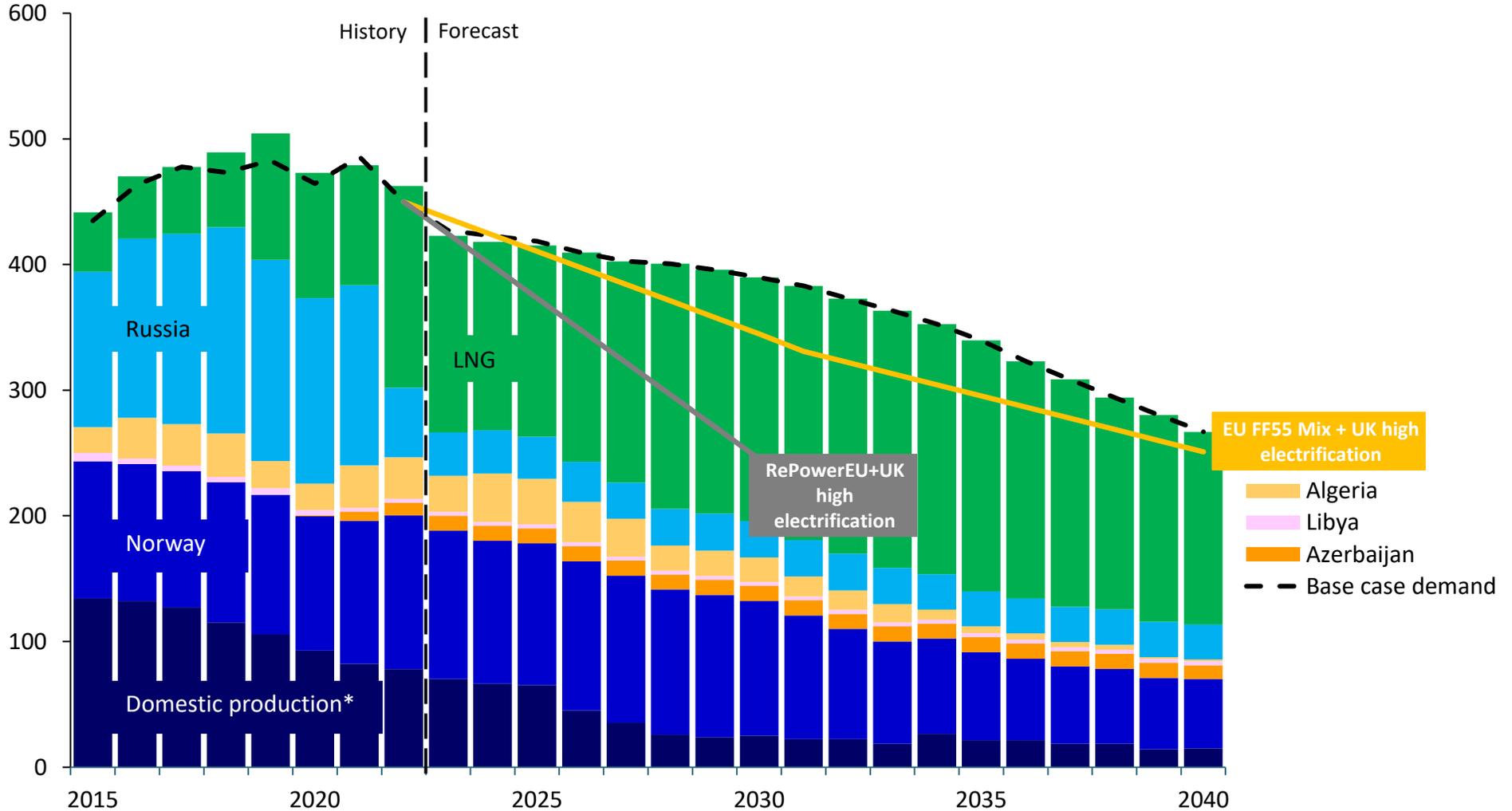
Producing

Source: Rystad Energy GasMarketCube

Europe will structurally turn to more LNG imports due to the decline in Russian gas

EU27+UK gas supply mix by source and demand scenarios, 1.9C scenario

Billion cubic meters

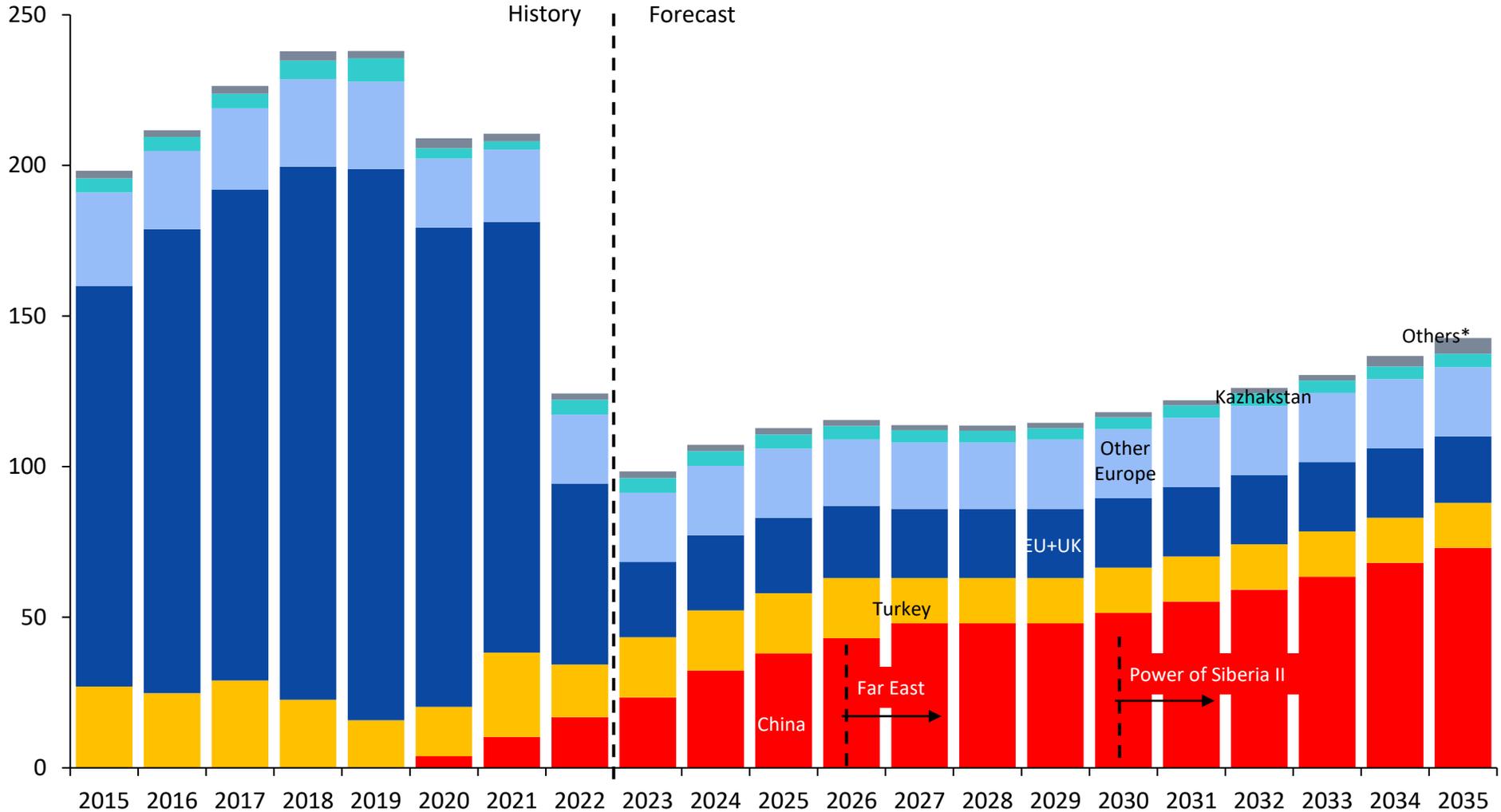


*Domestic production: Produced gas which is not consumed by the production country (Intra-Europe trade); EU and UK demand forecasts only have 2030 and 2050 data points hence a simple linear extrapolation is used between each data point

Source: Rystad Energy research and analysis, Rystad Energy GasMarketCube, European Commission, UK BEIS

Russia's export strategy has already turned East

Russian pipeline gas exports by destination
Billion cubic metres

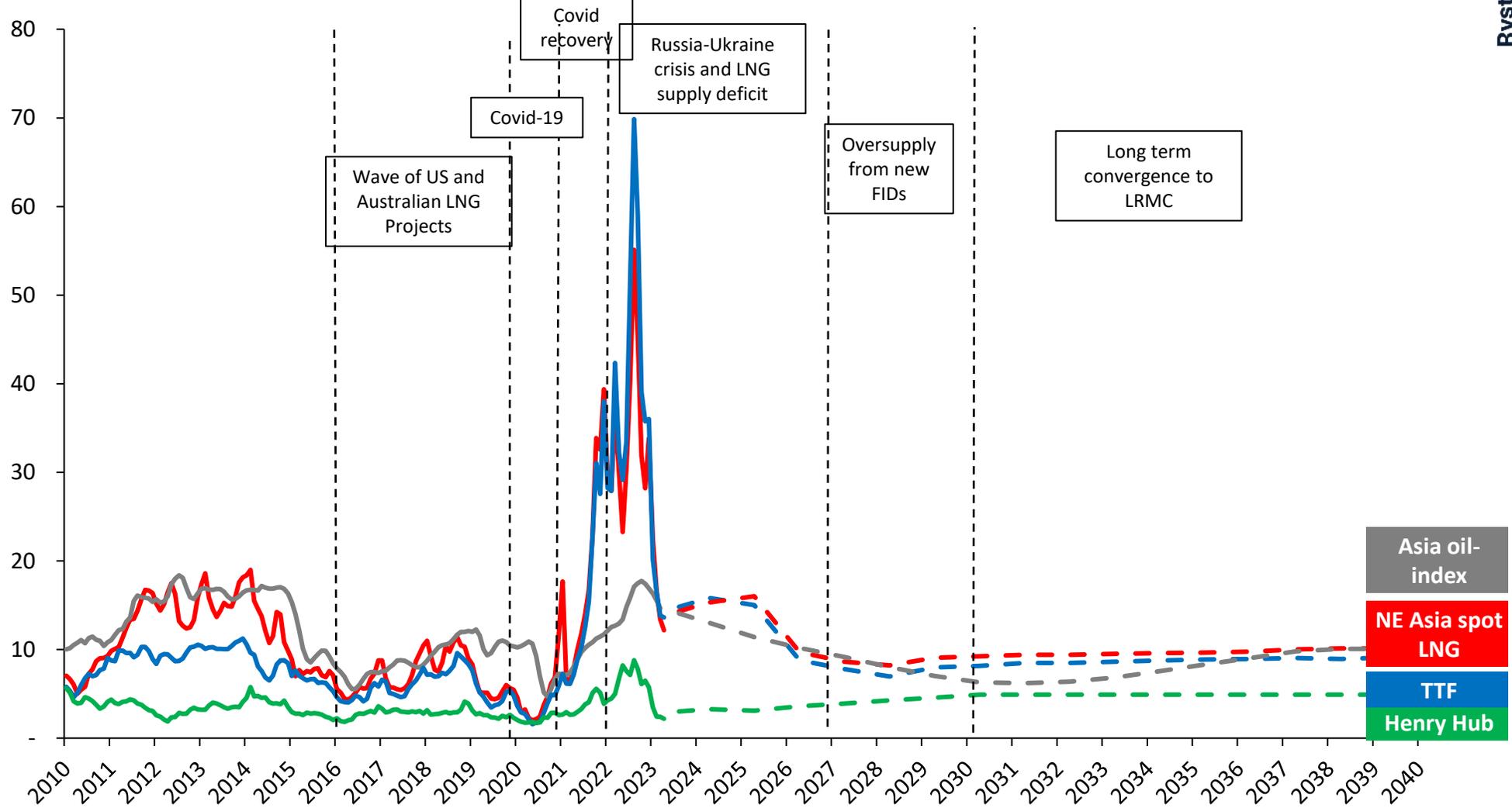


*Others includes Kyrgyzstan, Uzbekistan, Azerbaijan, Georgia, and Armenia
Source: Rystad Energy GasMarketCube

Our base case view sees long-term gas prices at between \$9-\$10/Mmbtu

International natural gas prices, base case

USD per million British thermal units (MMBtu), history in nominal terms, forecast in real 2023 terms



Source: Rystad Energy GasMarketCube

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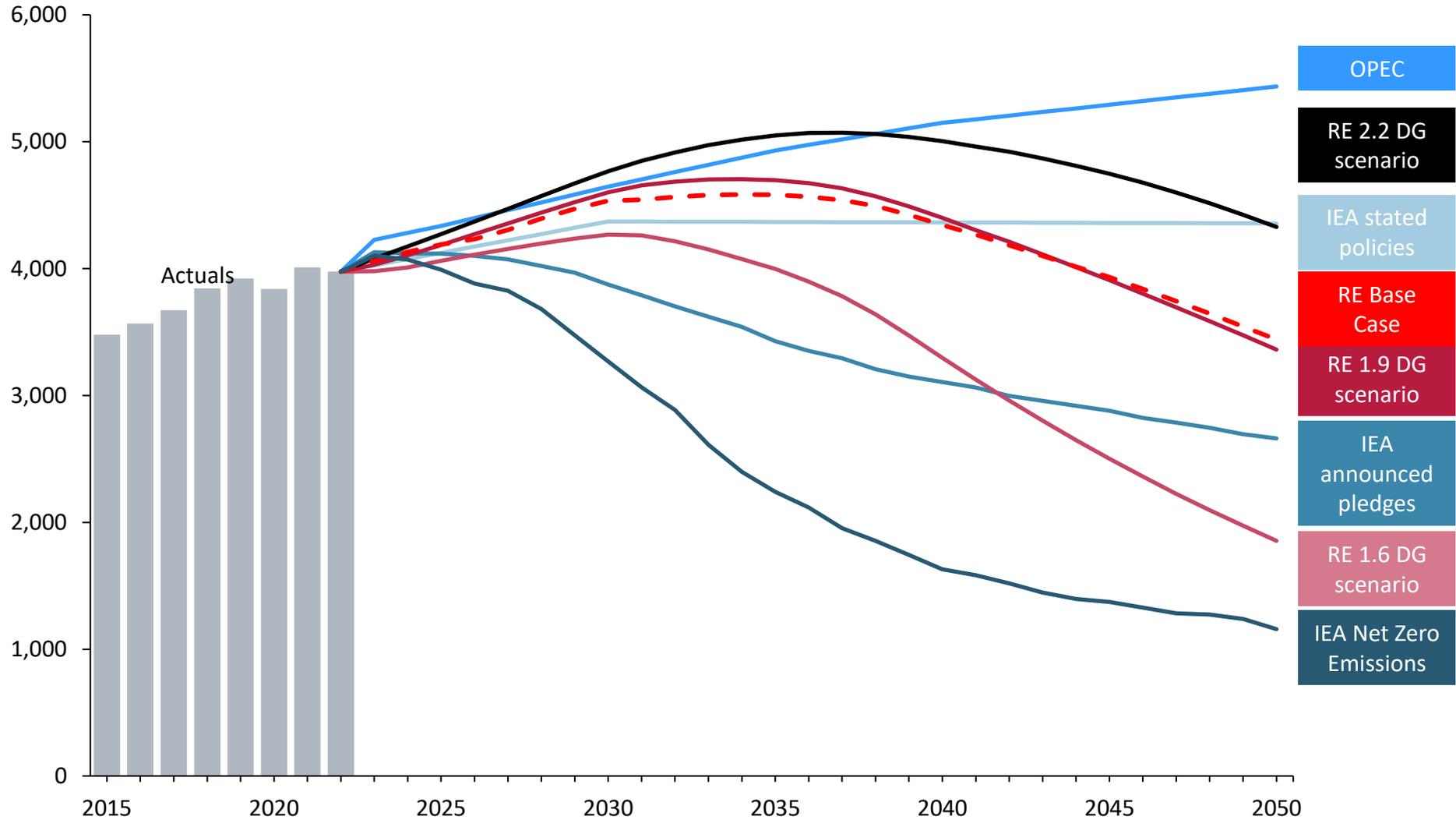
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Wide range of outcomes on global gas demand

Global natural gas demand by scenario

Billion cubic meters

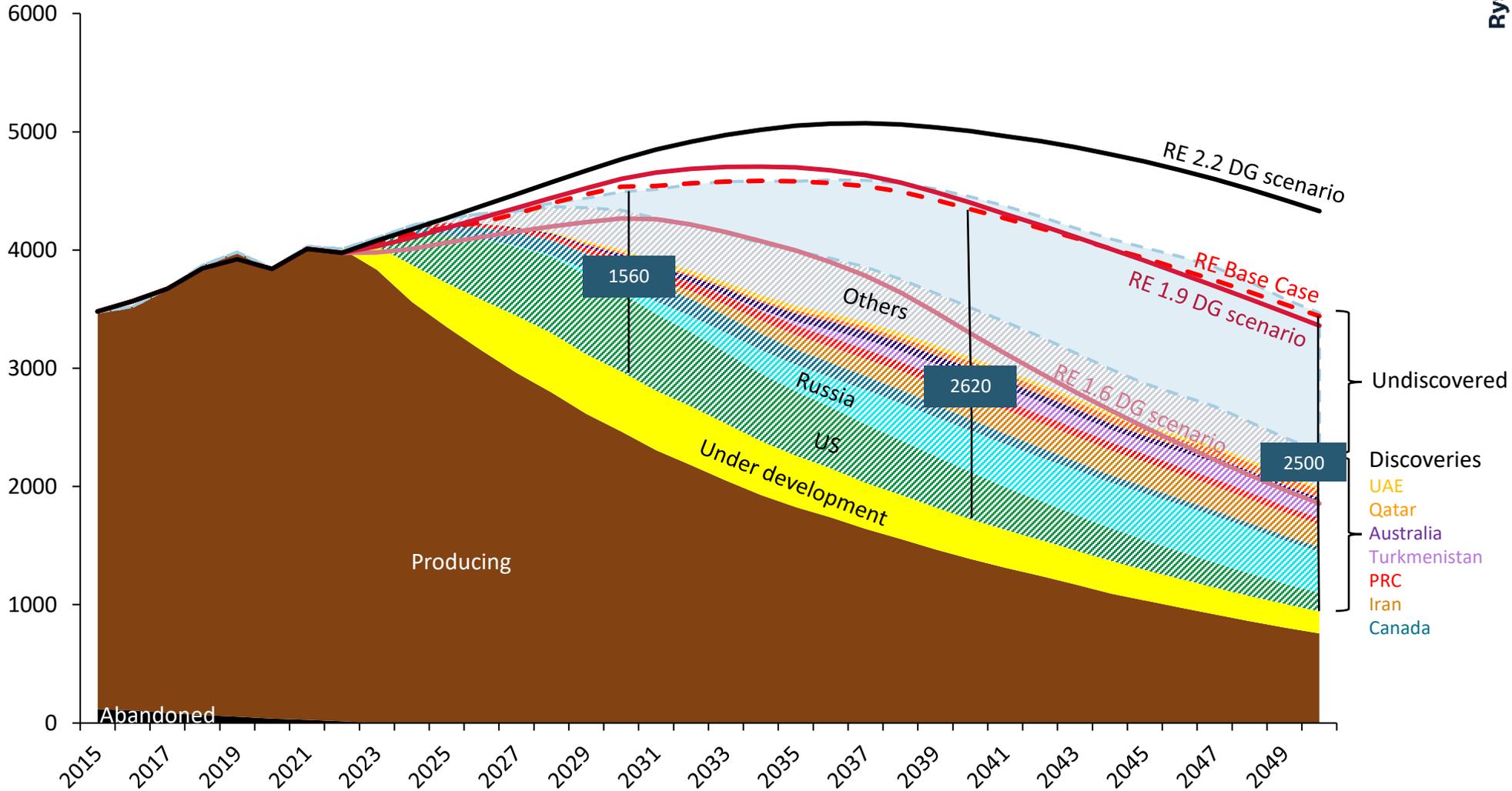


Source: Rystad Energy GasMarketCube, Rystad Energy research and analysis, IEA, OPEC

Declining supply may push demand away from gas towards renewables

Natural gas supply by life cycle vs RE demand scenarios

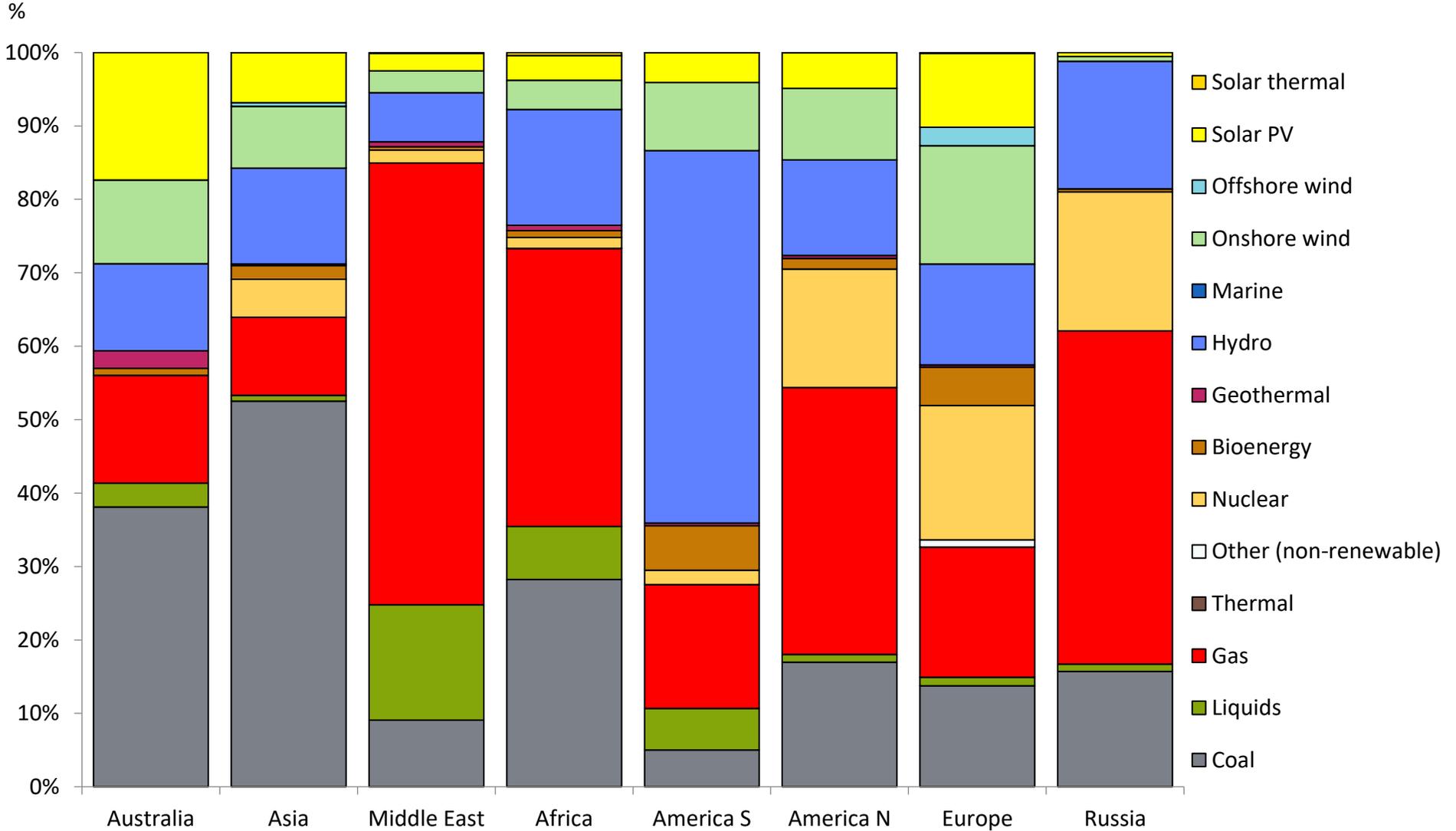
Billion cubic meters



Source: Rystad Energy GasMarketCube, Rystad Energy research and analysis

Power sector to determine the role of gas in the energy transition

Power generation mix by continent, 2022

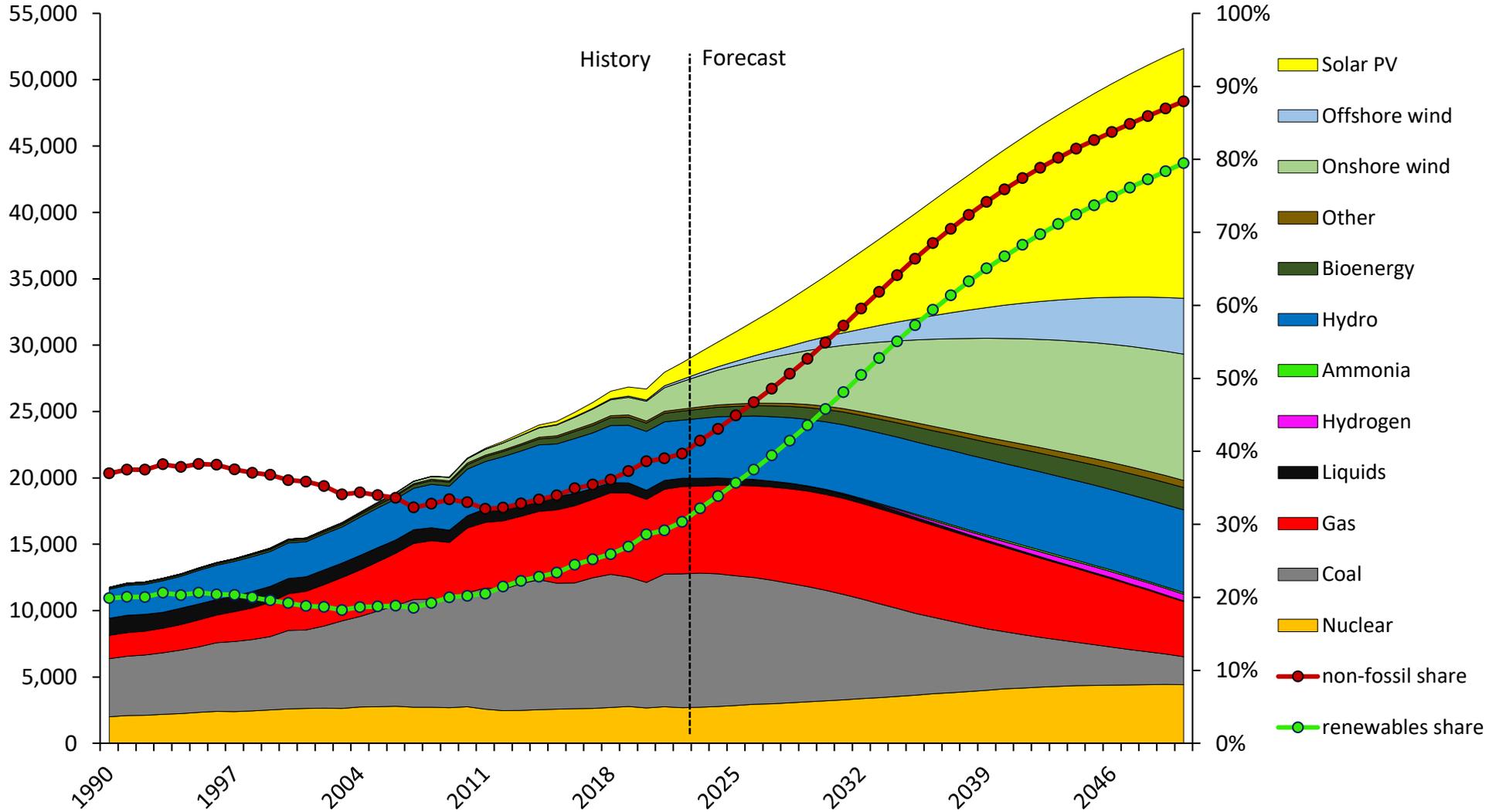


Source: Rystad Energy PowerCube Beta

Renewables will lead growth in power generation

Global power generation (left) and share of non-fossil and renewables (right), RE base scenario

TWh per year, Percent (%)



*Other induces Marine, Geothermal, Solar thermal and non-renewable waste
Source: Rystad Energy power solution

Key takeaways

- **Understanding the Volatility:** The recent fluctuations in oil and gas prices highlight the inherent volatility of these energy sources. It underlines the necessity to strategize and diversify energy sources to ensure energy security. With renewable energy, the energy system is de-linked from commodities and their inherent volatility.
- **The Energy Transition:** As we transition towards renewable energy, the volatility of oil and gas prices will become less impactful. This will also support decarbonization of the direct use sectors through electrification.
- **Renewable Energy Potential:** The future lies in maximizing the renewable energy potential. Investments in renewable technologies and infrastructure are not just environmentally sound choices, but also economically strategic ones. They promise energy stability, affordability, and independence in the long run.



RystadEnergy

Navigating the future of **energy**

Rystad Energy is an independent energy consulting services and business intelligence data firm offering global databases, strategic advisory and research products for energy companies and suppliers, investors, investment banks, organizations, and governments.

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