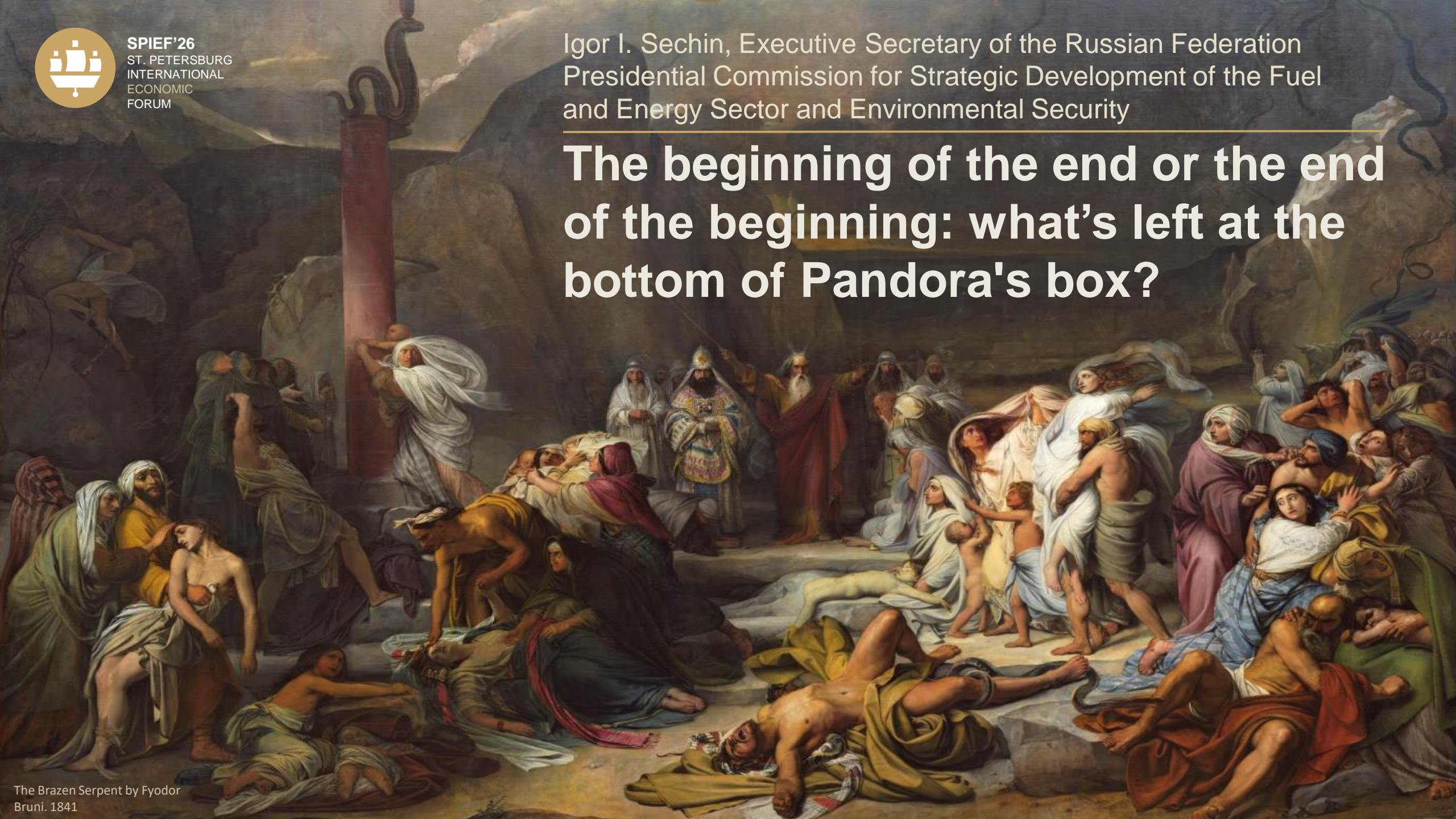




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Igor I. Sechin, Executive Secretary of the Russian Federation
Presidential Commission for Strategic Development of the Fuel
and Energy Sector and Environmental Security

The beginning of the end or the end of the beginning: what's left at the bottom of Pandora's box?



The Brazen Serpent by Fyodor
Bruni. 1841

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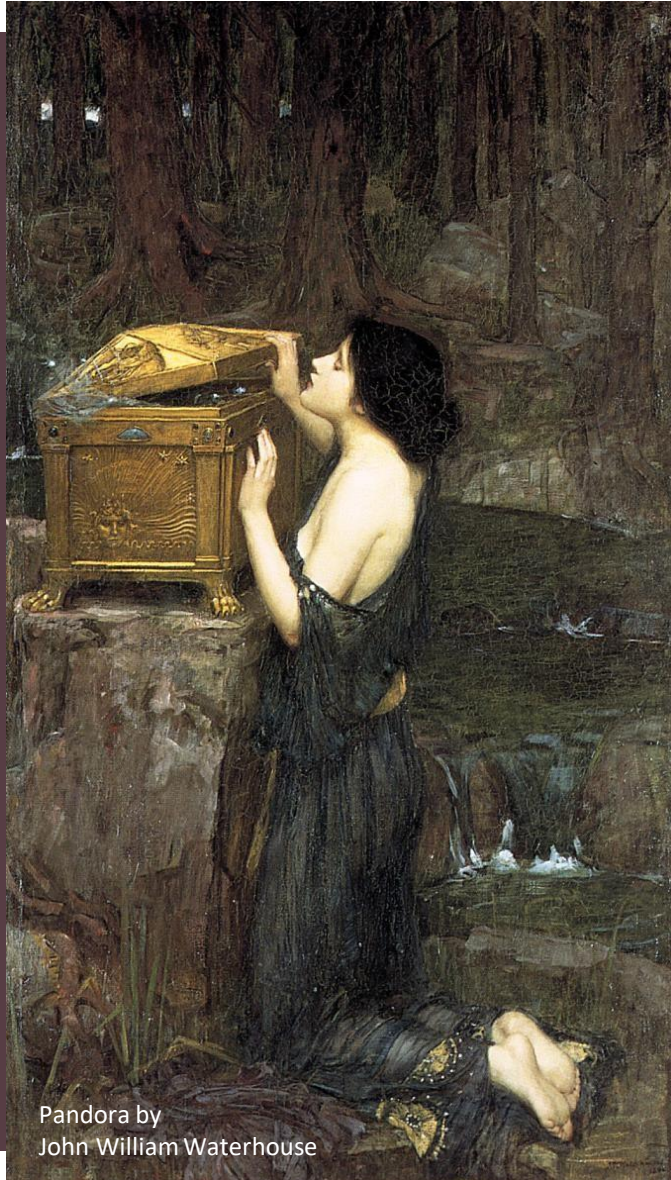
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Pandora's box is open and won't close anytime soon



Pandora by
John William Waterhouse

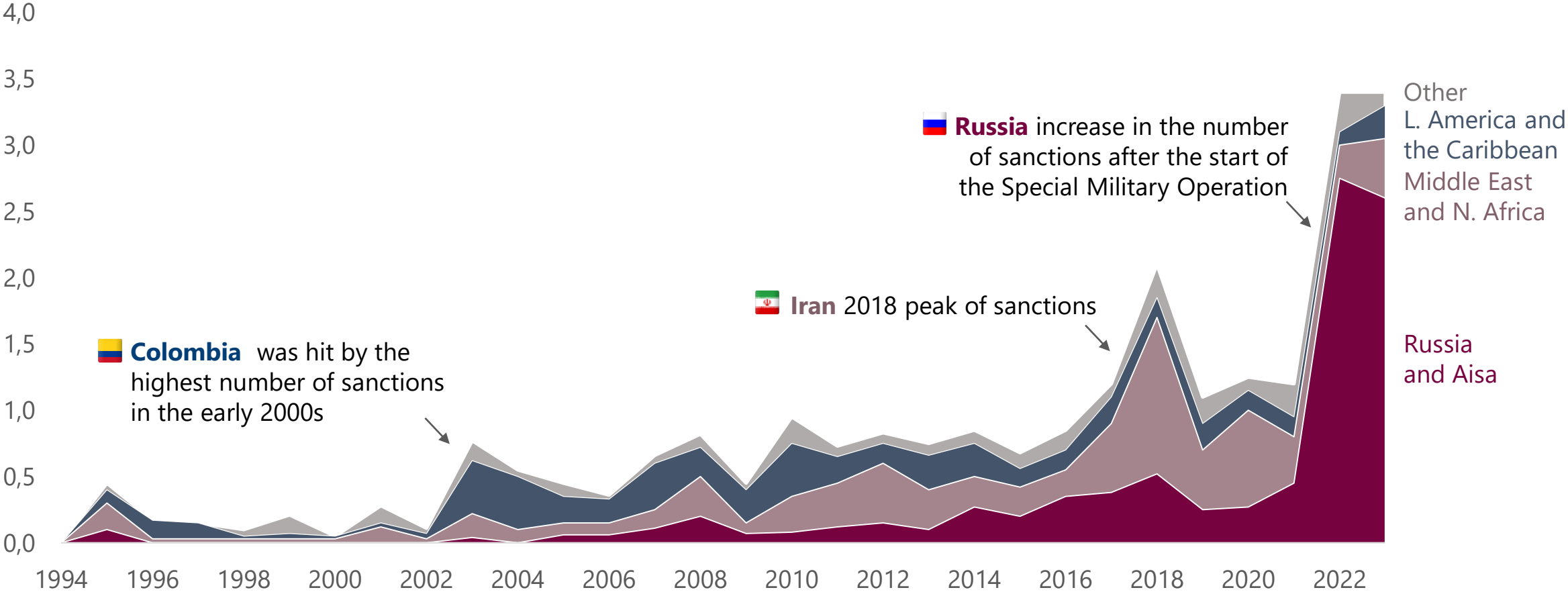
For ere this the tribes of men lived on earth remote and free from ills and hard toil and heavy sickness which bring the Fates upon men; for in misery men grow old quickly. But the woman took off the great lid of the jar with her hands and scattered all these and her thought caused sorrow and mischief to men. Only Hope remained there in an unbreakable home within under the rim of the great jar...

Works and Days by Hesiod
(translated by Hugh G. Evelyn-White)



The use of sanctions is growing

Number of US sanctions imposed per region
thous.

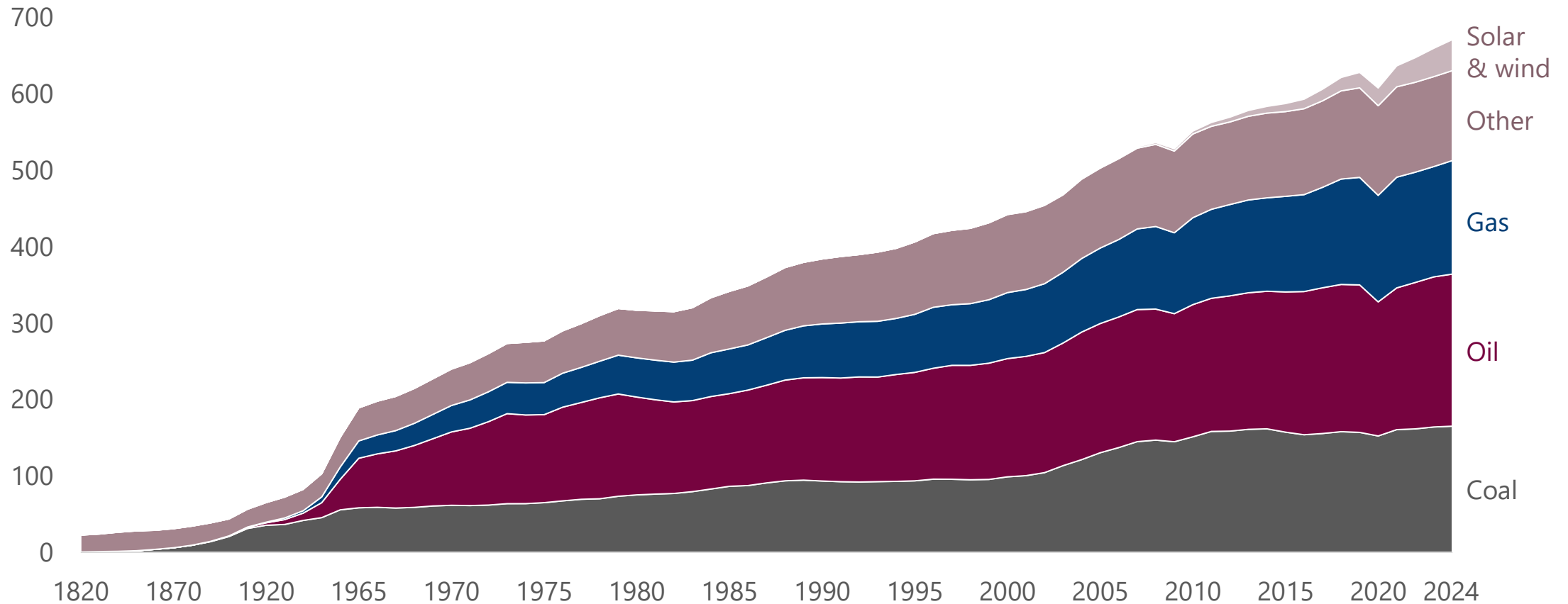


Source: The Washington Post, citing the US Treasury Department's Office of Foreign Assets Control



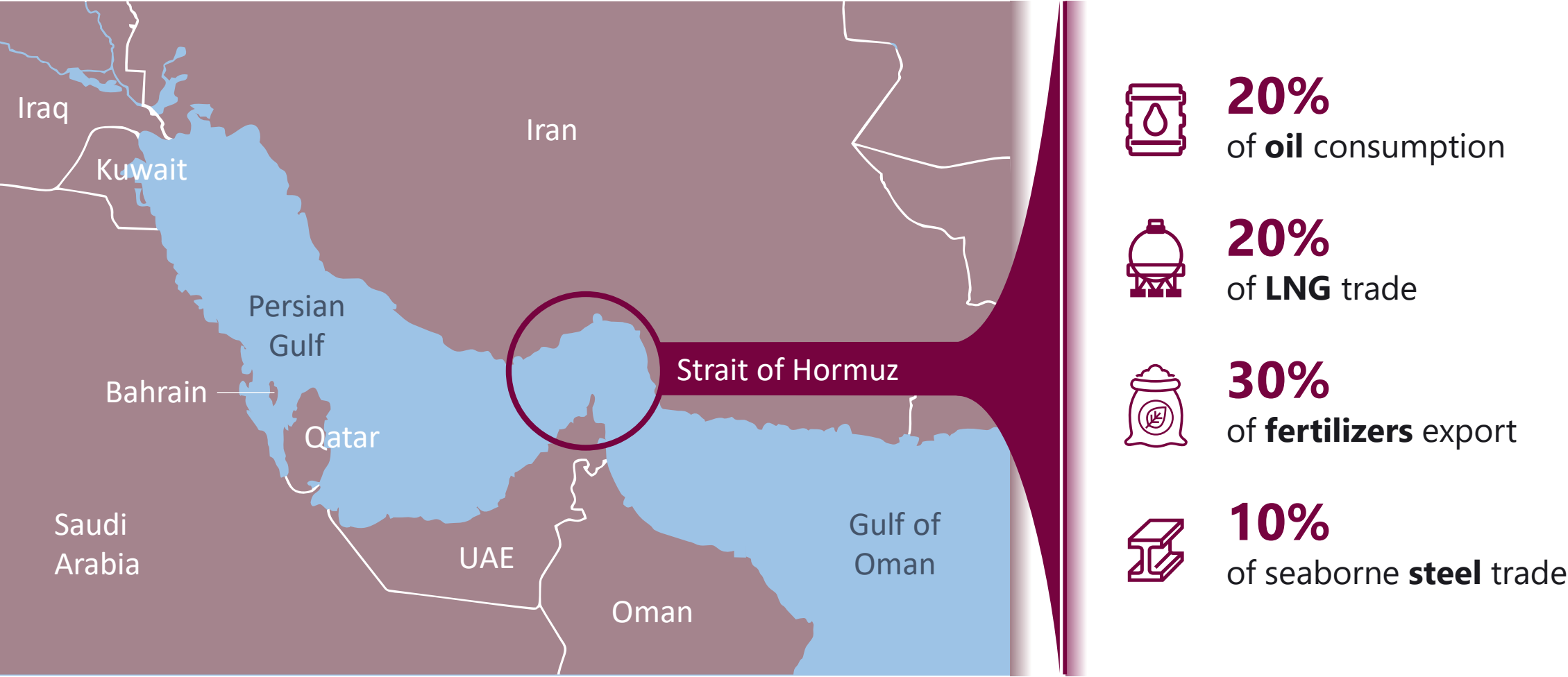
Demand growth cannot be sustained without existing energy sources

Global energy consumption by source
EJ



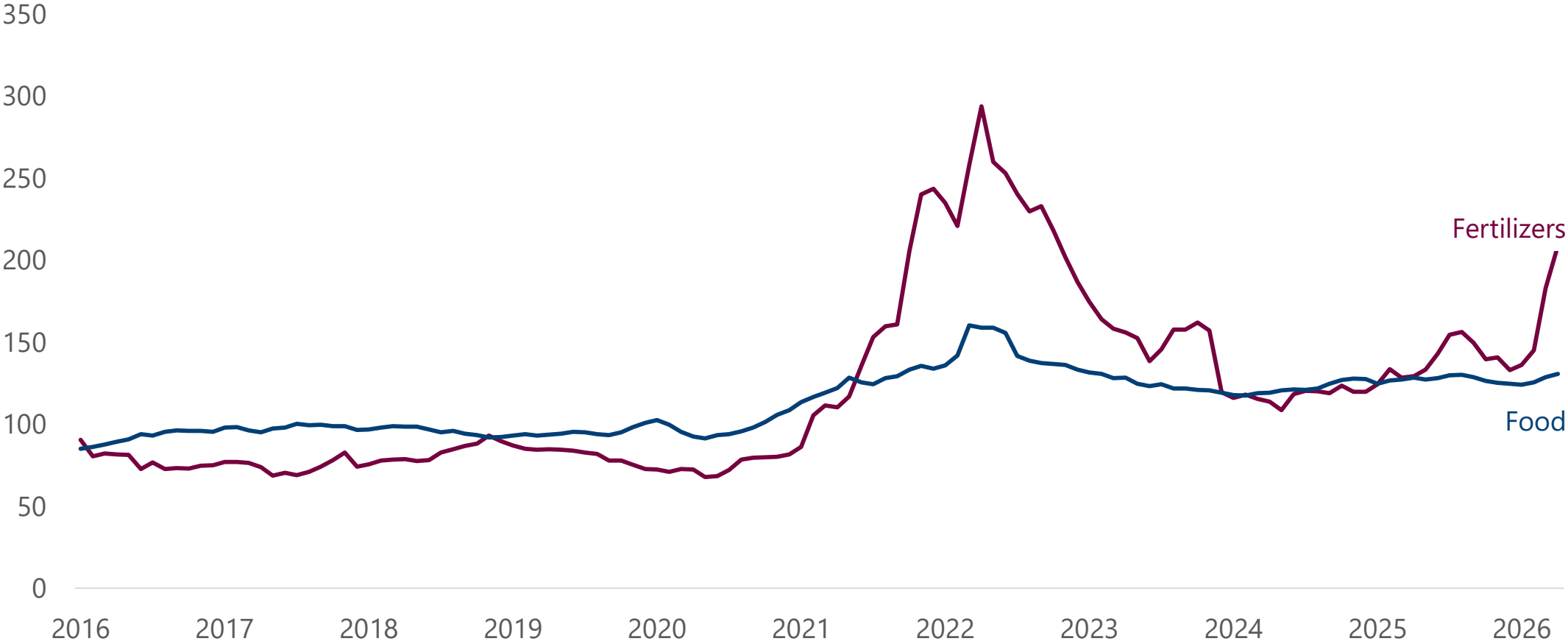
The impact of the Strait of Hormuz closure extends beyond the energy market

The Strait of Hormuz and the main trade flows through it



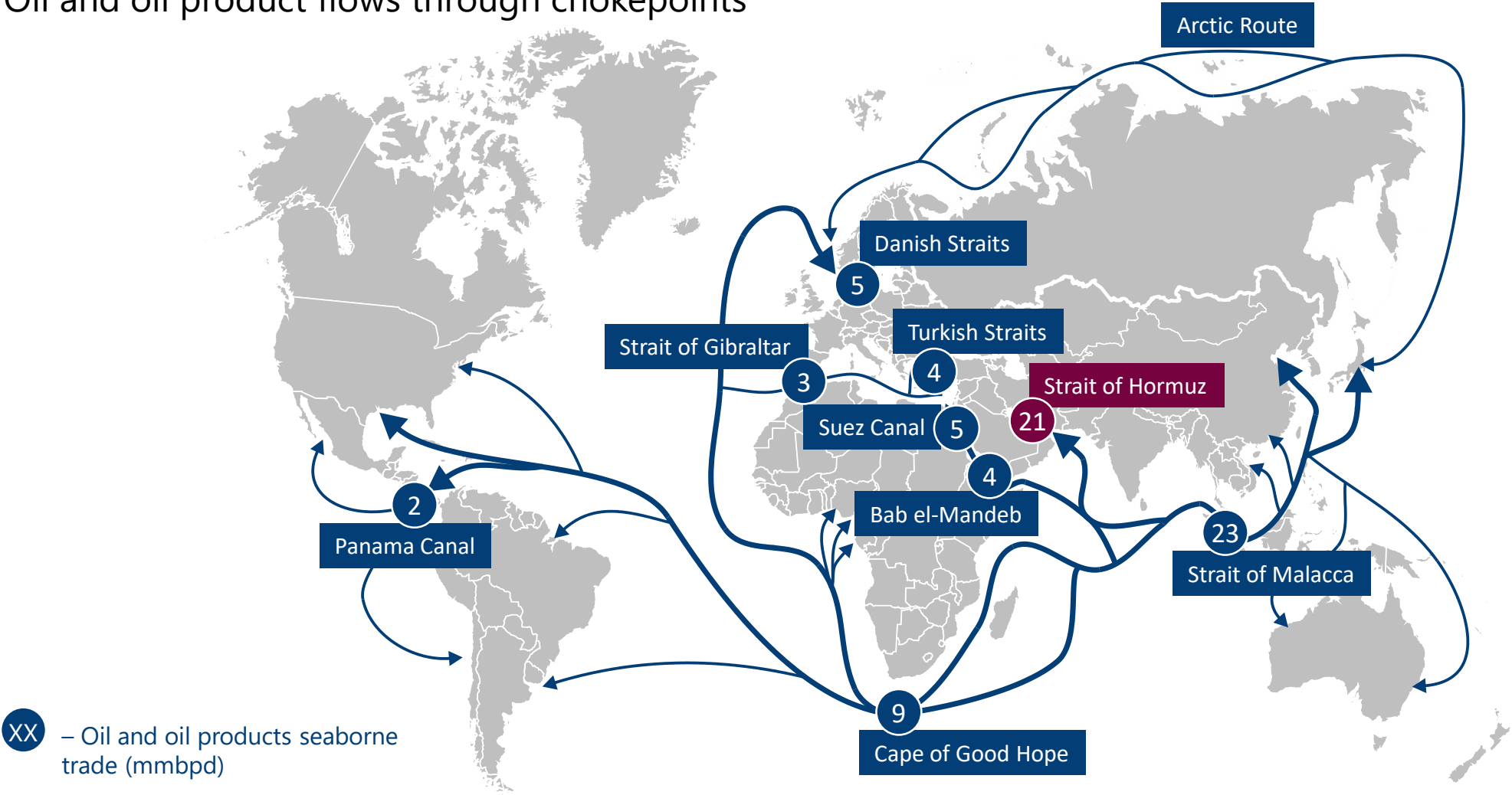
A global food crisis risk is emerging

Global fertilizer and food price index
Fertilizers: 2010 = 100, food: 2014-2016 = 100



Chokepoints in global logistics

Oil and oil product flows through chokepoints



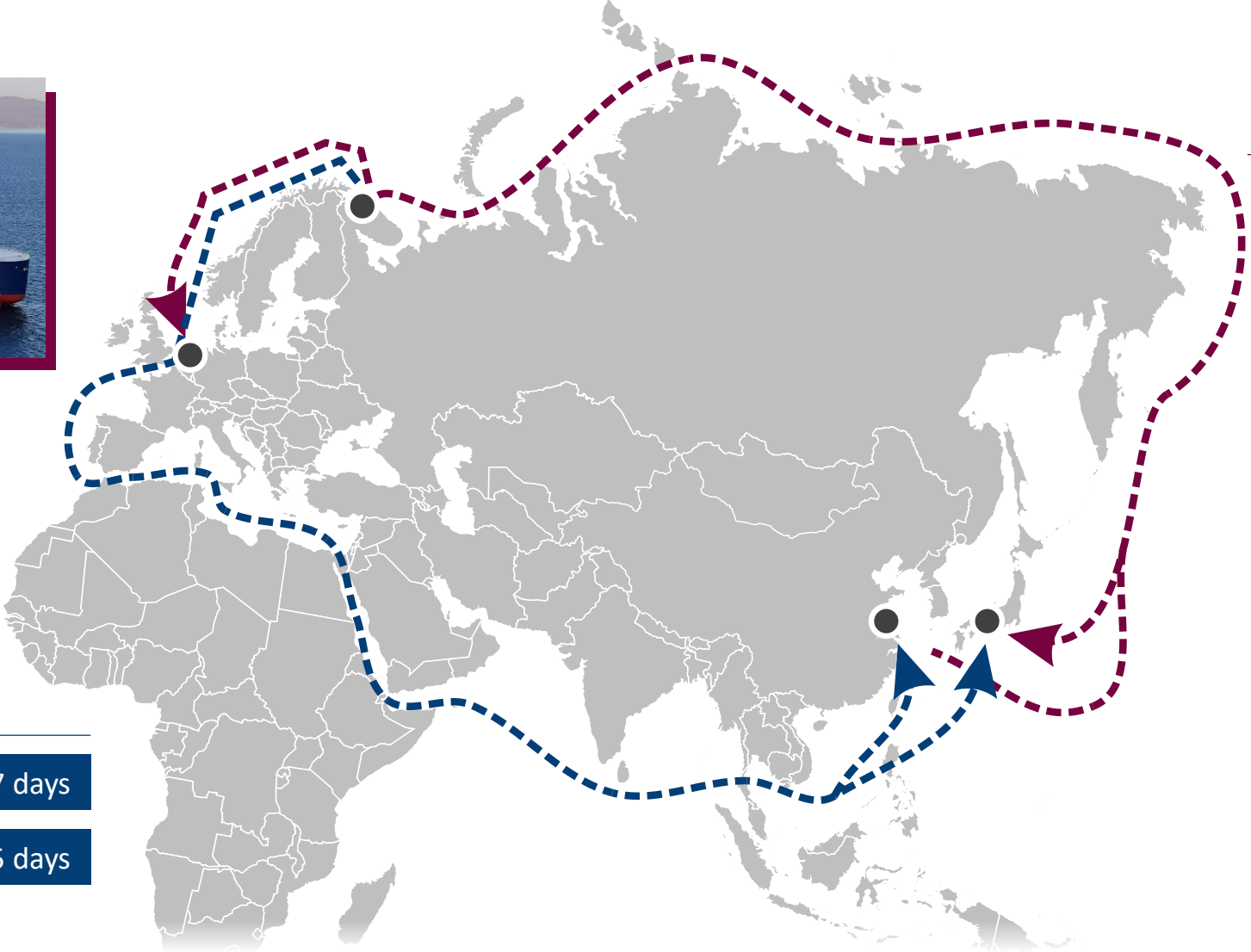
XX – Oil and oil products seaborne trade (mmbpd)



The Arctic is becoming increasingly important for secure logistics



"Alexei Kosygin"



Northern Sea Route

Murmansk – Japan	18 days
Shanghai – Rotterdam	20 days

Suez Canal

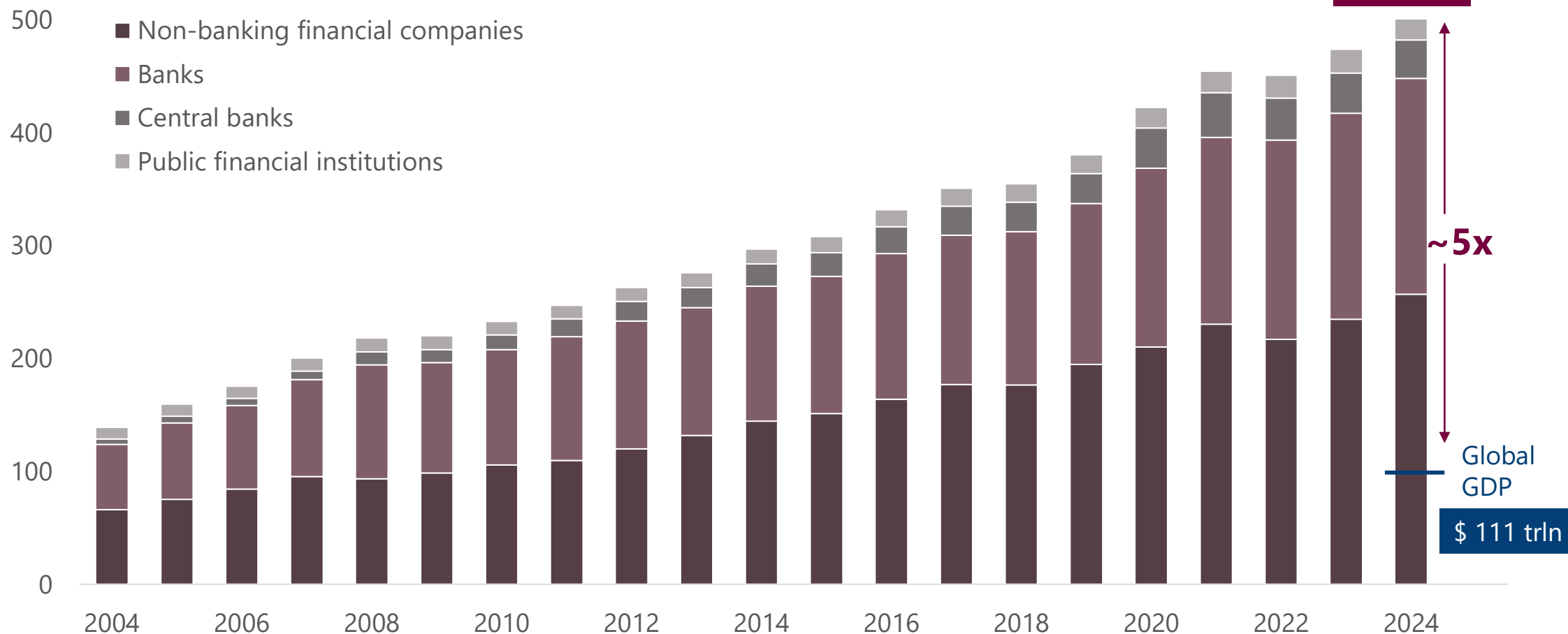
Murmansk – Japan	37 days
Rotterdam – Shanghai	35 days



Financial sector assets are five times greater than global GDP

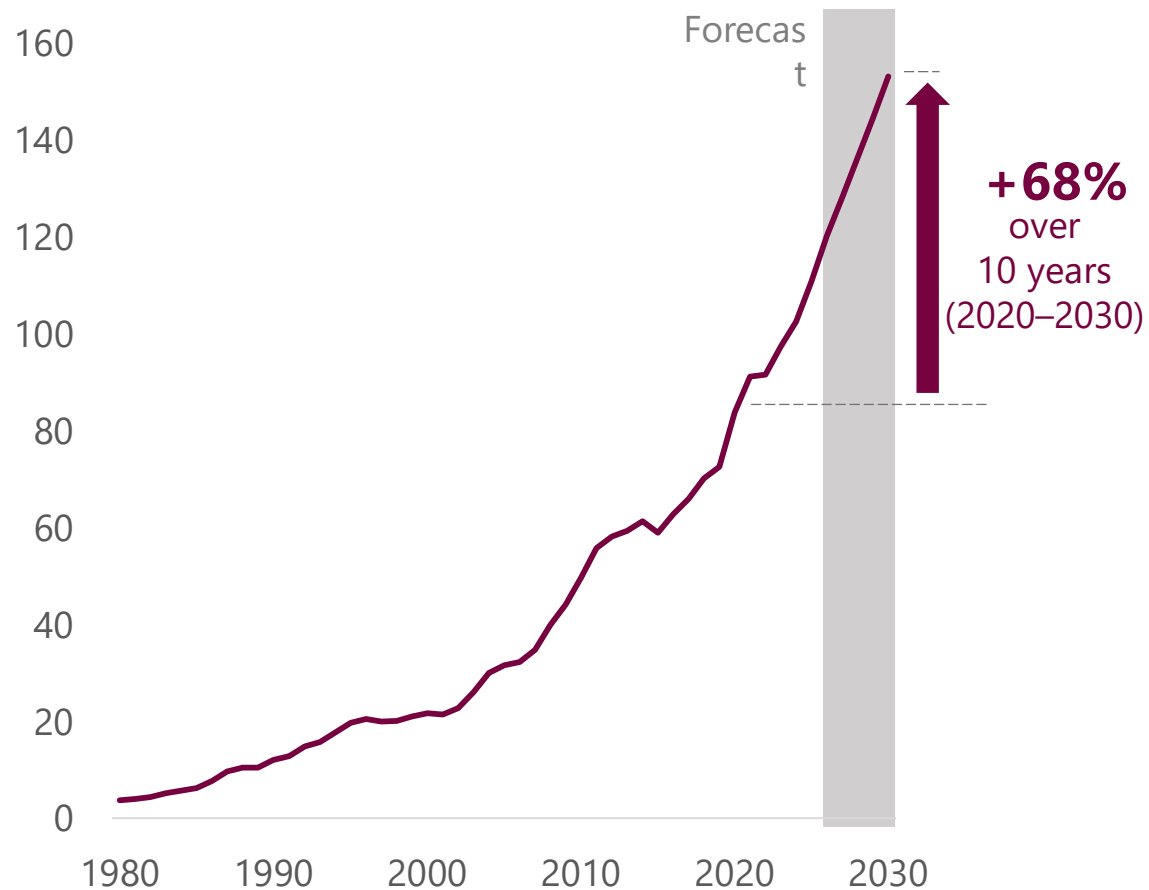
Global financial assets

\$ trln

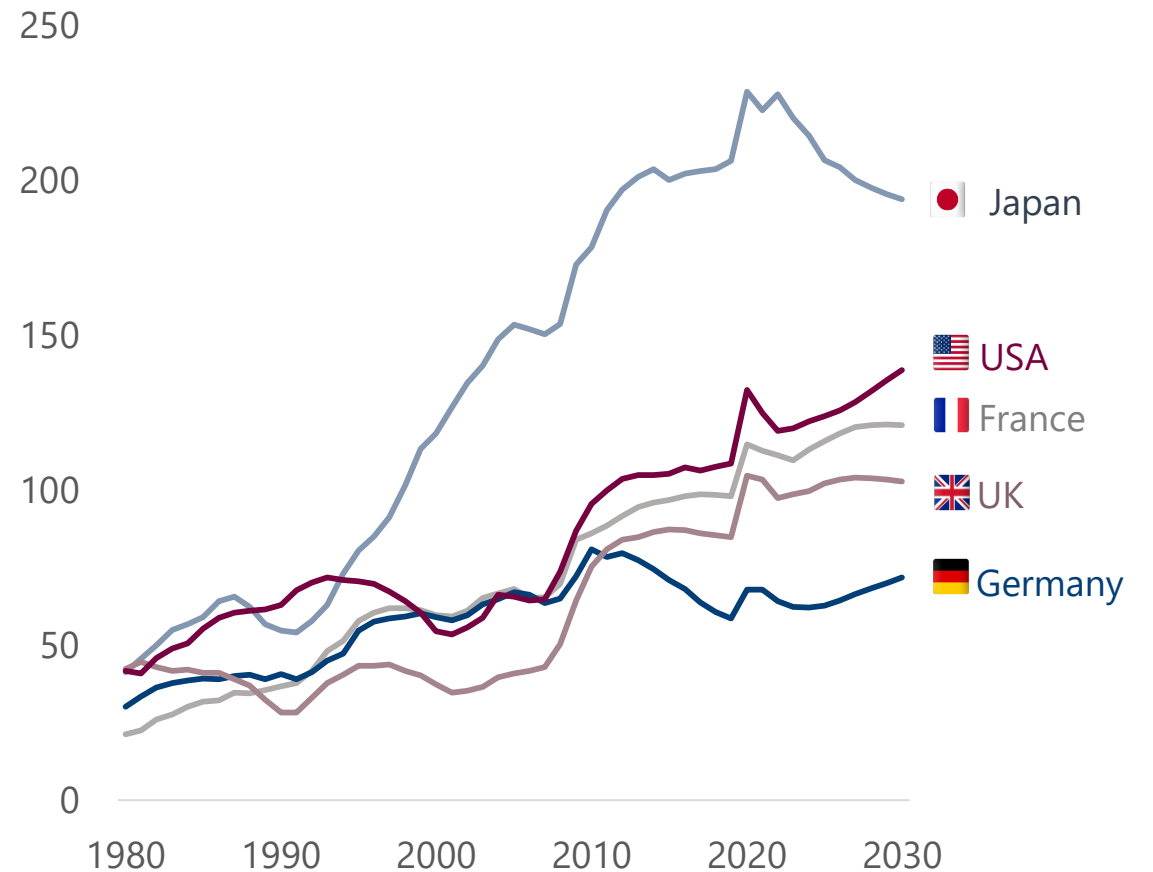


Global debt sets new records

Global government debt
\$ trln in current prices

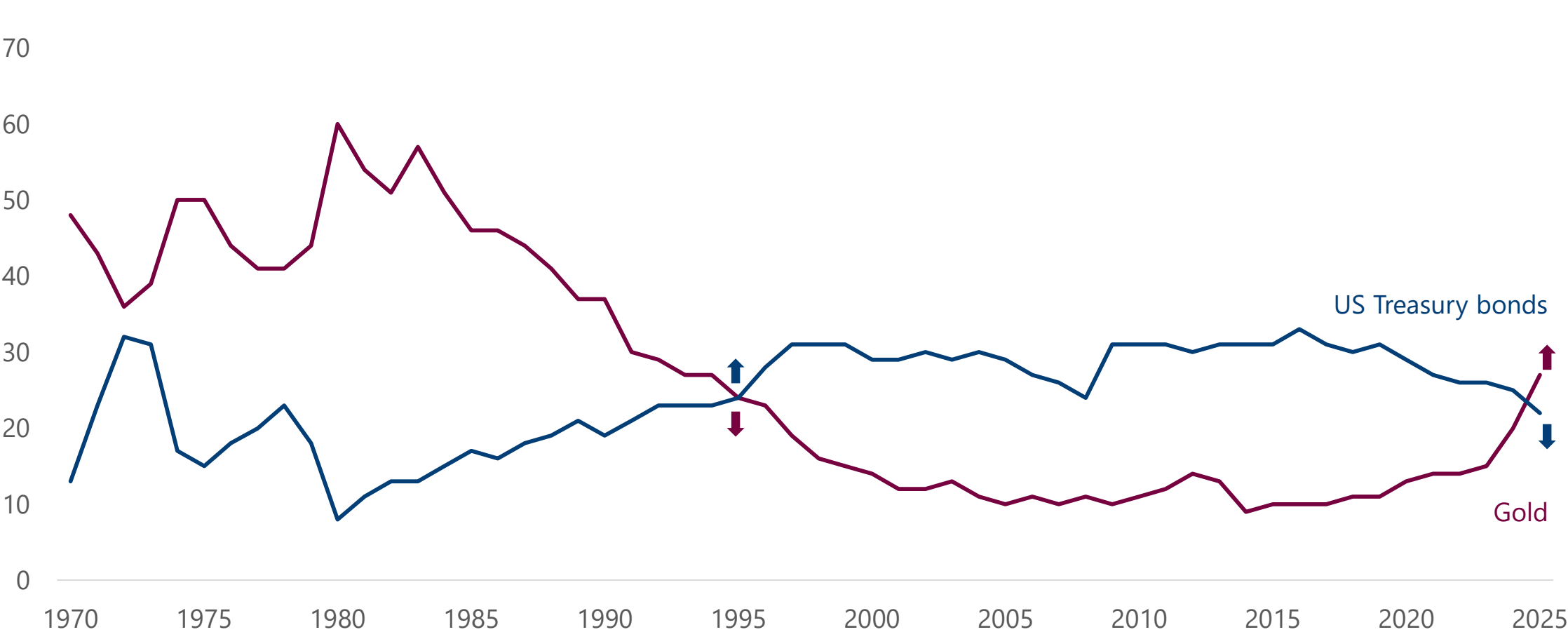


Government debt/GDP by country
%



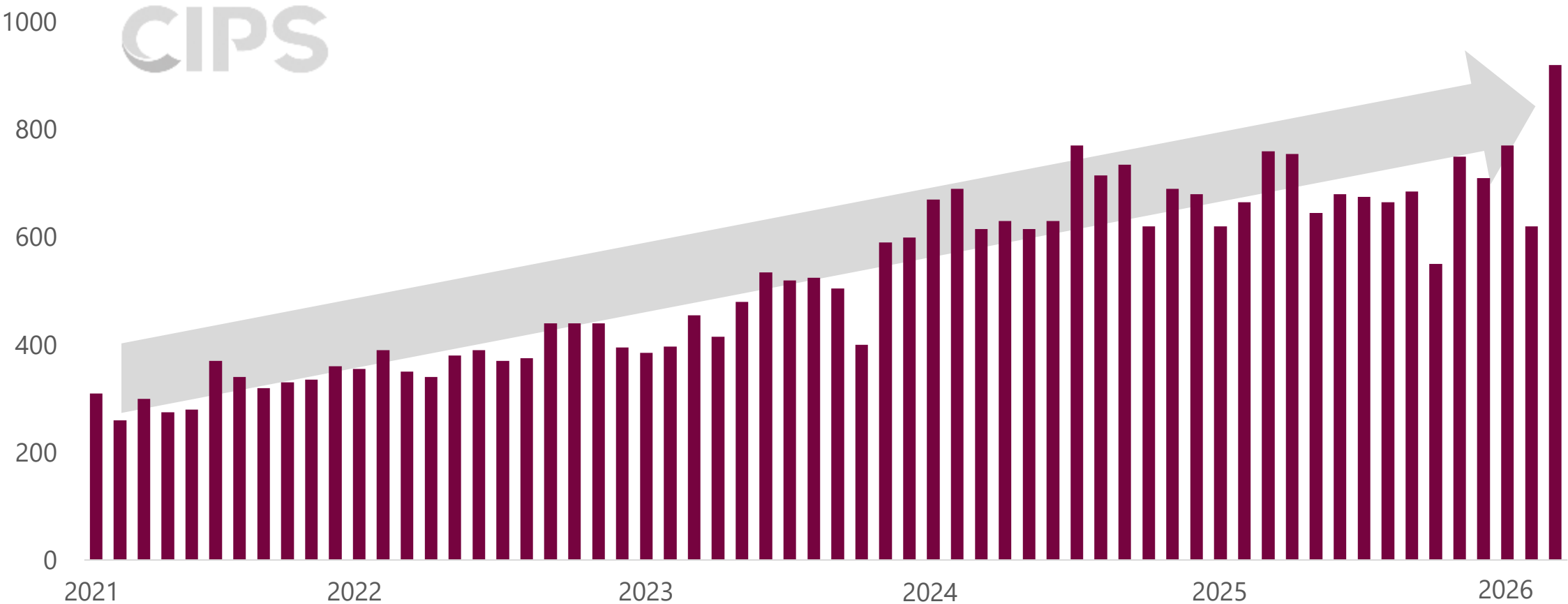
The share of gold in global central bank reserves exceeded the share of US Treasury bonds

Share of gold and US Treasury bonds in global central bank reserves
%



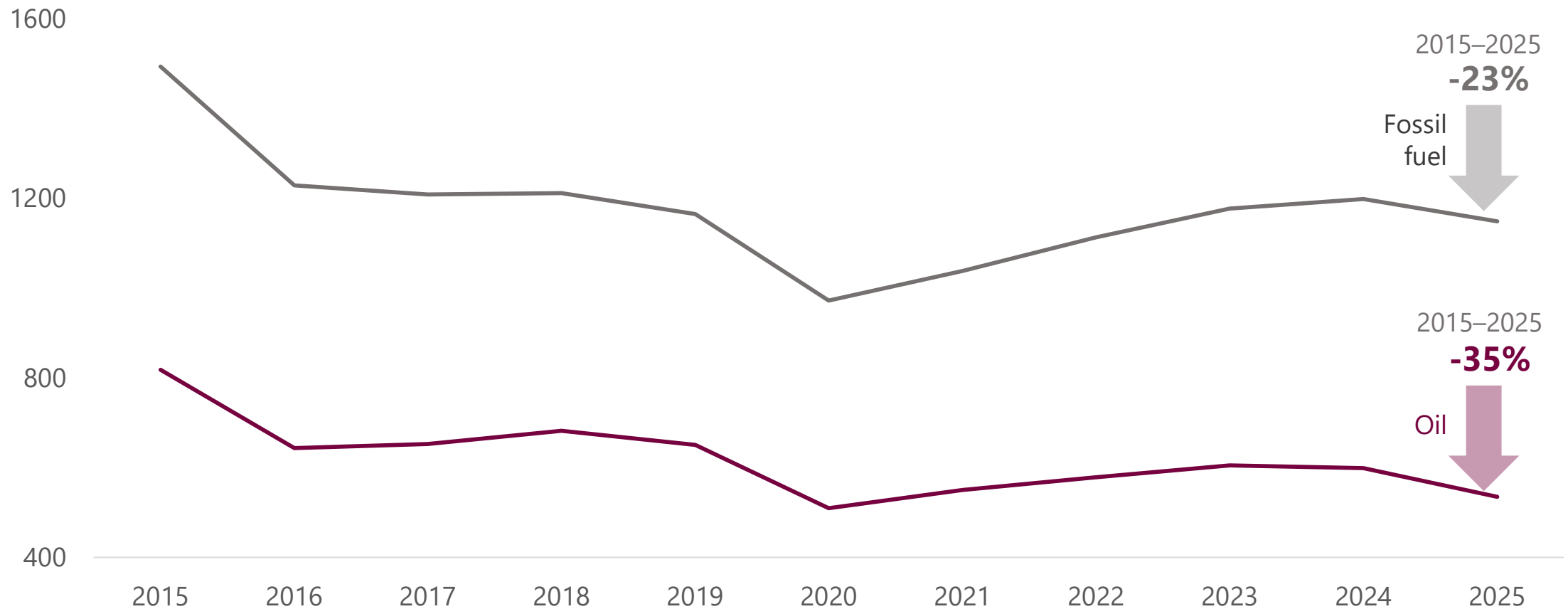
The role of alternative payment systems is expanding

The value of transactions settled through China's CIPS
Rmb bn



Fossil fuel production and refining are underinvested

Global fossil fuel and oil investments
\$ bln



A new wave of global rearmament

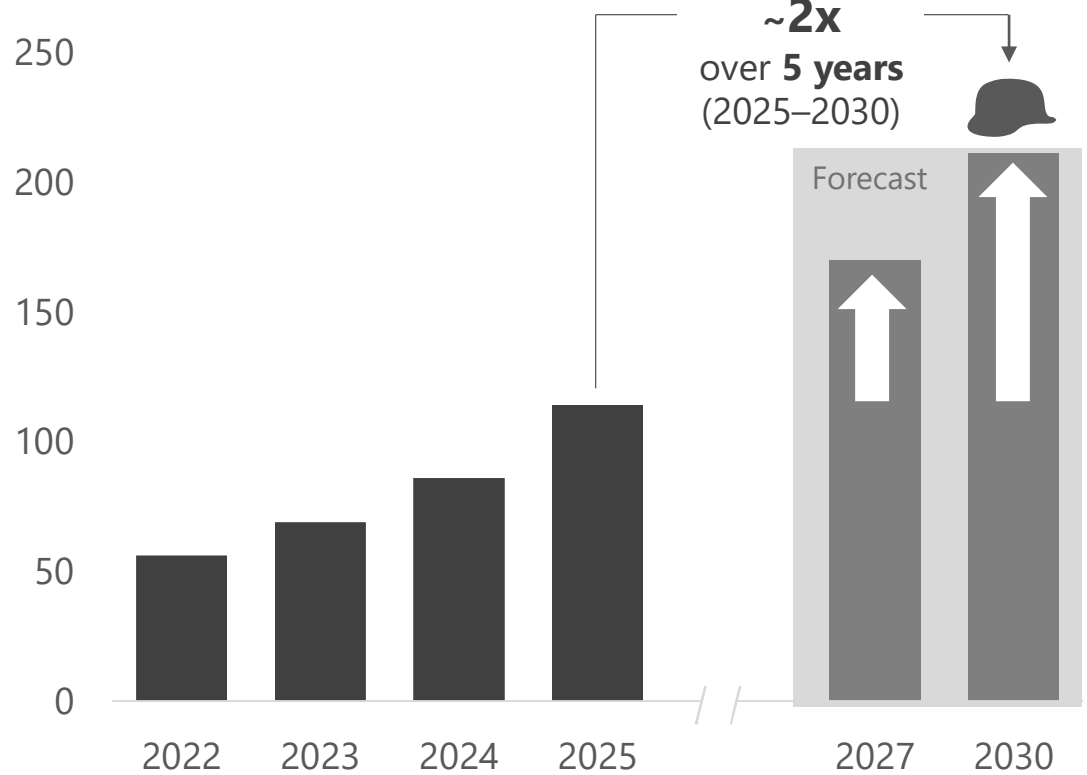
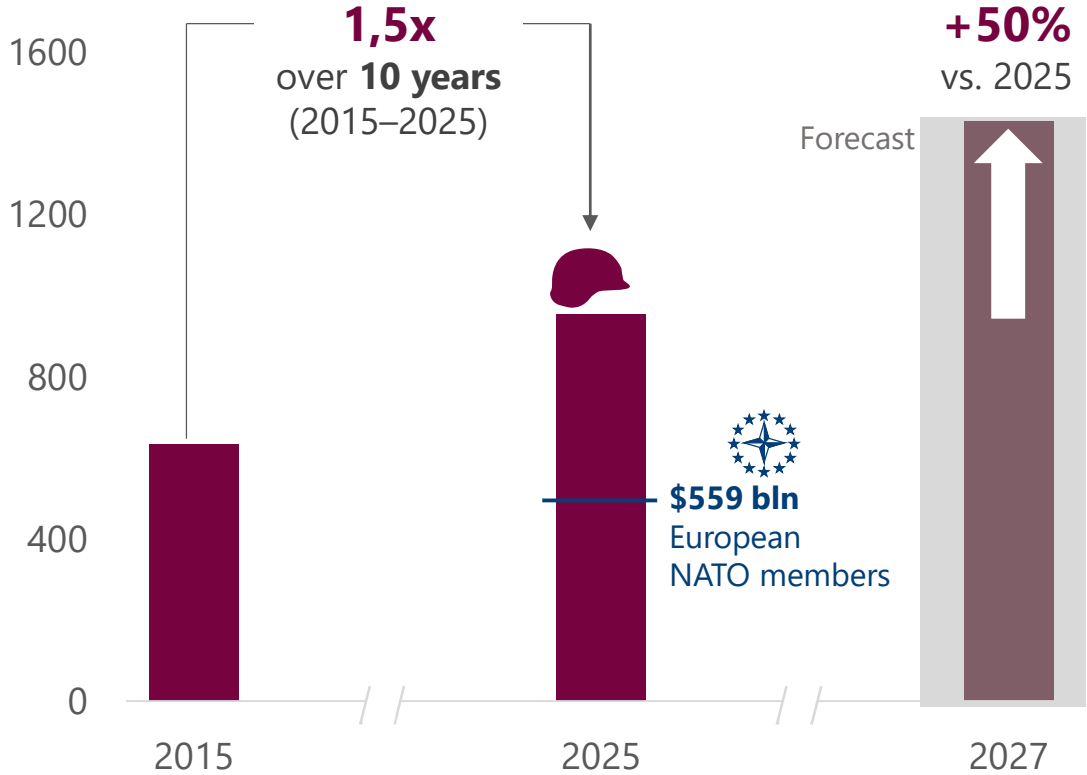
Global military spending
\$ bln



US

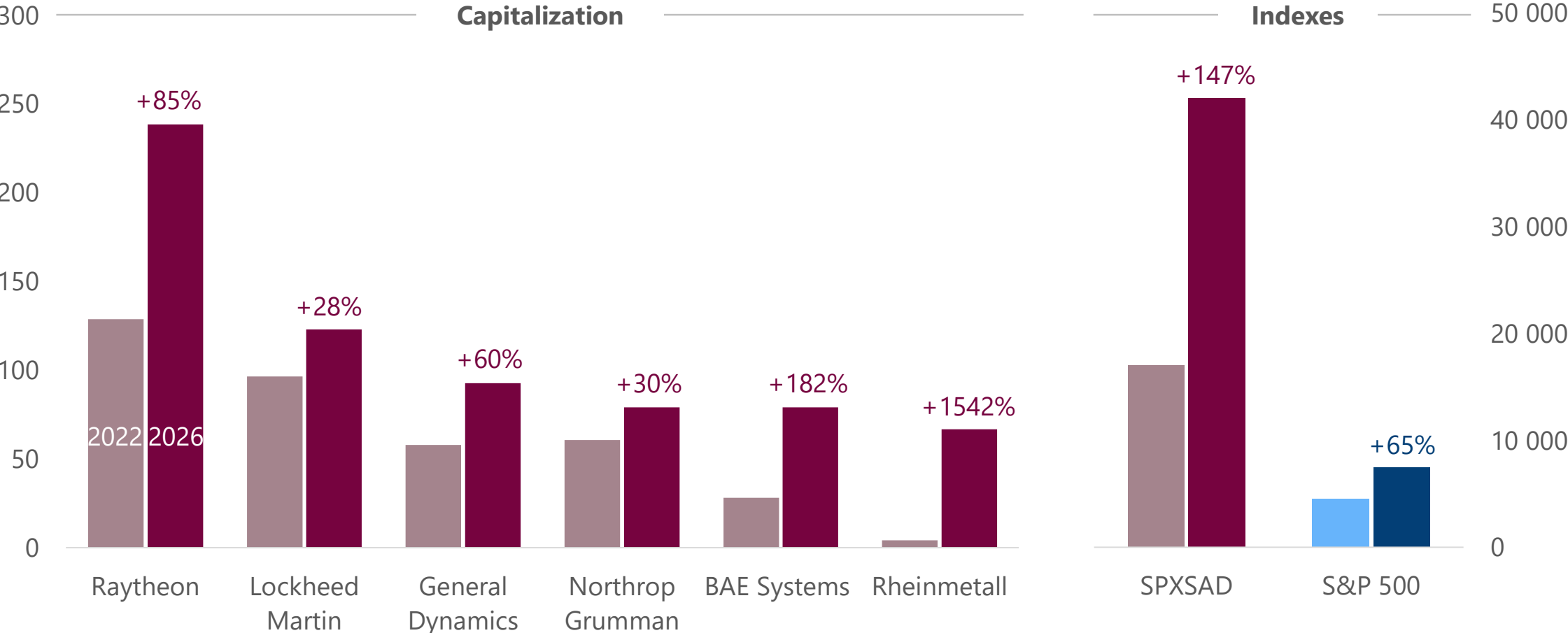


Germany



Financial capital is also directed to the military industrial complex

Capitalization of defense companies in comparison with the US stock market capitalization – \$ bn, market indexes – points, rhs

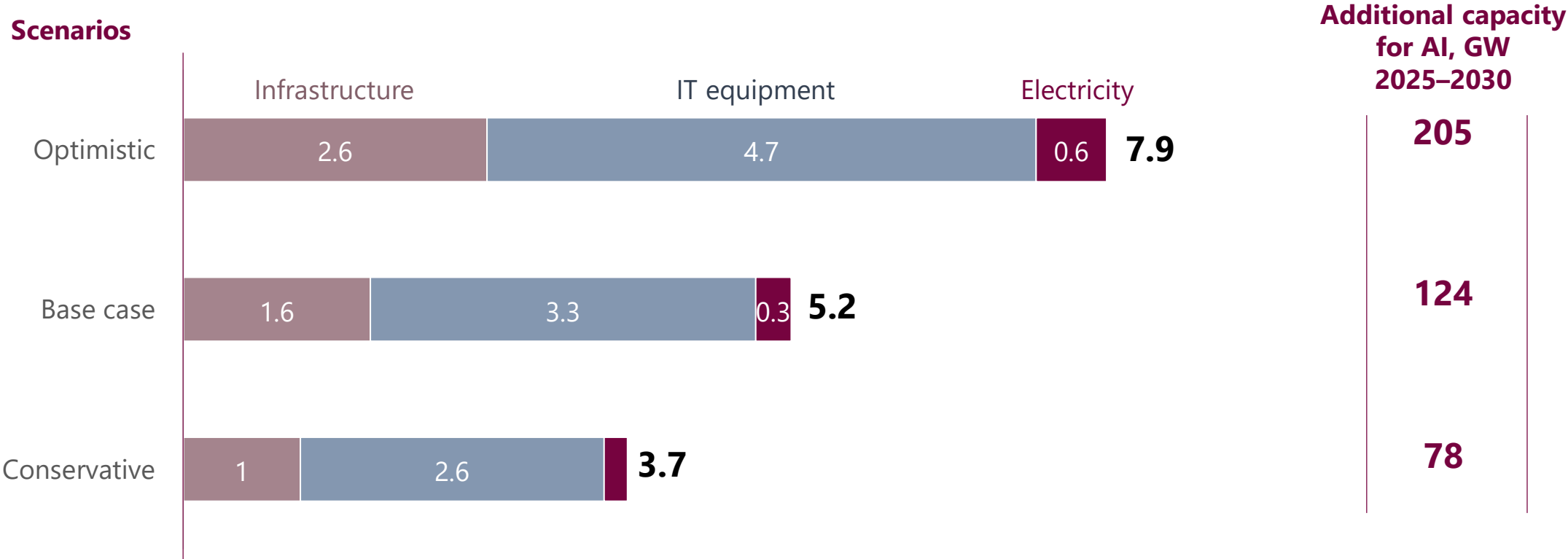


Note: 2022 – January data, 2026 – March data, SPXSAD – US Aerospace and Defense Industry Index



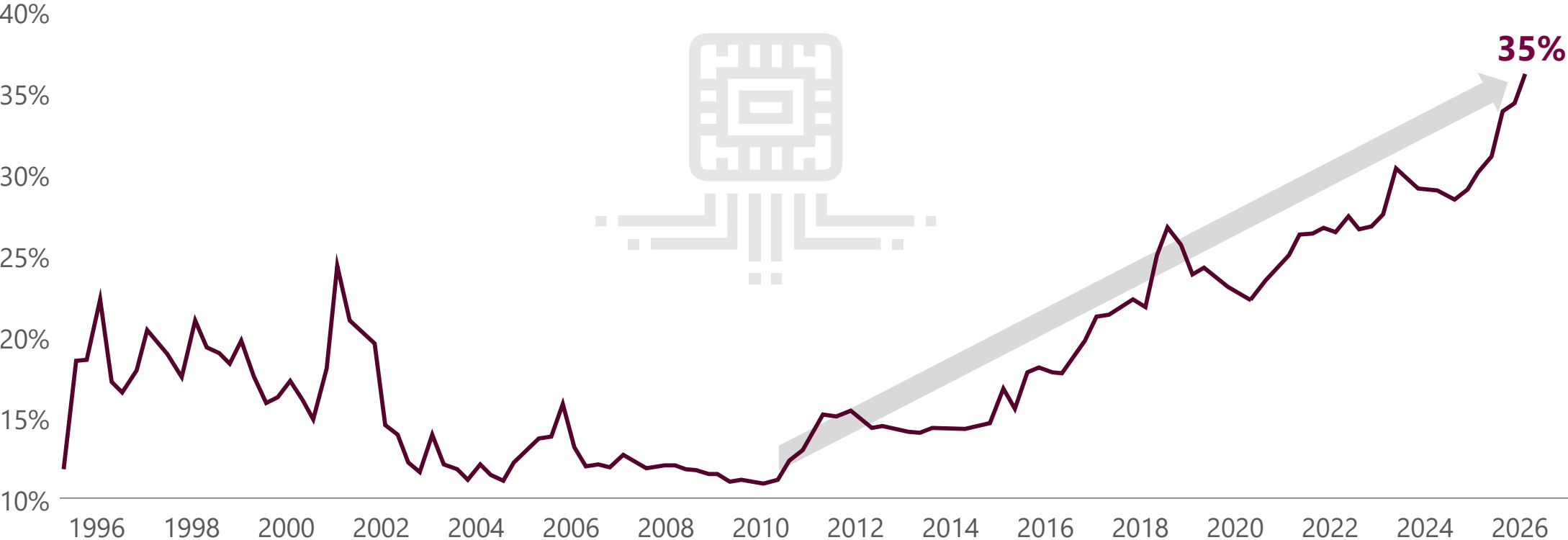
The technology sector requires large-scale investments

Capital expenditures on AI data center construction
\$ trln



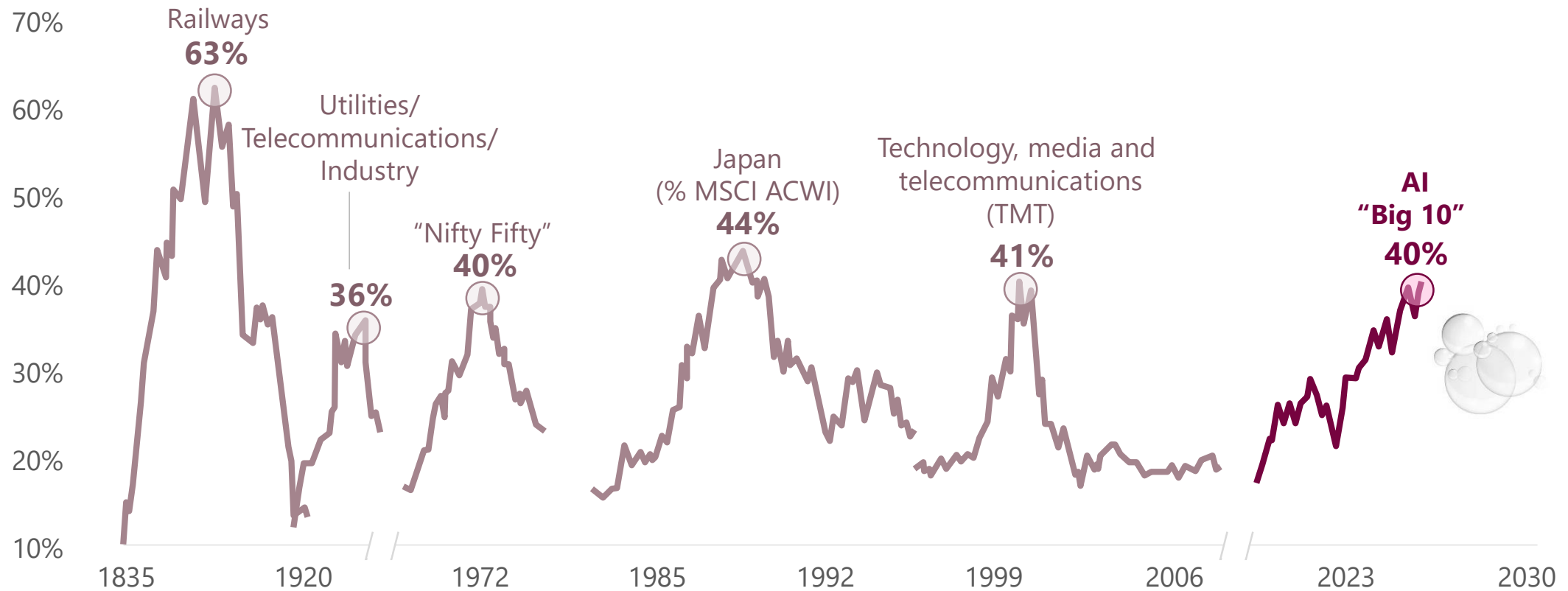
Technology companies are taking an increasing share of investment resources

Share of S&P 500 IT sector capex
As % of total S&P 500 capex



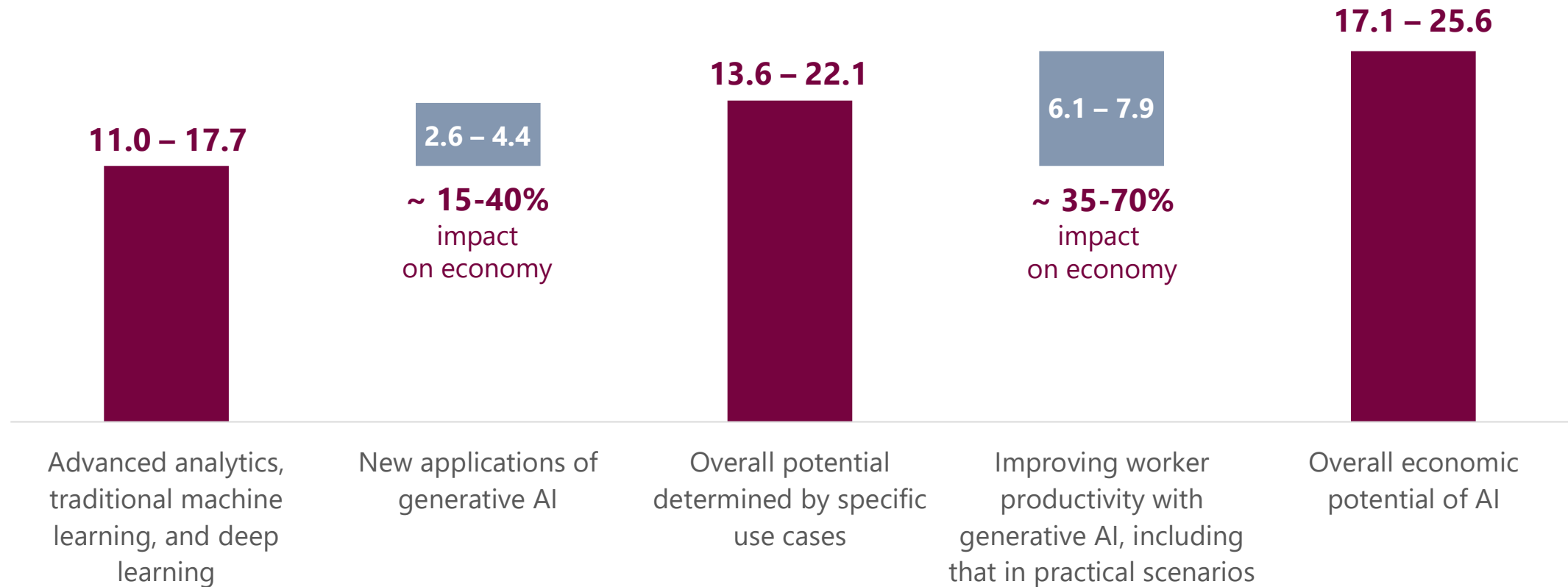
Risks of a new financial bubble are growing

The history of stock market bubbles
% of the US market capitalization



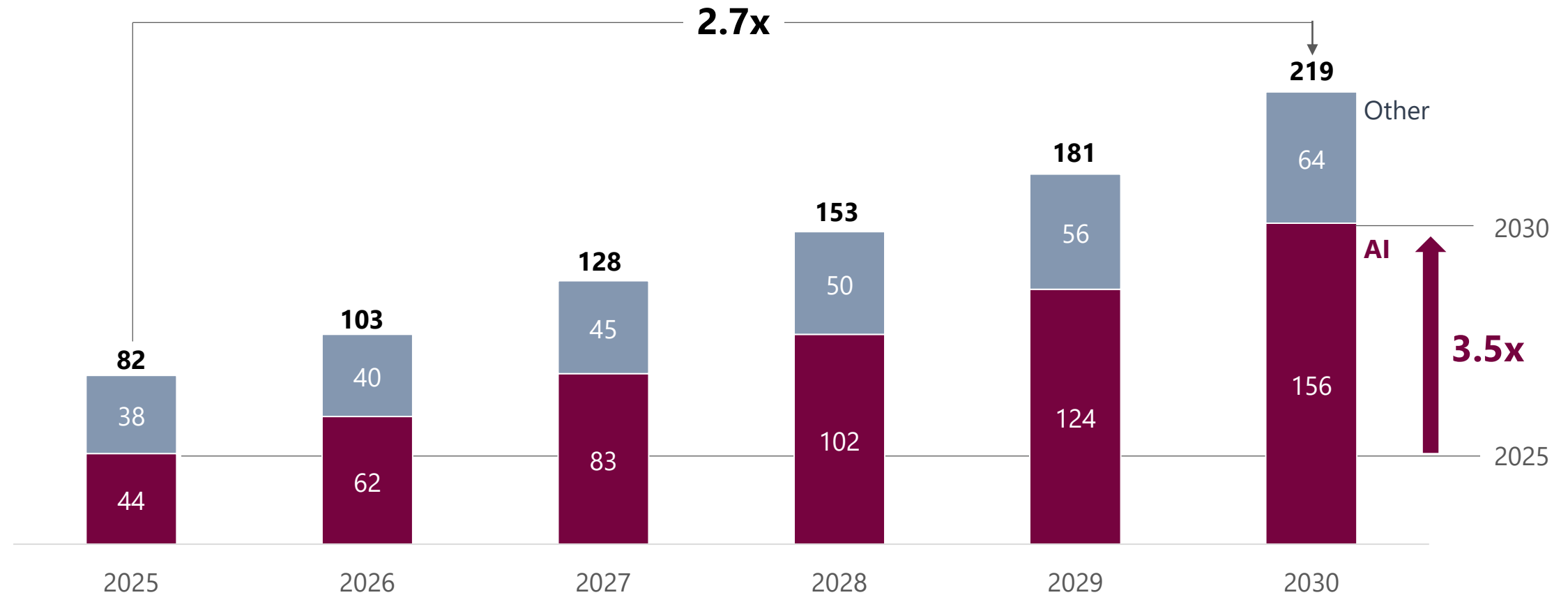
How justified are expectations around AI's impact?

Potential impact of AI on the global economy
\$ trln



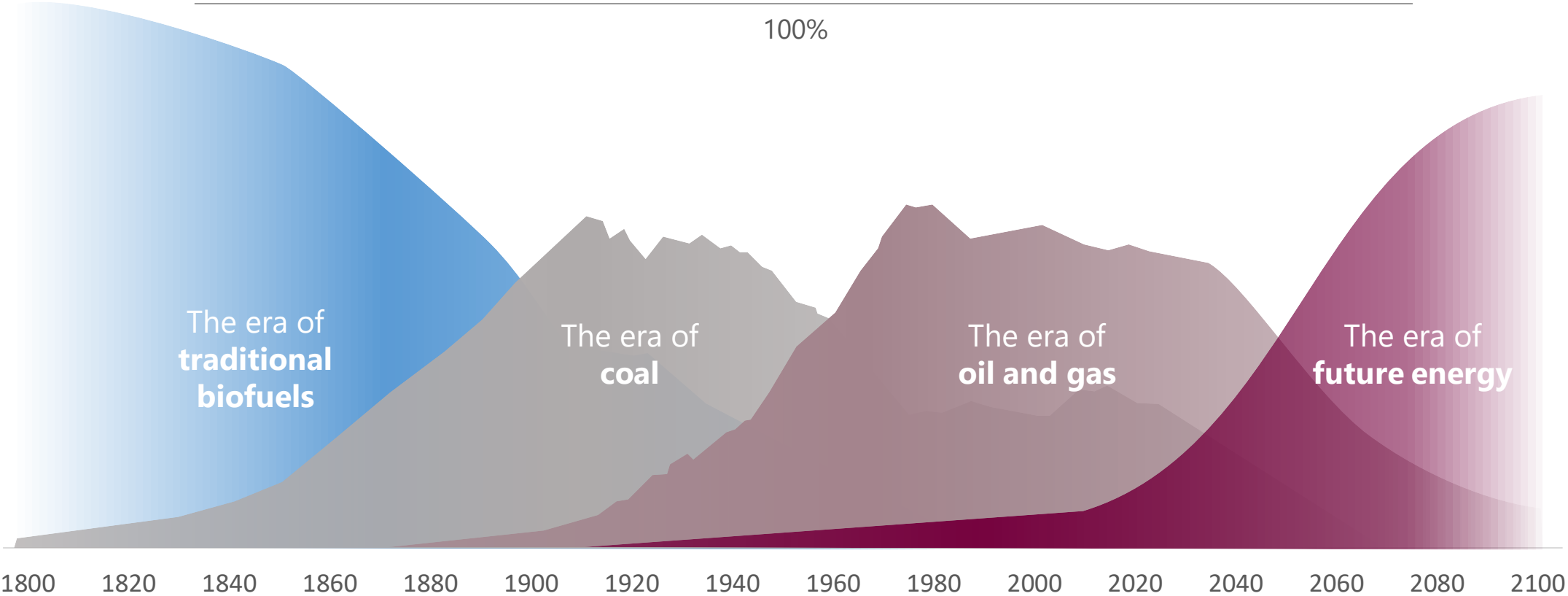
Demand for data center capacity will nearly triple by 2030

Data center capacity demand forecast
GW



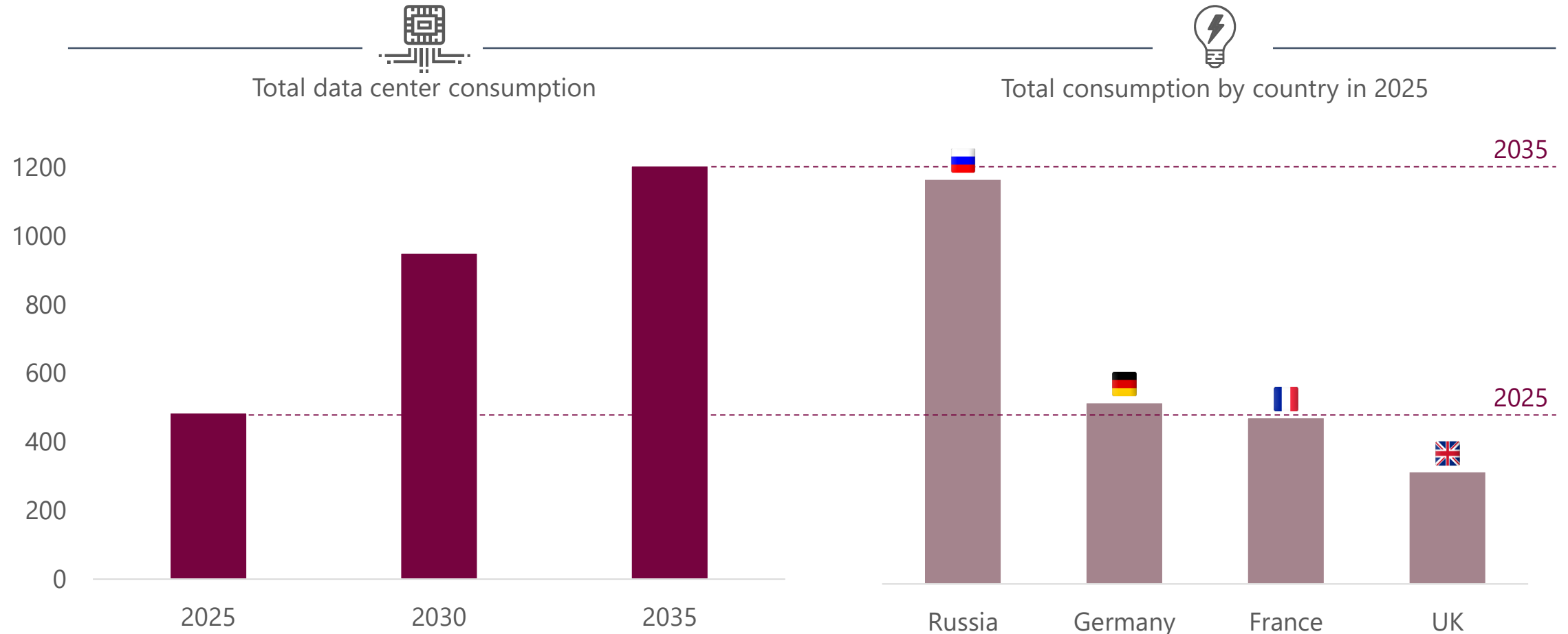
Evolution of the global energy system from molecules to electrons

Relative share of total primary energy consumption by source
%



By 2035, global data center power demand will exceed Russia's current electricity consumption

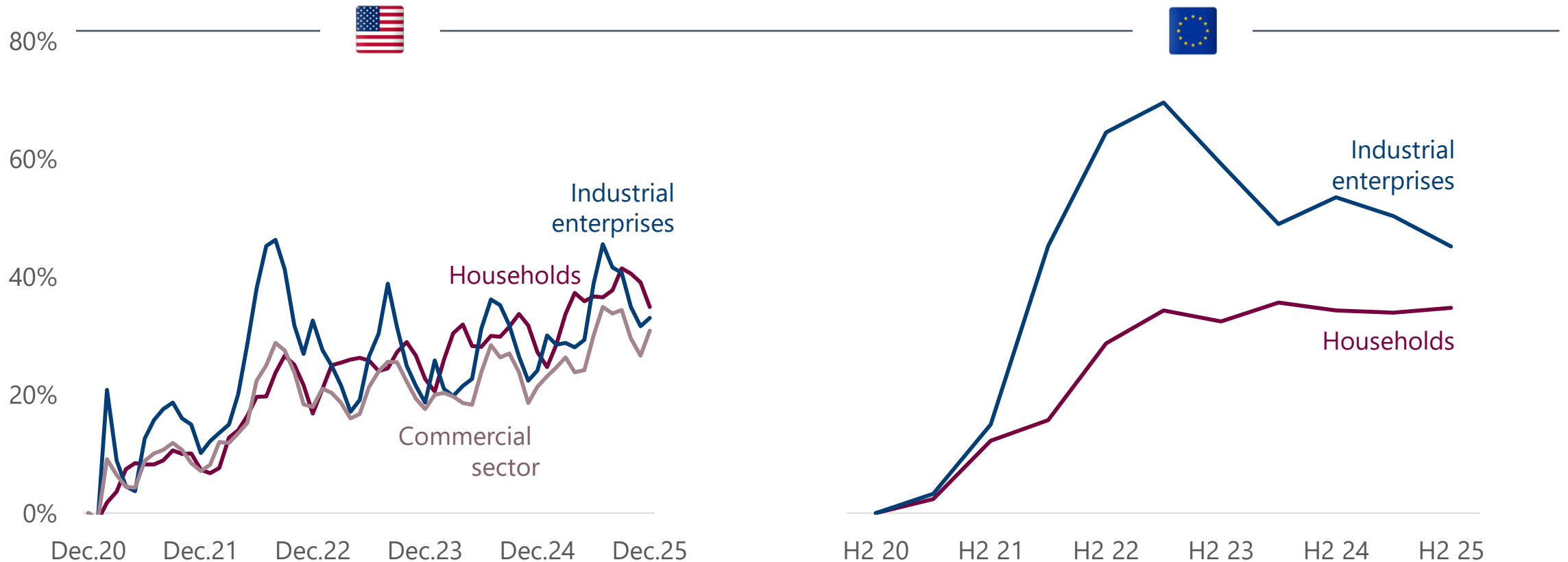
Global electricity demand
TWh



Unbalanced renewable energy development drove electricity price growth in the US and the EU

End-customer electricity price change in the US
Compared to December 2020, % change

End-customer electricity price change in the EU
Compared to H2 2020, % change



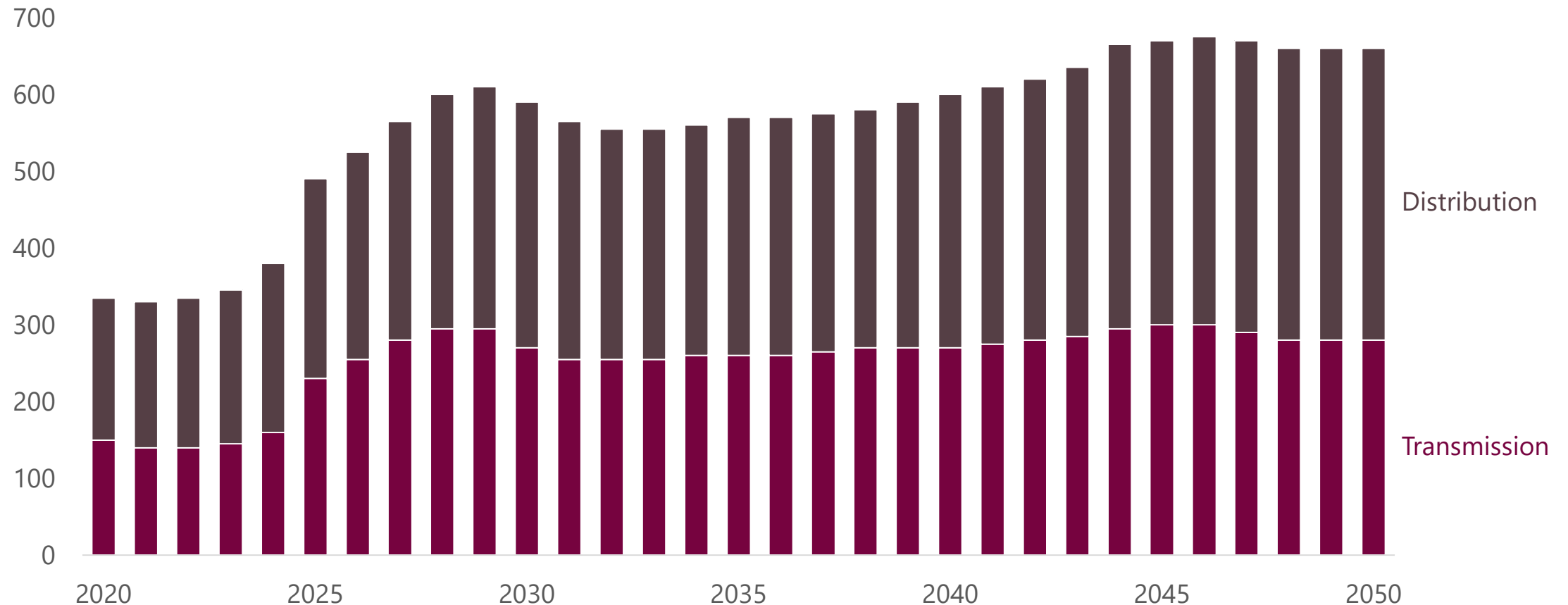
100% of power grid capacity will need to be expanded and replaced

Global electricity transmission and distribution grid length and the need for grid expansion and replacement
mln km



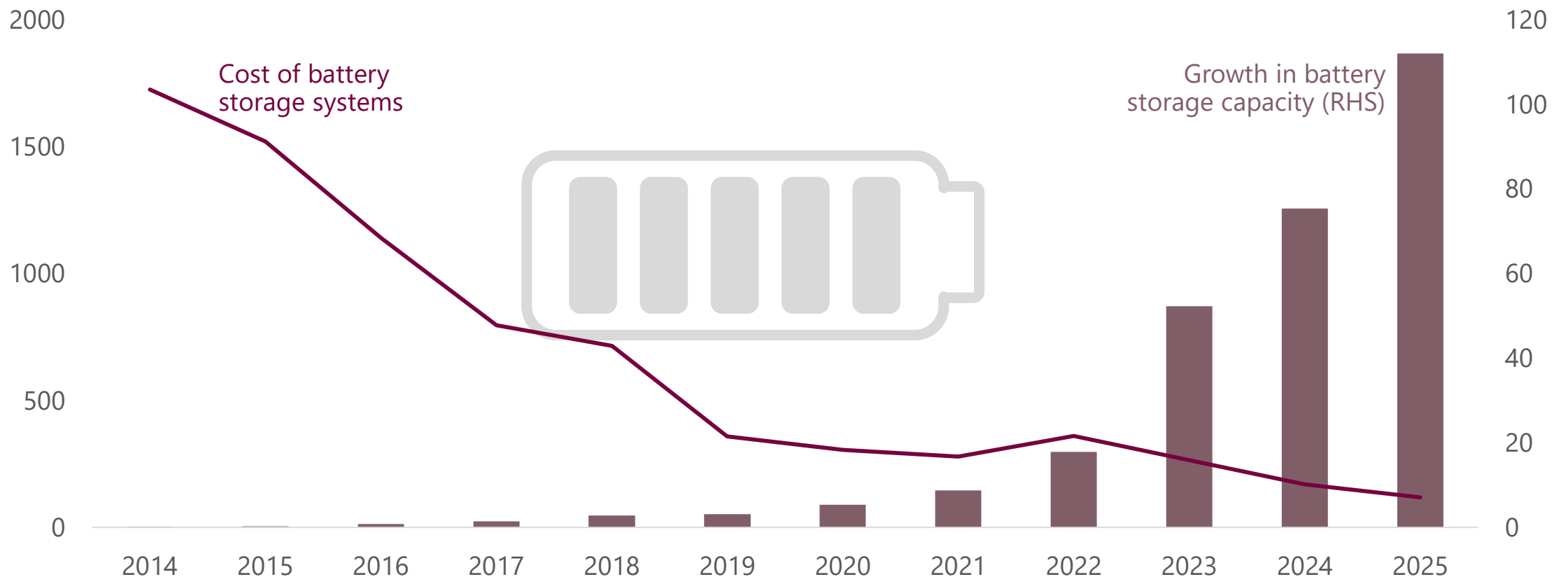
\$16 trillion investment in electricity grid is needed over the next 25 years

Required investments in electricity grid development
\$ bln



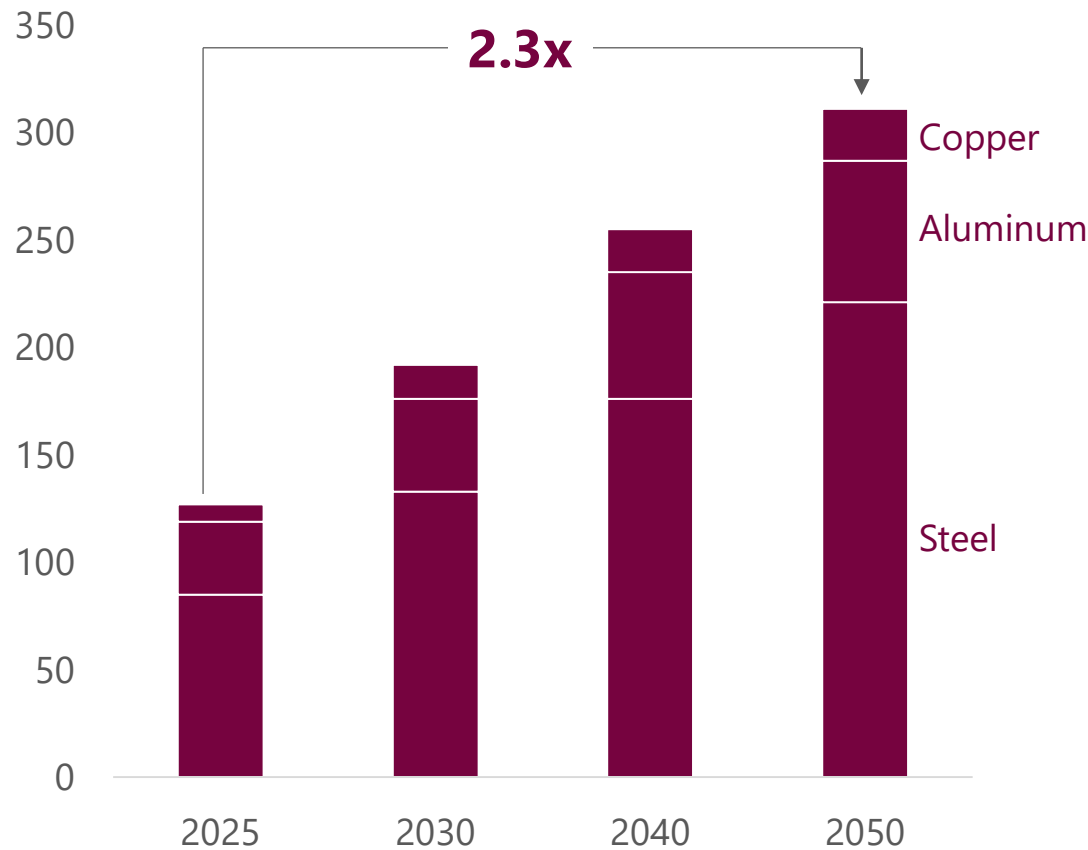
Energy storage systems costs are declining

Cost of battery energy storage systems and growth in battery storage capacity
\$/kWh, in GW – storage capacity

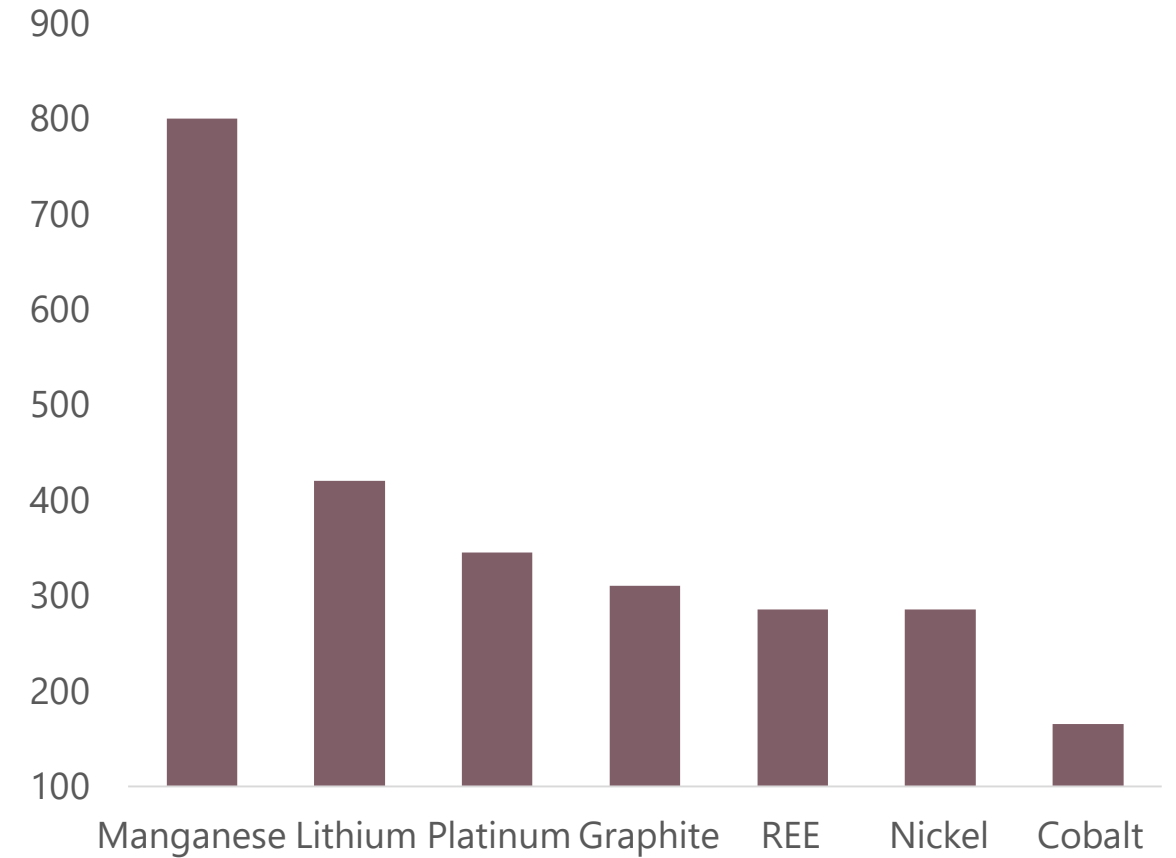


Metals demand from the new energy sector will more than double by 2050

Metals demand in the new energy sector
mmt

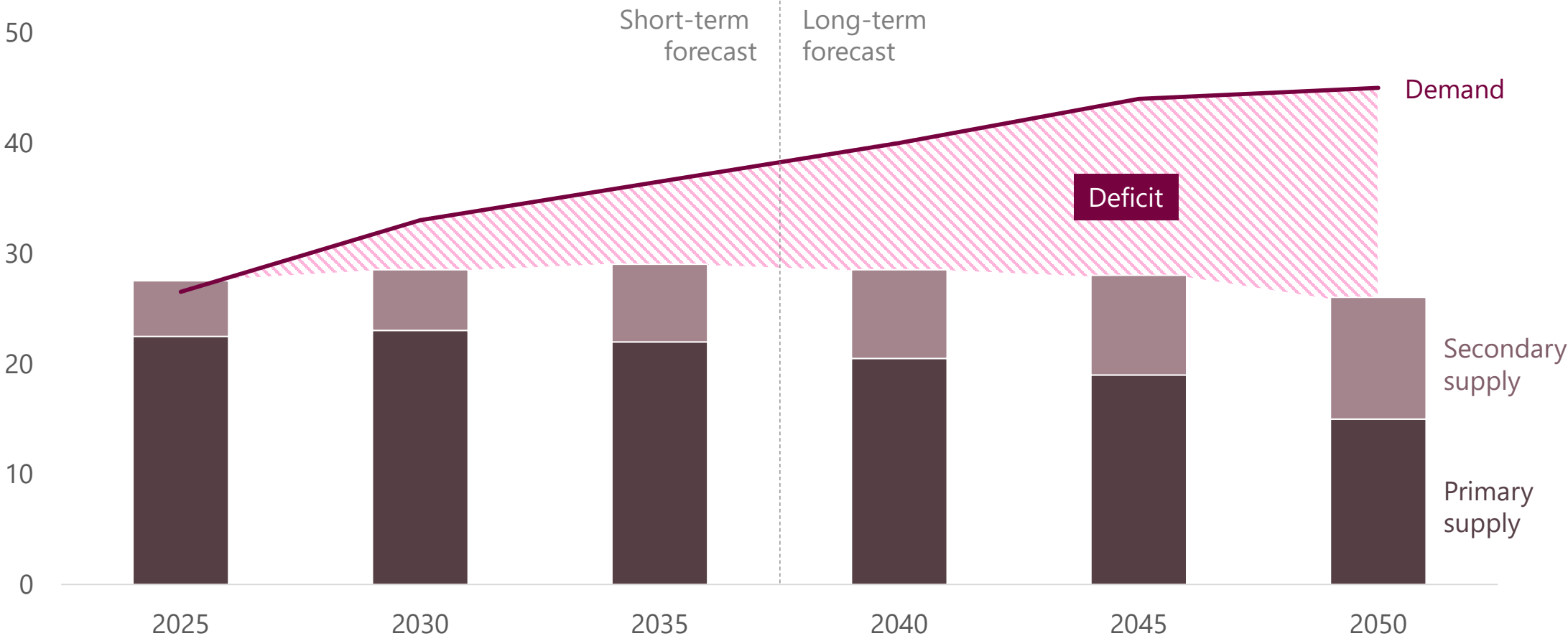


Metals demand growth in the new energy sector
from 2025 to 2050
2025 = 100



The global copper shortfall may reach 40% by 2050

Global copper market balance
mmt



US military industry dependence on rare earth metals is critical

Rare earth metals required for the production of US military equipment
kg



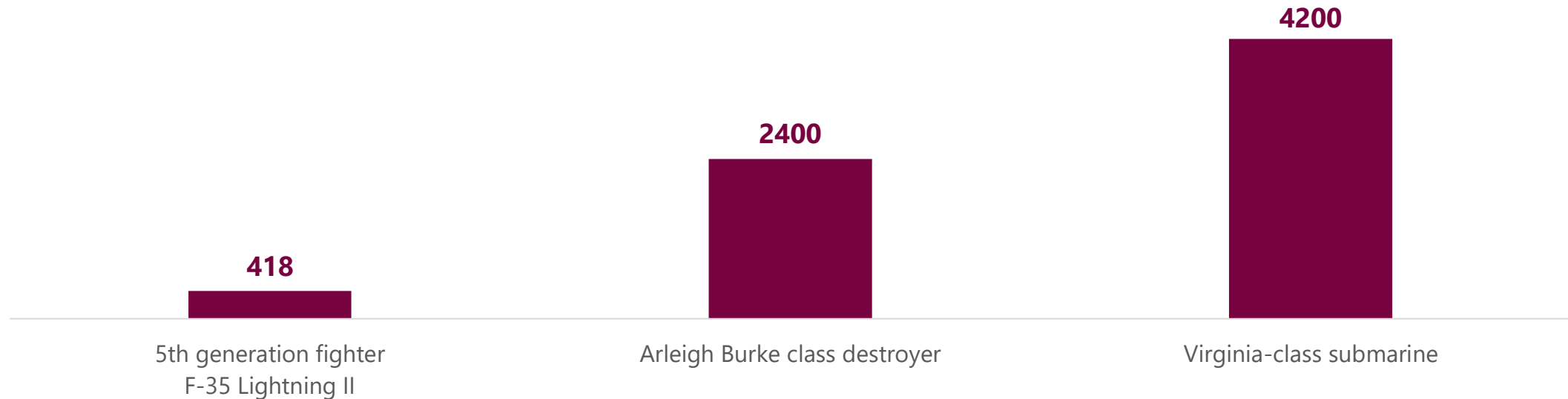
- Guided Missiles
- Target Lasers
- Engines



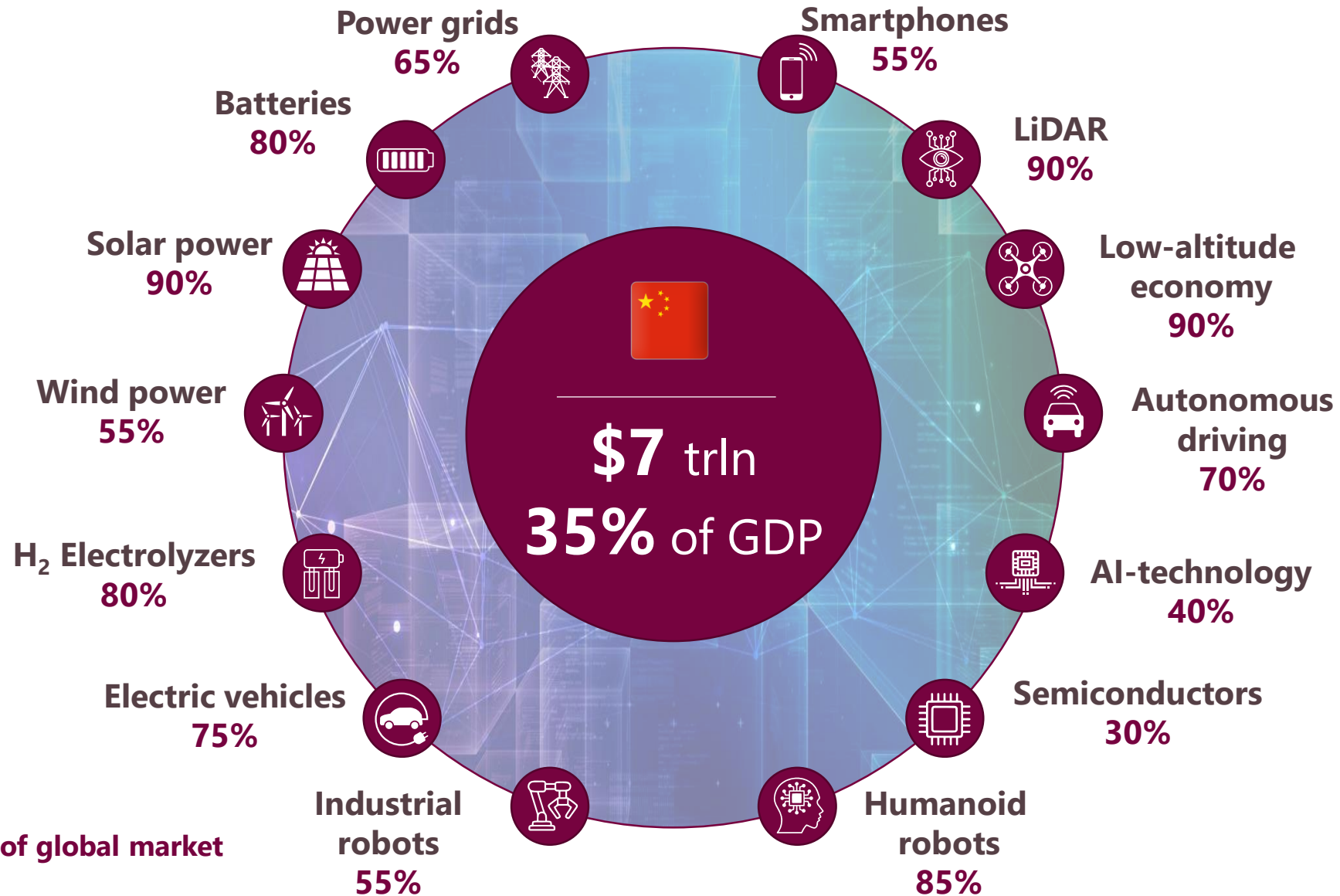
- Advanced Radar Systems
- Missile Guidance Systems
- Engines



- Tomahawk Missiles
- Radar Systems
- Engines



China dominates in cutting-edge technology

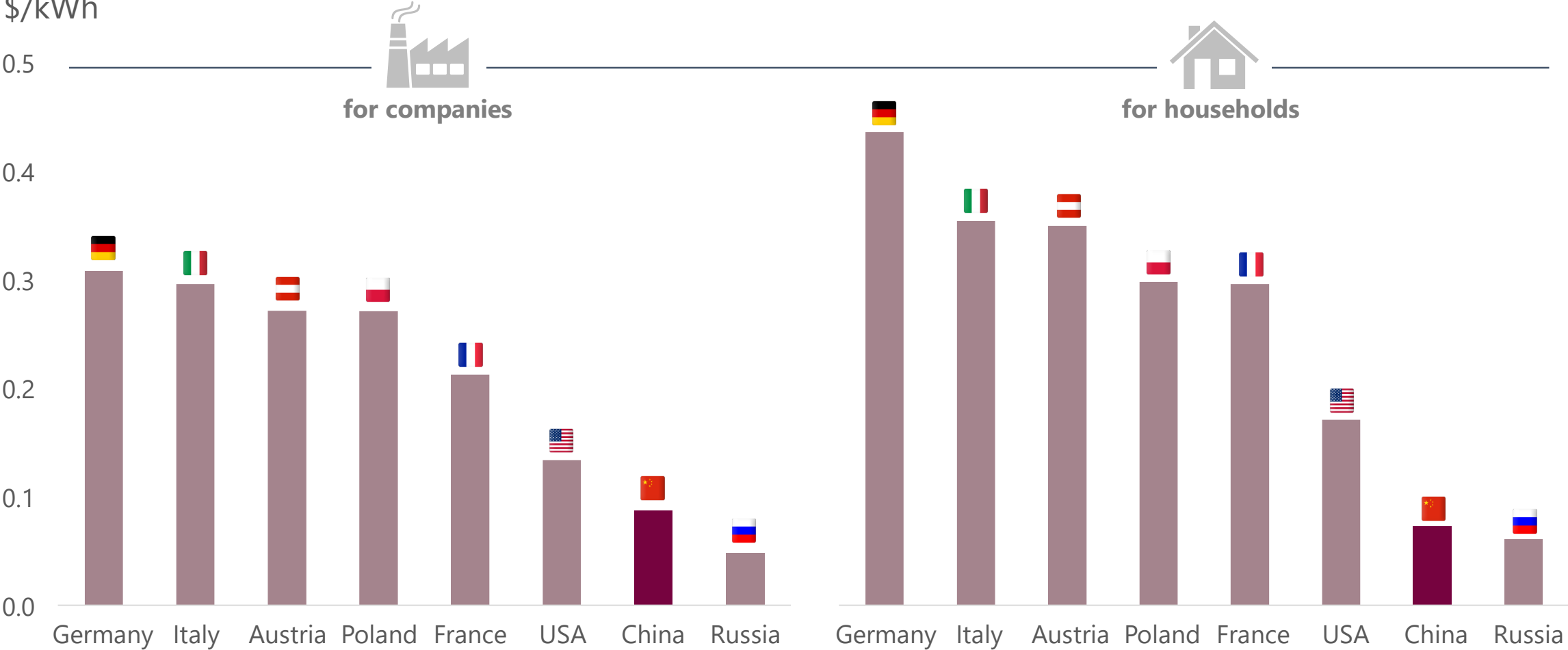


XX% - share of global market



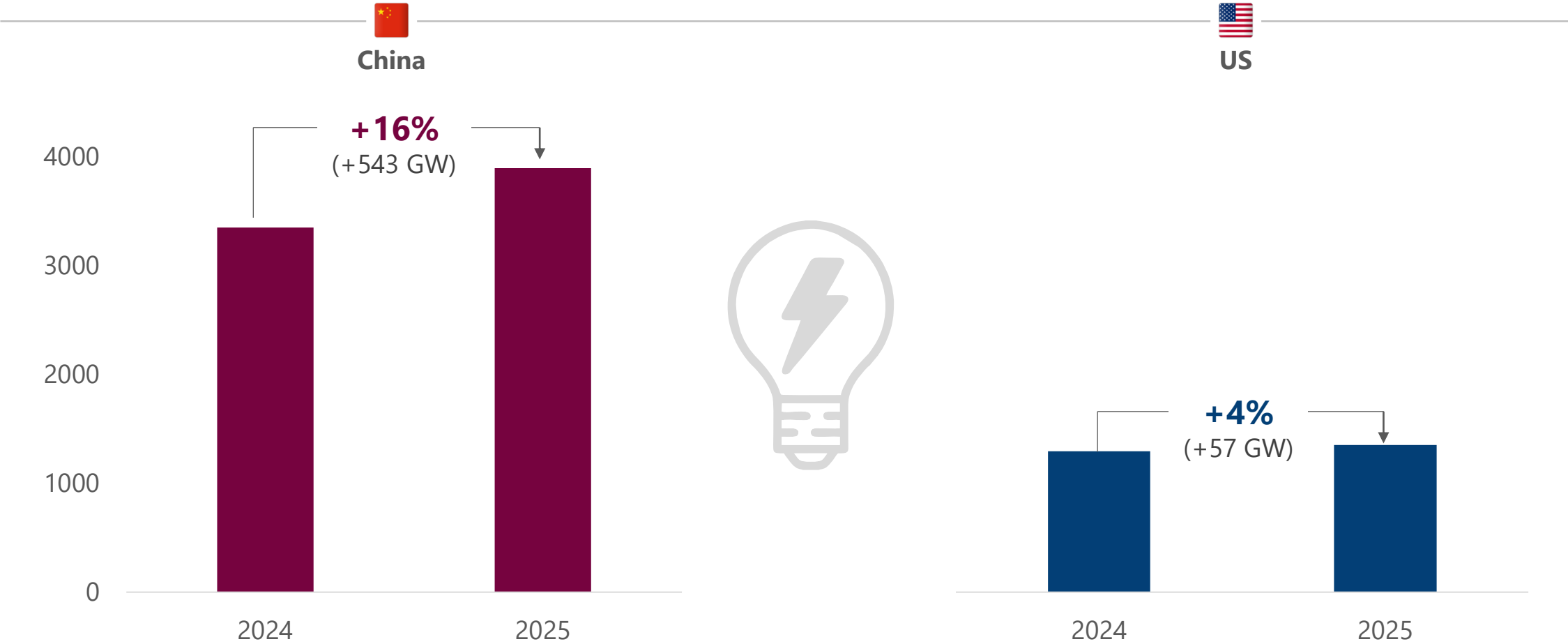
China's balanced energy system keeps electricity prices low

Electricity cost in 2025
\$/kWh



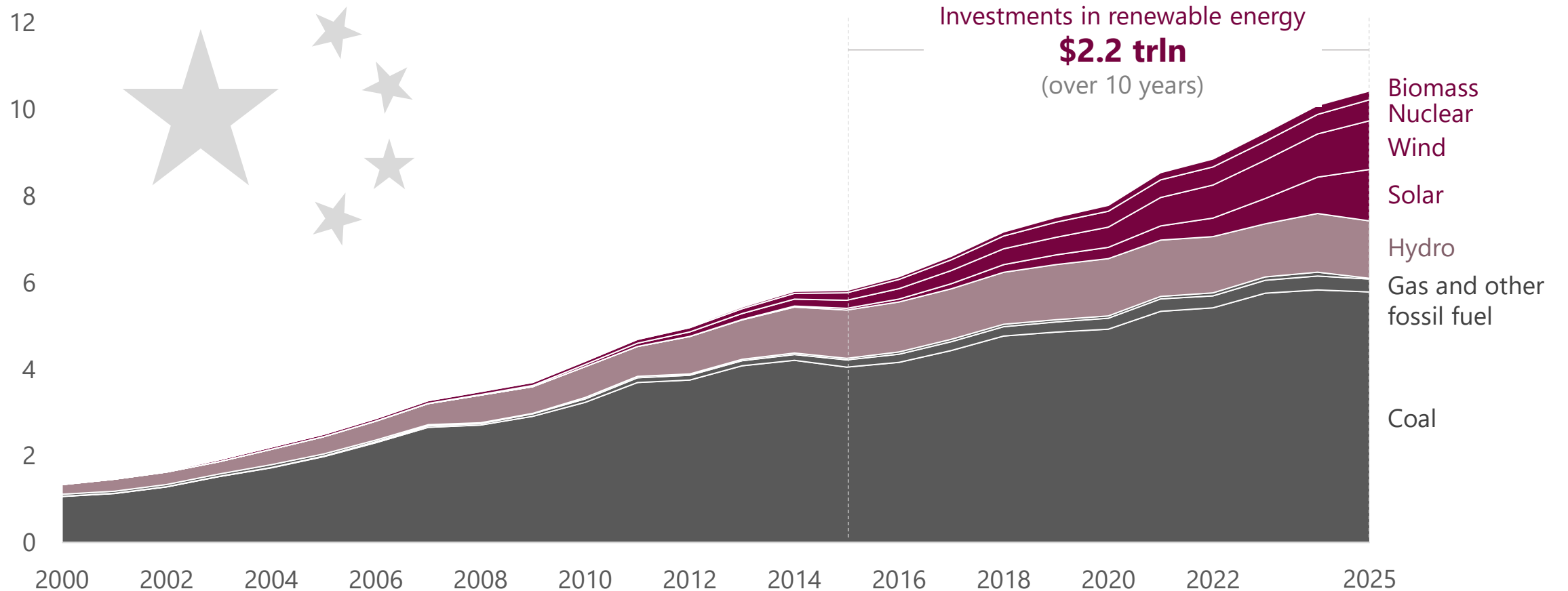
China's installed generation capacity is three times bigger than in the US

Installed power generation capacity in China and the US
GW



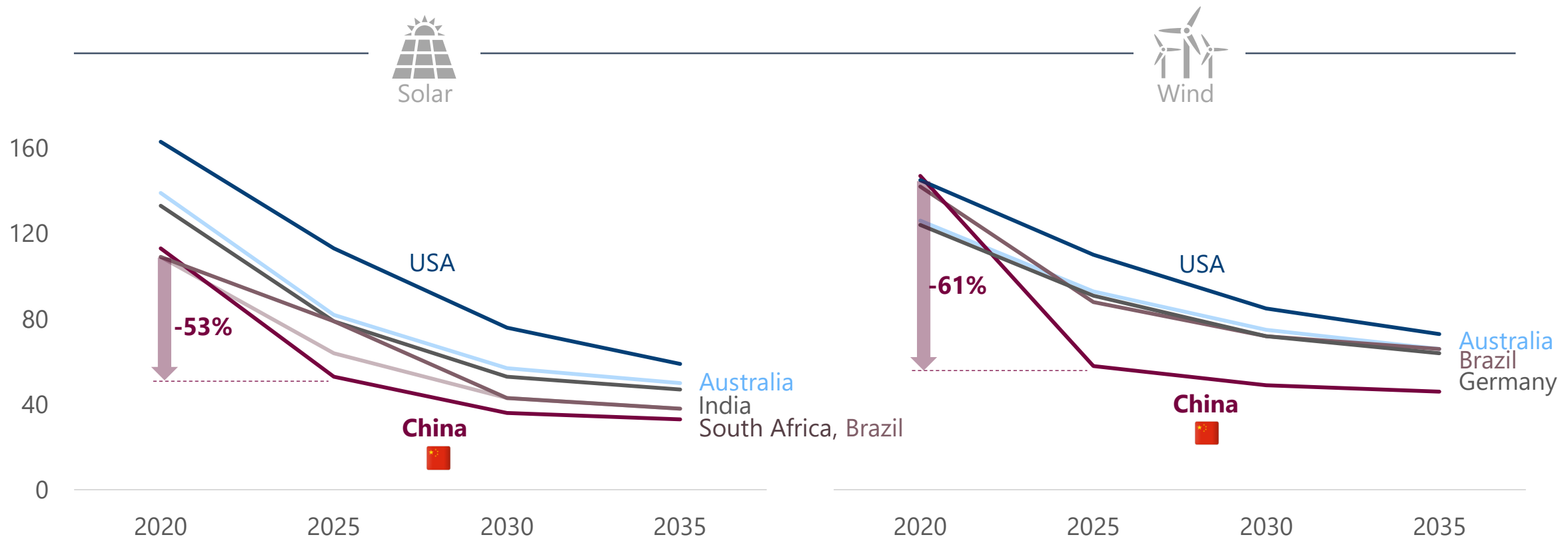
Renewable energy generation in China increased tenfold between 2015 and 2025

Electricity generation in China by source
thous. TWh



Cost of solar and wind power in China has decreased by 50–60% since 2020

Firm levelized cost of energy for solar and wind generation projects by region
\$/MWh

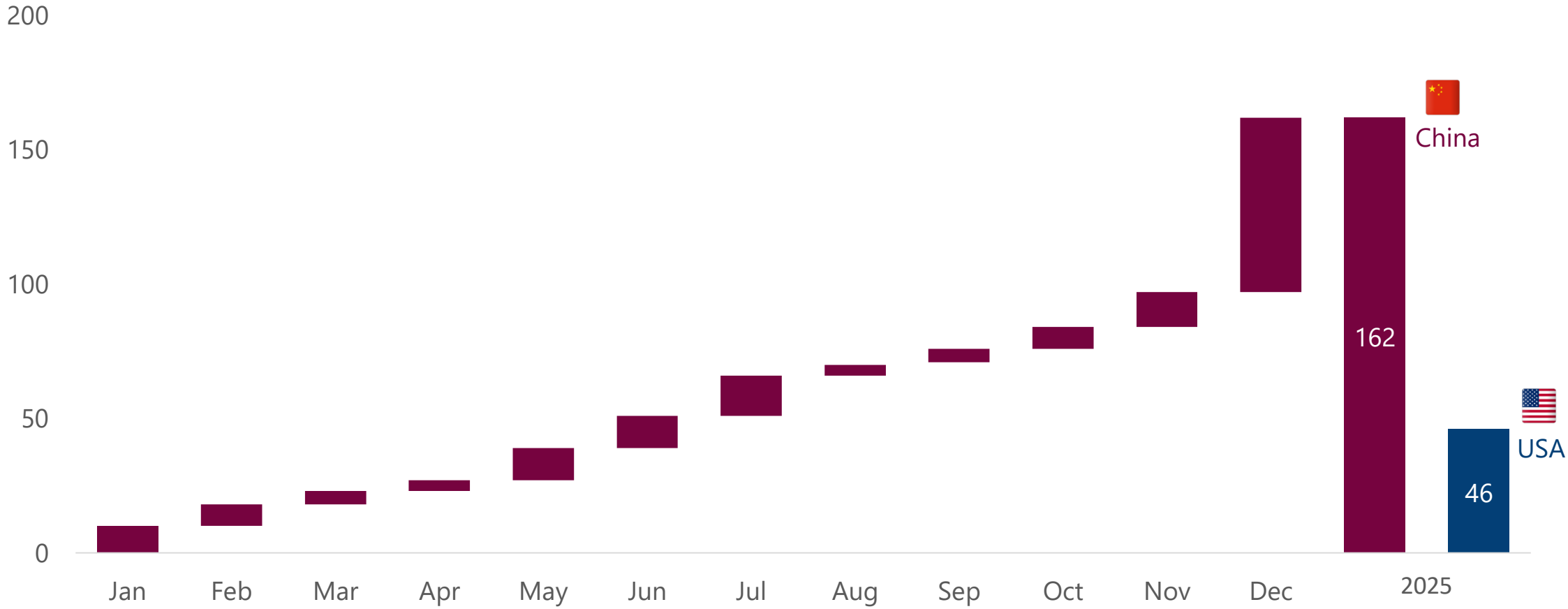


Source: International Renewable Energy Agency. Note: levelized cost of energy for flat, firm round-the-clock renewables power (95% reliability) for generation combined with battery storage; analysis of the most generation-favorable locations: China (Hebei Province, Inner Mongolia), USA (Nevada, North Dakota), Australia (South Queensland, Mid-Western Region), India (Tar Desert), South Africa (North-West province), Brazil (Bahia, Rio Grande do Norte), Germany (Schleswig-Holstein).



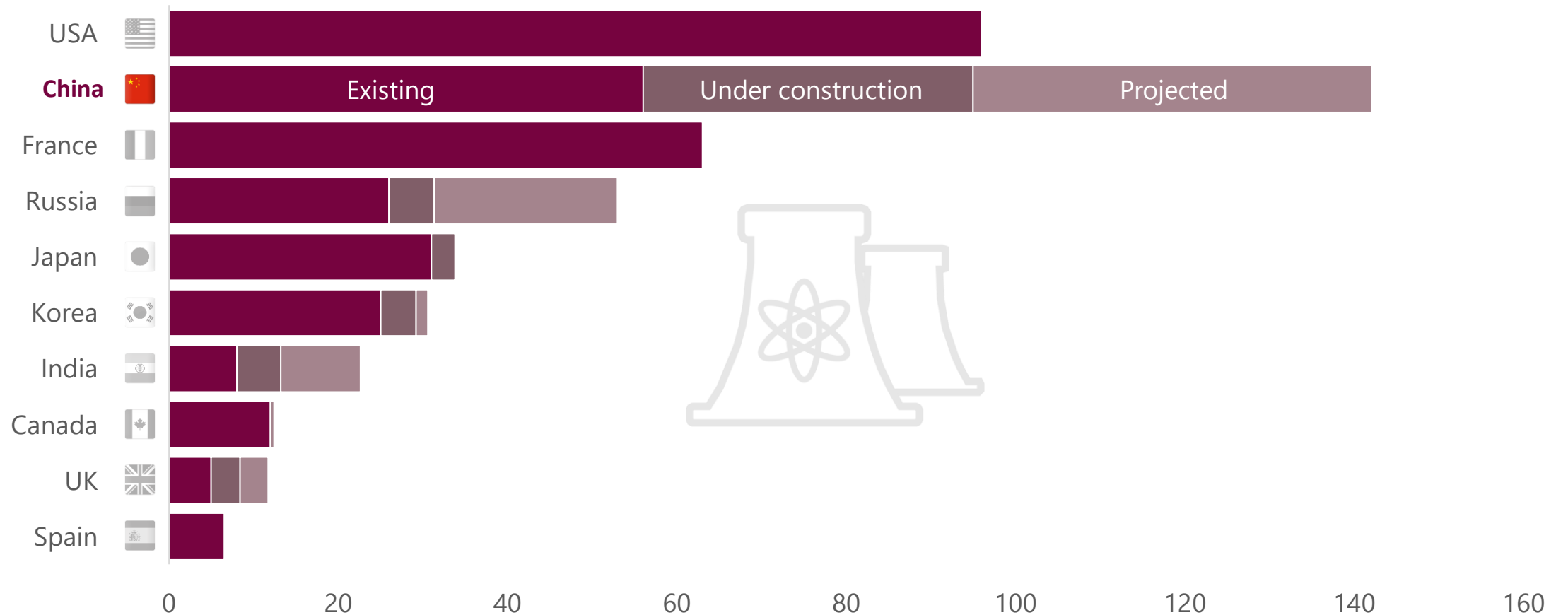
China leads in battery energy storage system deployment

Battery energy storage system capacity installations in China and the US in 2025
GWh



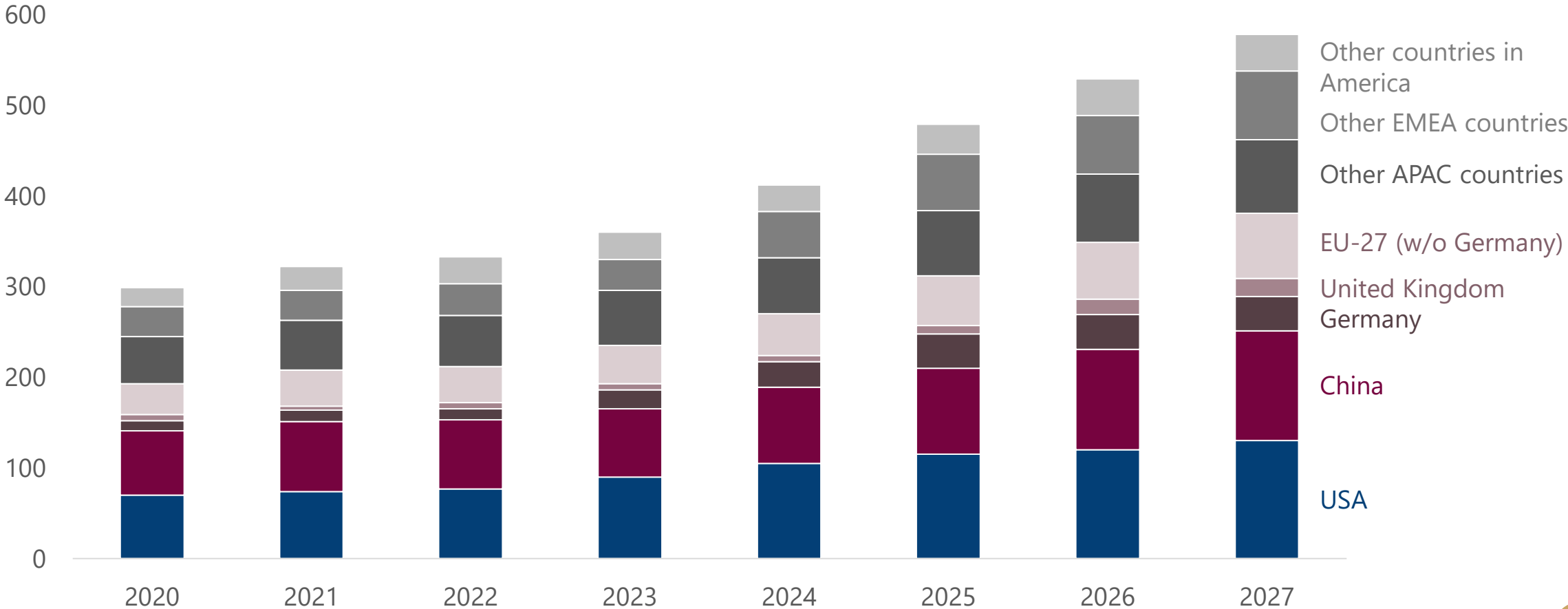
China is a leader in nuclear power construction

Nuclear power generation capacity in major nuclear countries
GW



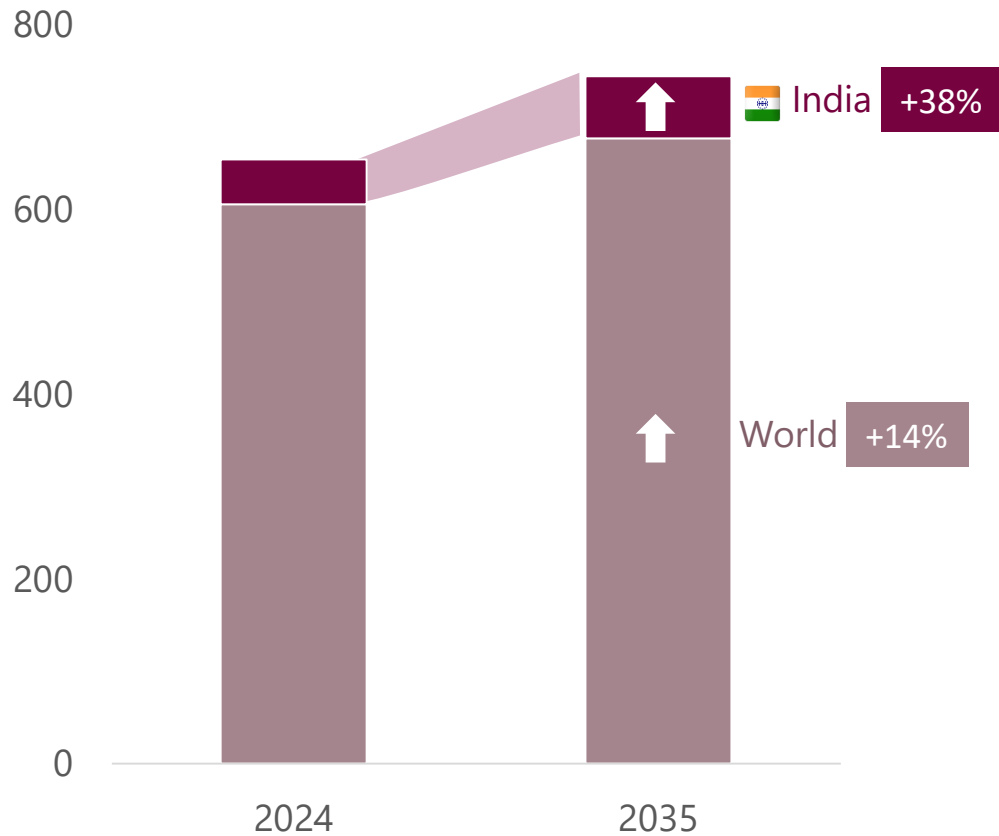
China leads in power grid development

Power grid investments by country/region
\$ bln

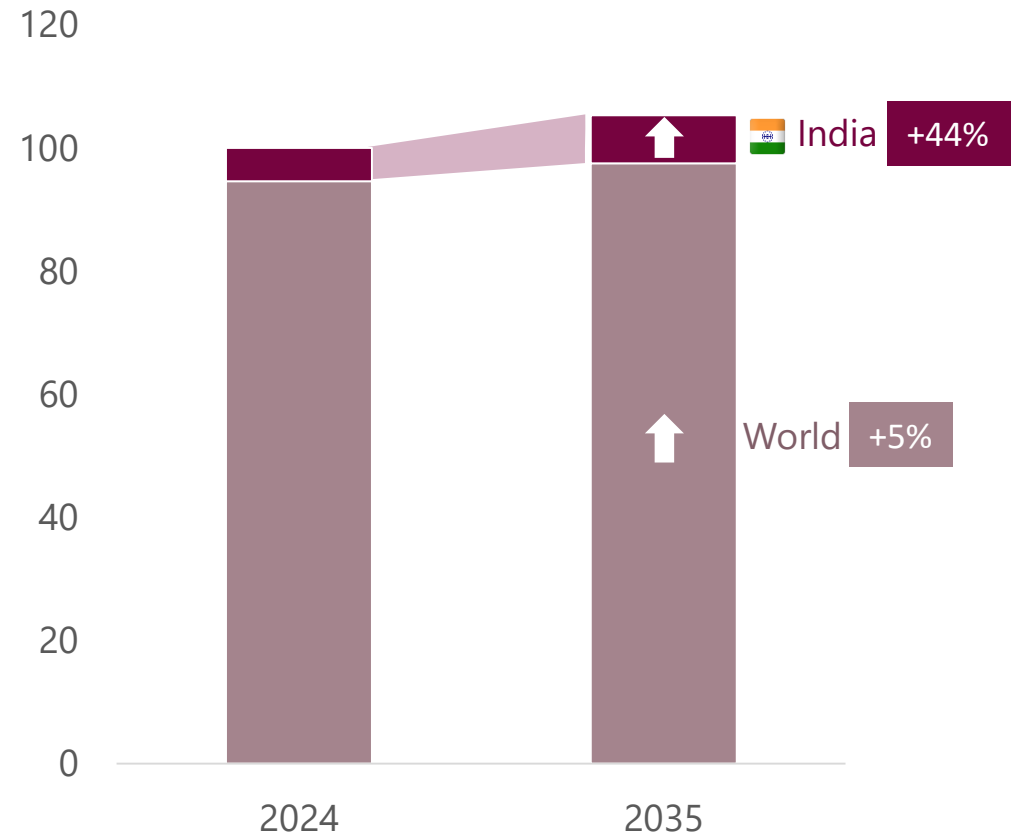


India is outpacing other regions in energy consumption

Energy consumption
EJ

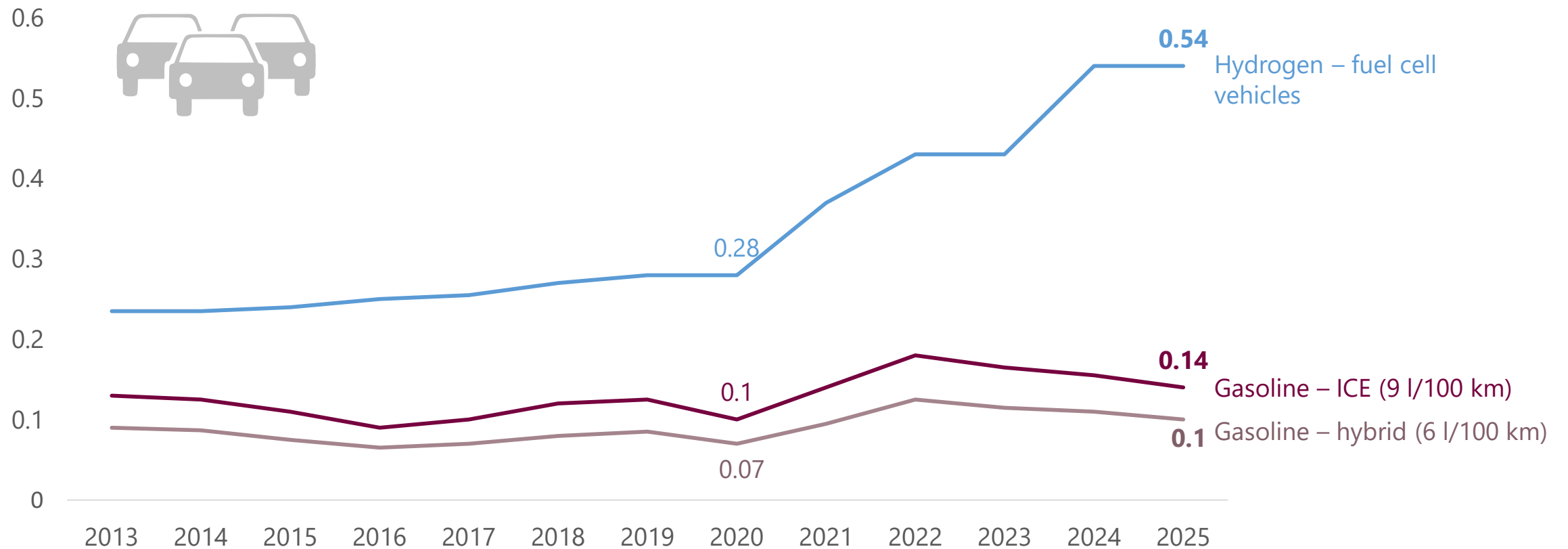


Oil demand
mmbpd



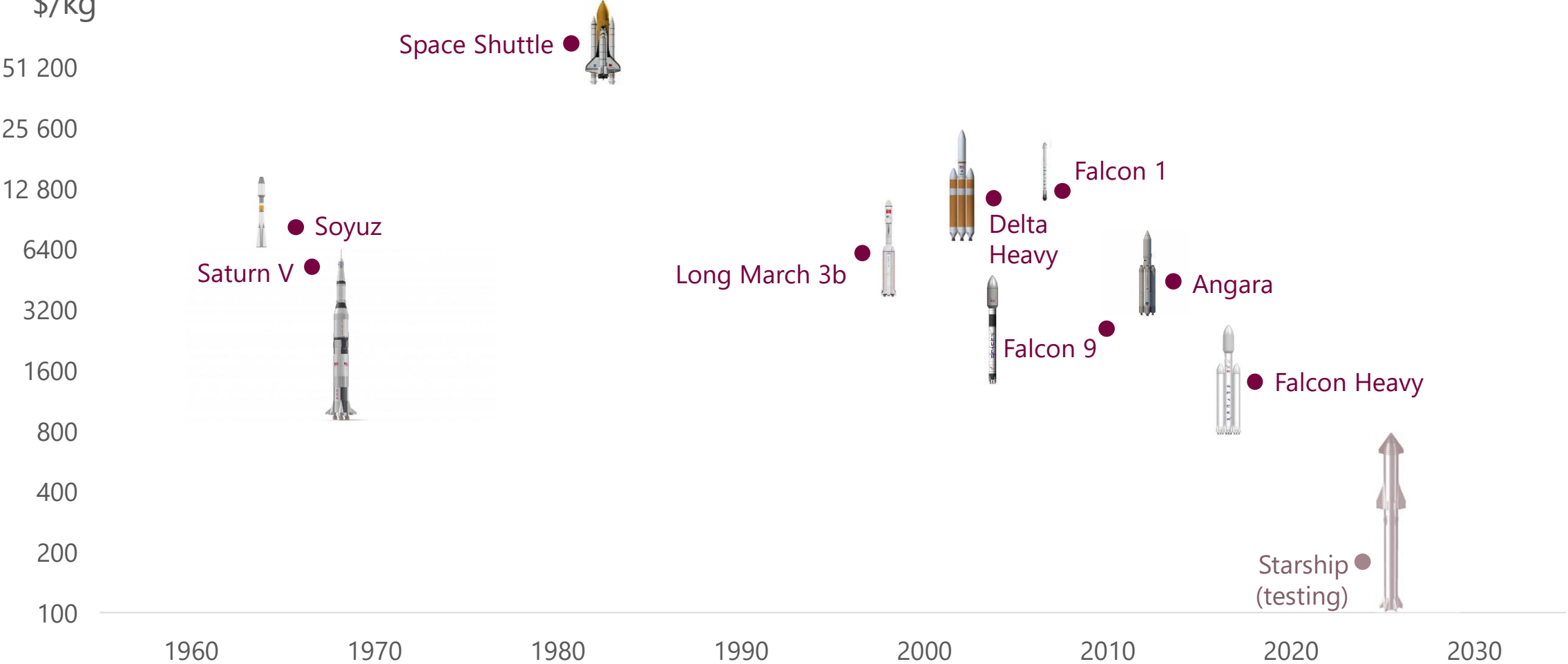
Hydrogen cost vs. other fuels

Motor fuel costs, 2013–2025
\$ per mile



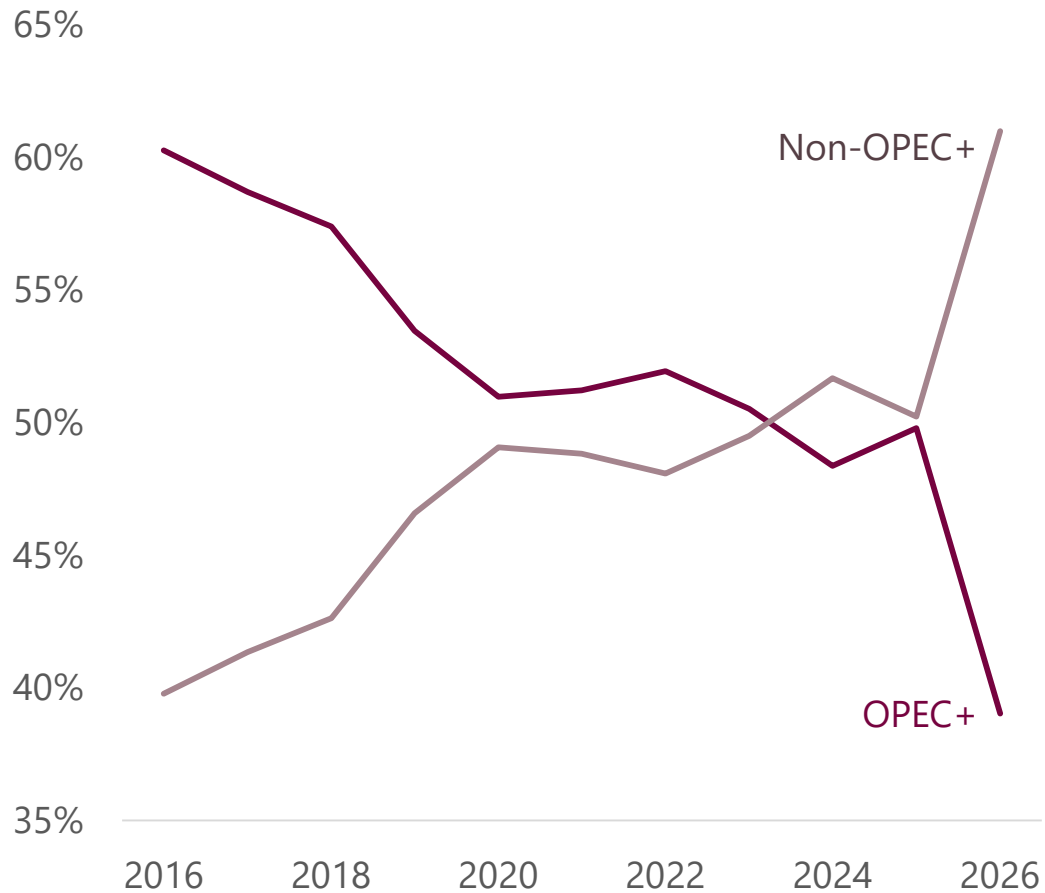
Space-based computing requires reducing the cost of delivering cargo into orbit

Space payload launch costs to low-Earth orbit
\$/kg

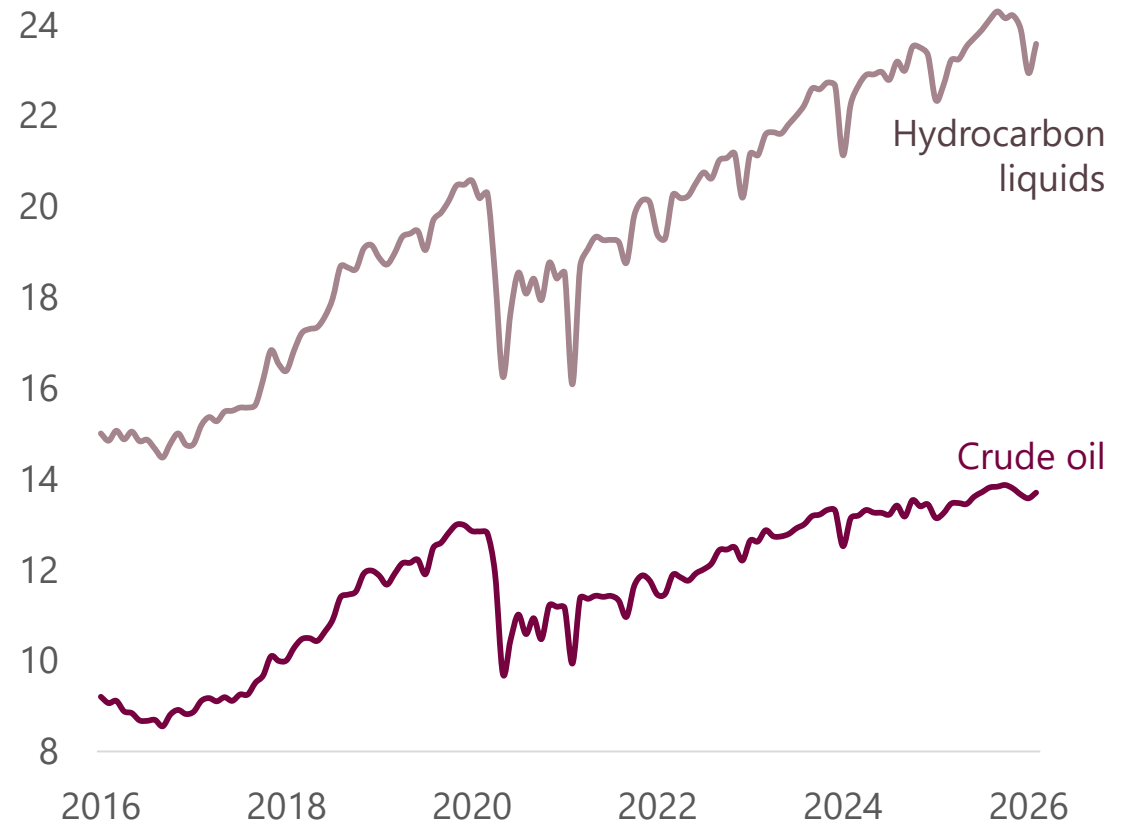


OPEC+'s oil market share has declined significantly

OPEC+ and non-OPEC+ countries' share of global hydrocarbon liquids production

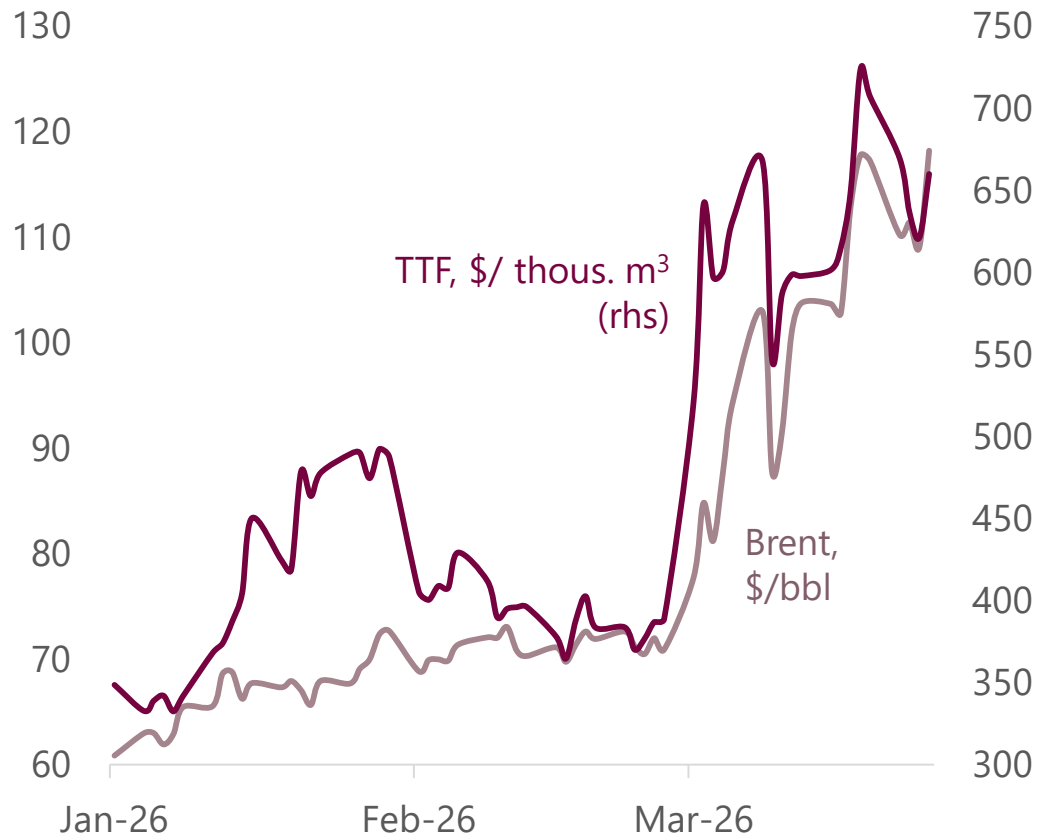


US crude oil and hydrocarbon liquids production mmbpd

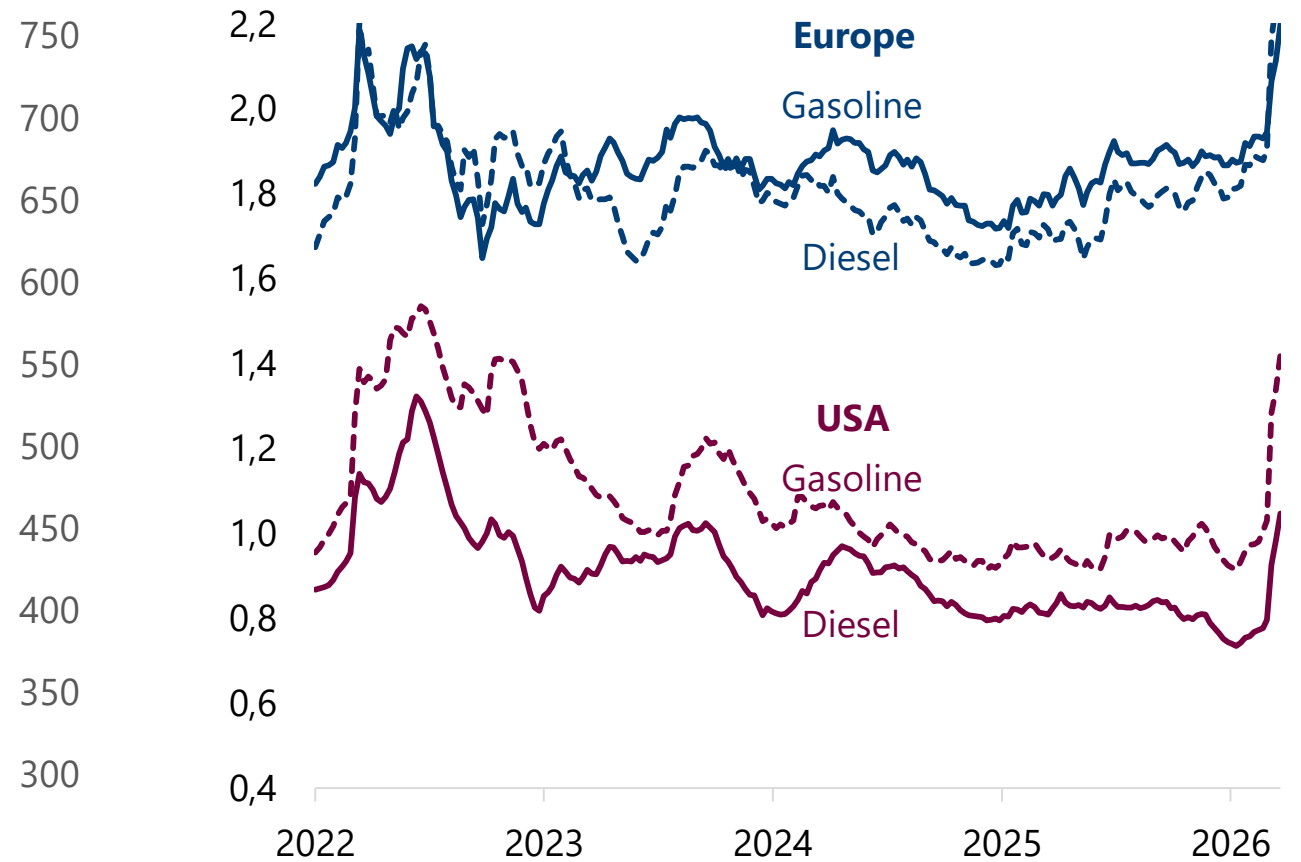


Rising hydrocarbon prices are passed on to consumers

Brent oil price and gas price in Europe

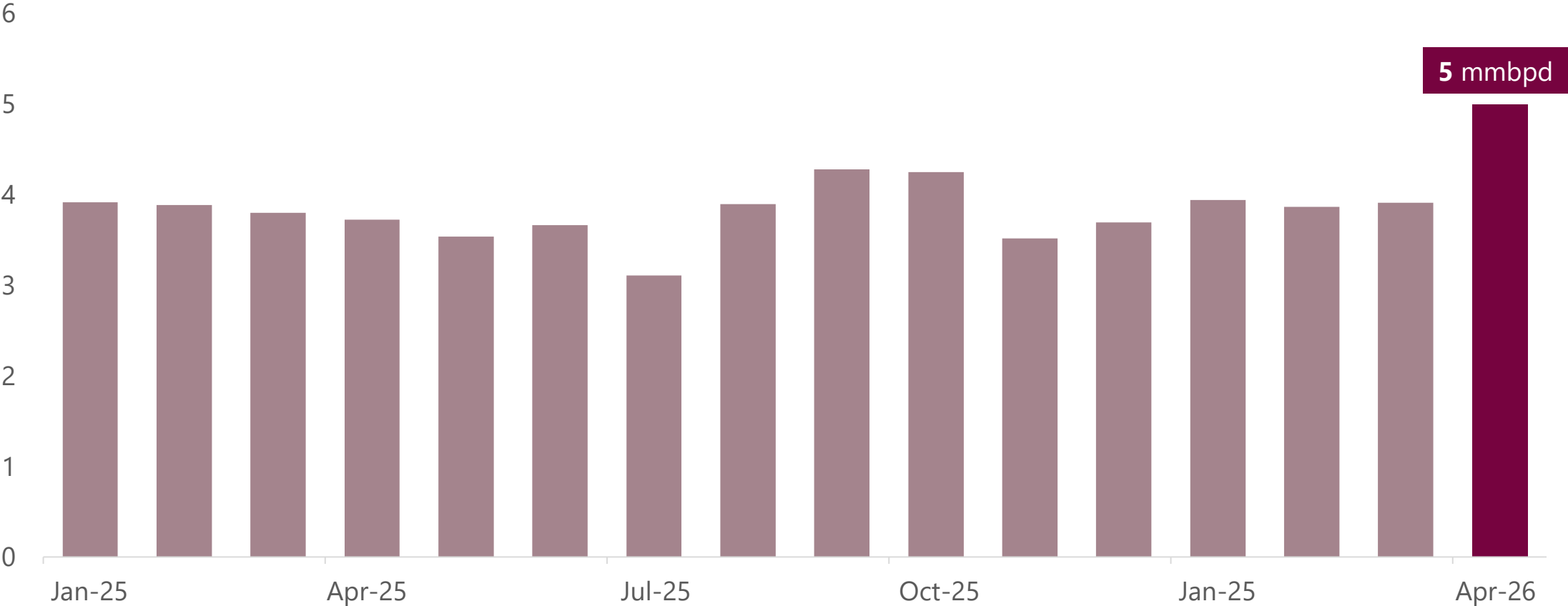


Retail motor fuel prices \$ per liter



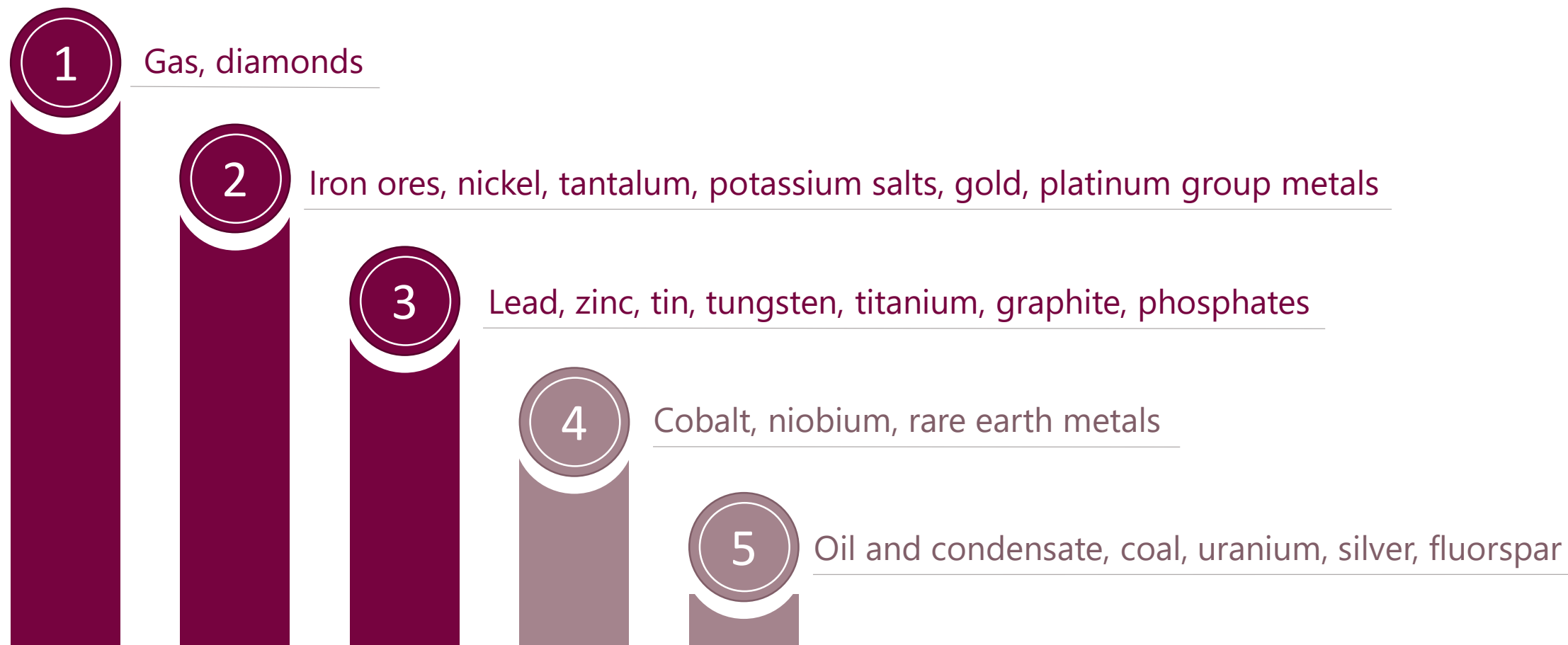
The US oil and gas industry benefits from the Hormuz crisis

US seaborne oil exports
mmbpd



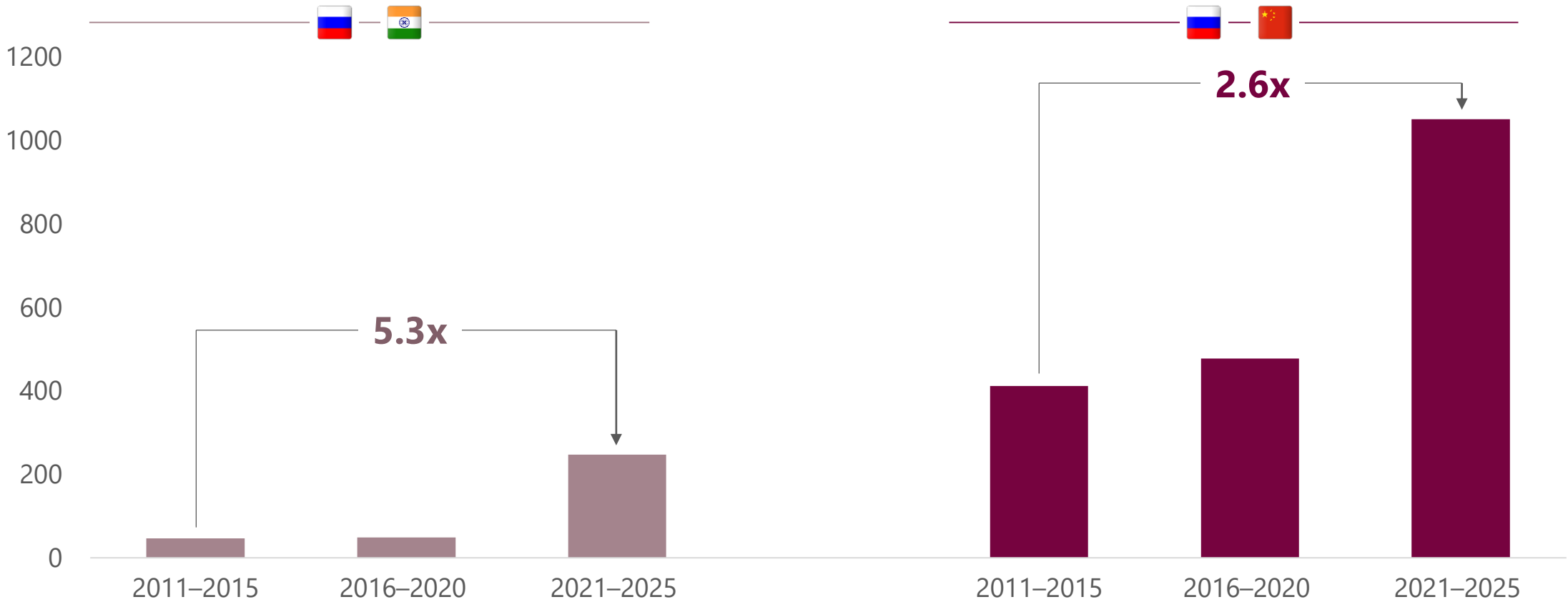
Russia has the largest natural resources base

Russia's rank in global reserves of natural resources



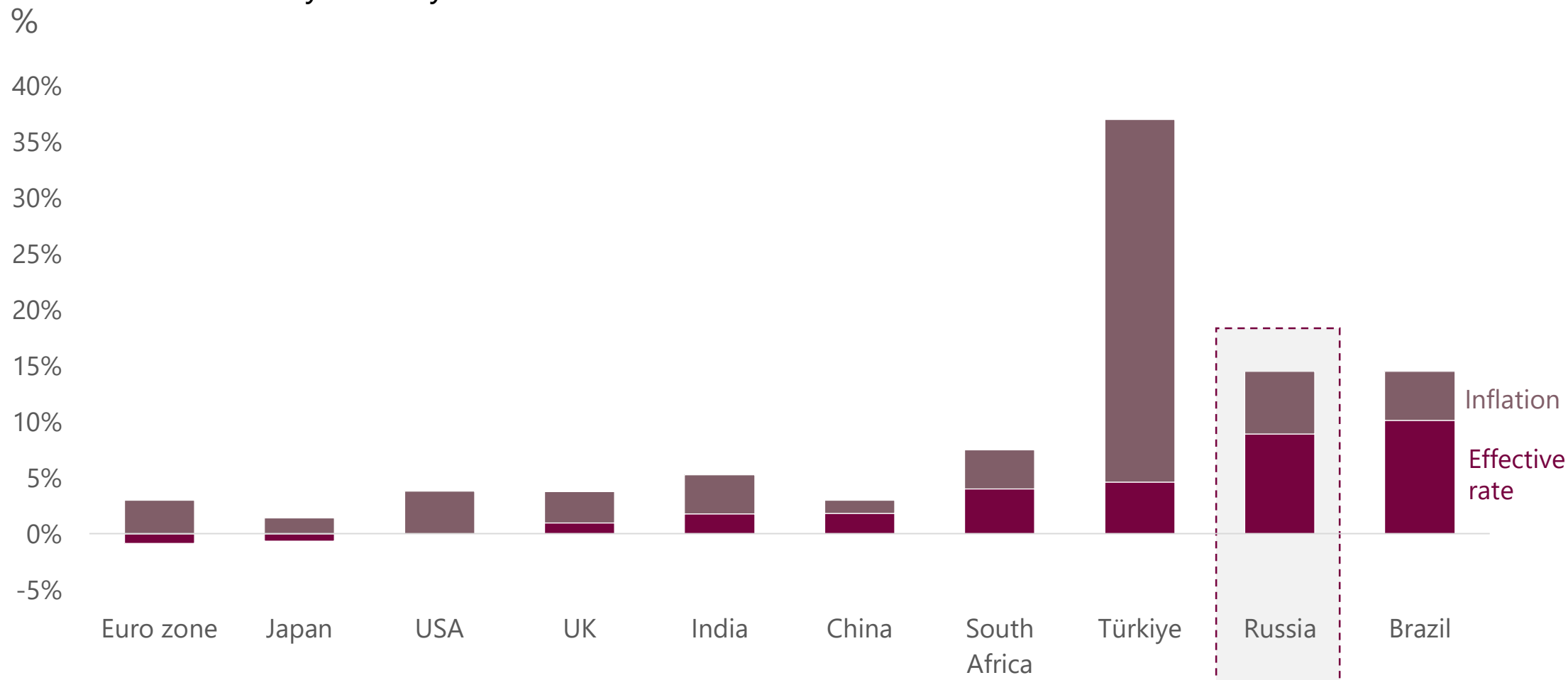
Cooperation with strategic partners

Russia's trade turnover with India and China
\$ bln



Record-high borrowing costs in Russia hold back investments

Real interest rates by country





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