

CARLYLE

The New Joule Order

Jeff Currie, Chief Strategy Officer of Energy Pathways

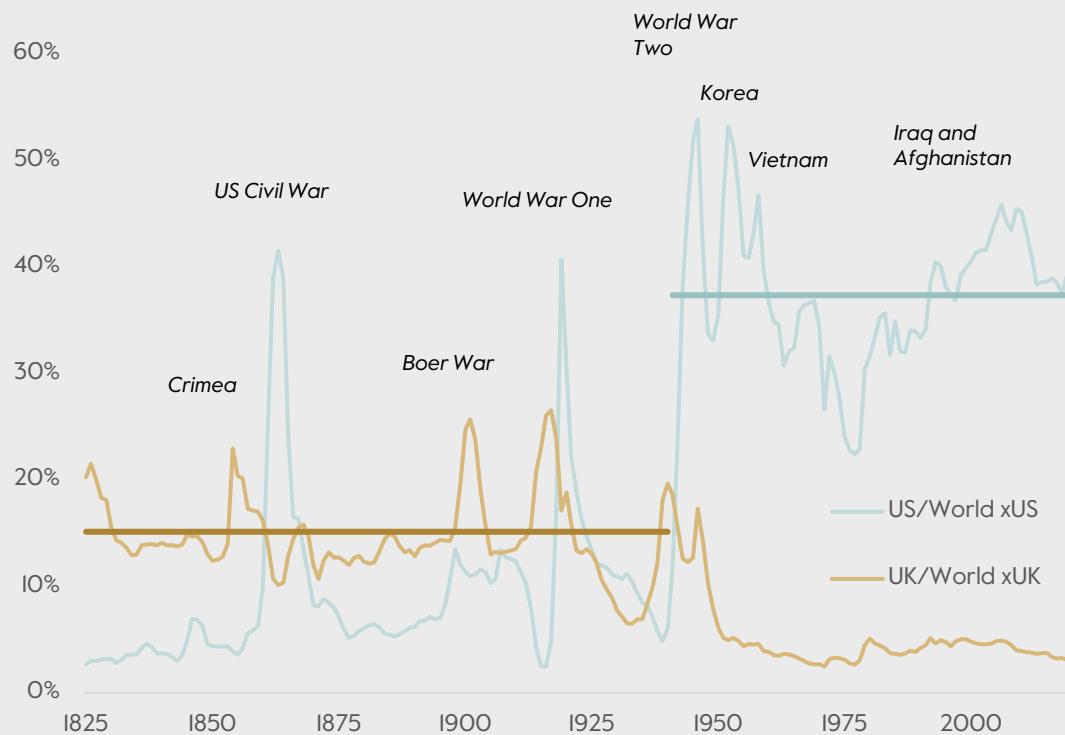
DECEMBER 2025

TRADE SECRET AND STRICTLY CONFIDENTIAL

The US pays to provide hegemonic stability

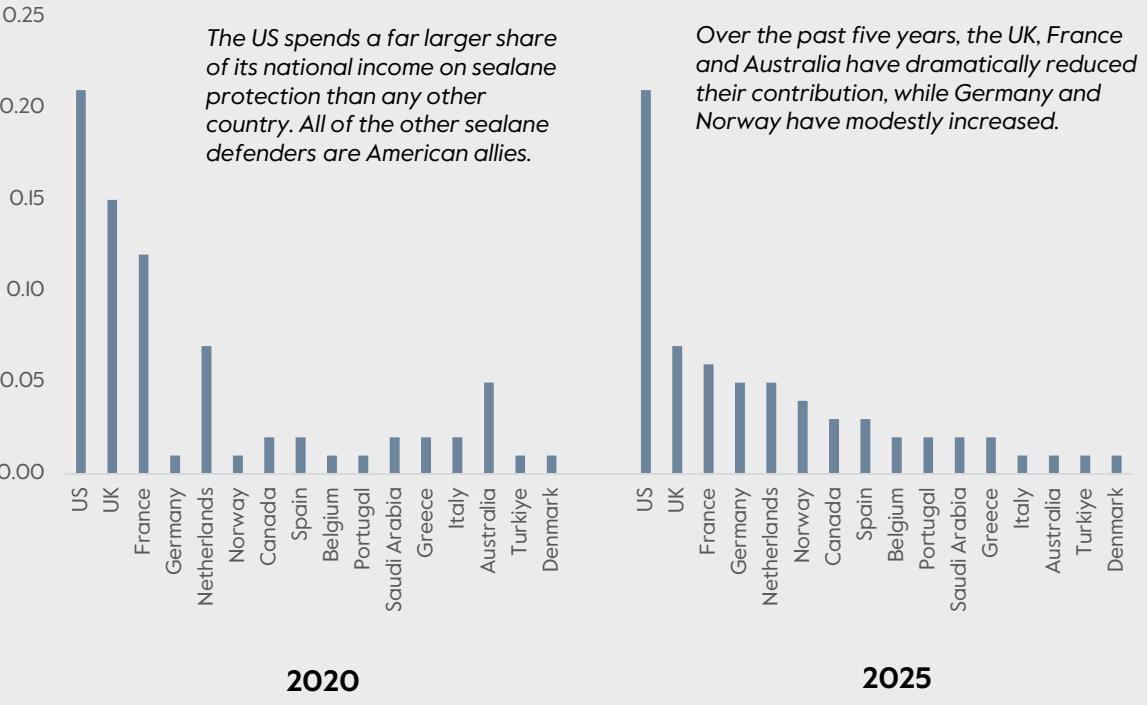
The Core of America's Hegemonic Power Has Been Its Economic Capacity to Spend on Defense

Military Expenditure Share



The US leads the West in protecting sealanes for the world

Percentage of GNI Spent on Sealane Protection



Inequality and protectionism reflect a society under stress

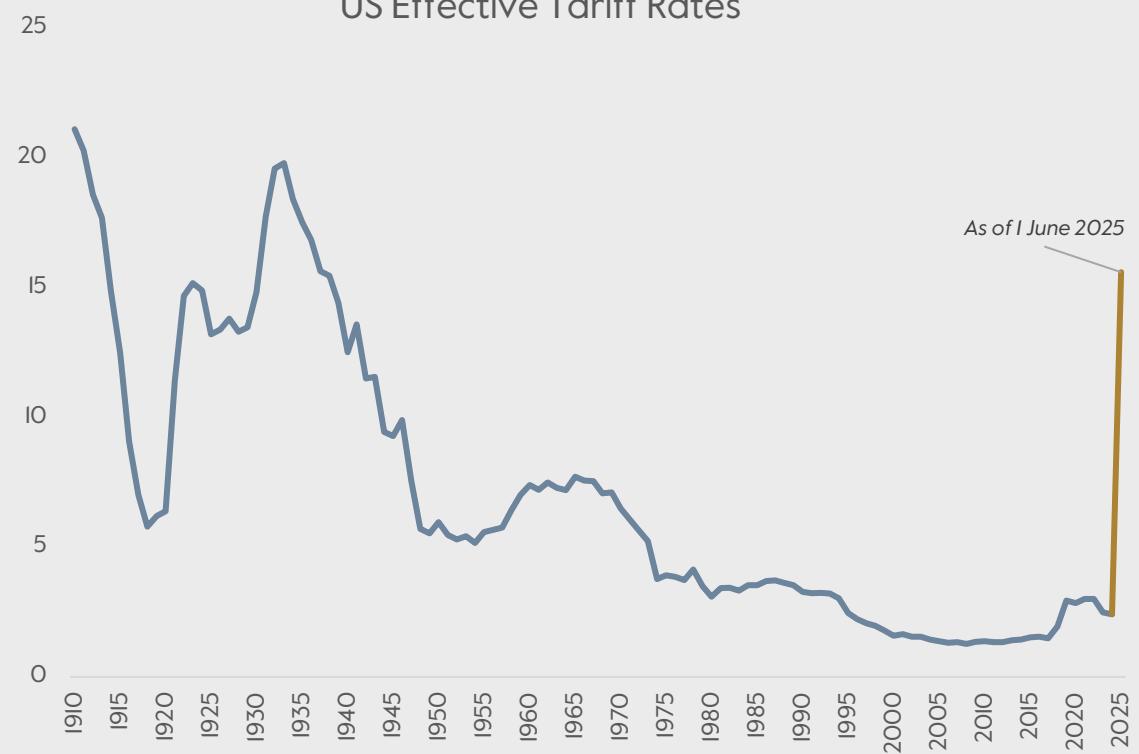
Inequality in the US has steadily risen to record levels

Average income of top 1% over bottom 50%



Tariff rates, while still unsettled, have jumped to levels not seen since the Great Depression

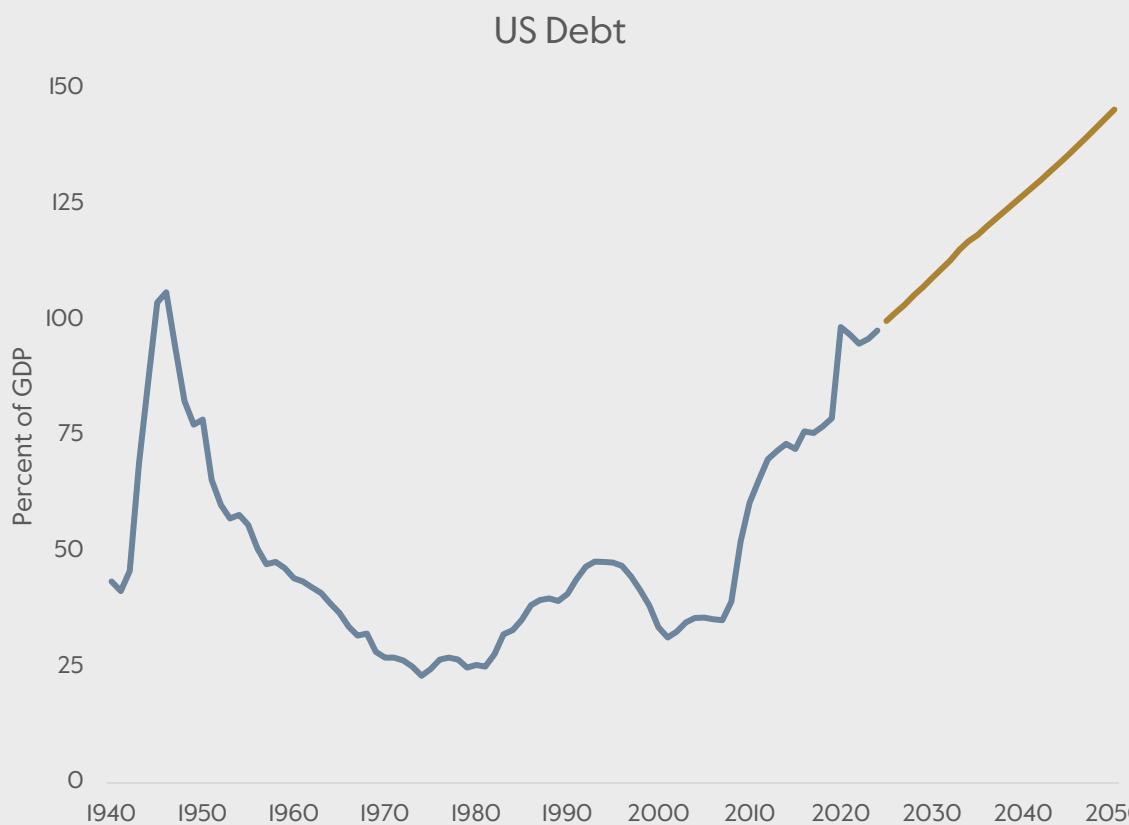
US Effective Tariff Rates



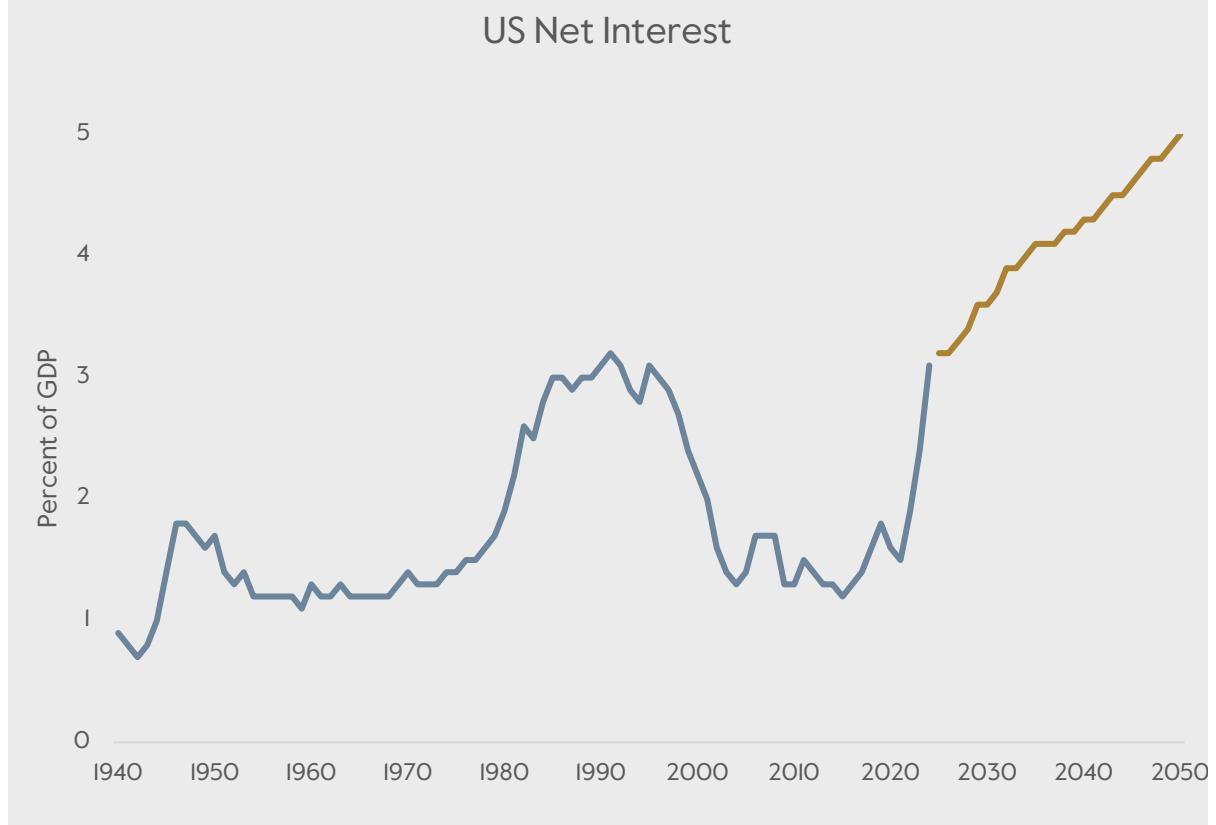


The debt can no longer be ignored by Americans

Government debt surged with the Global Financial Crisis to wartime records

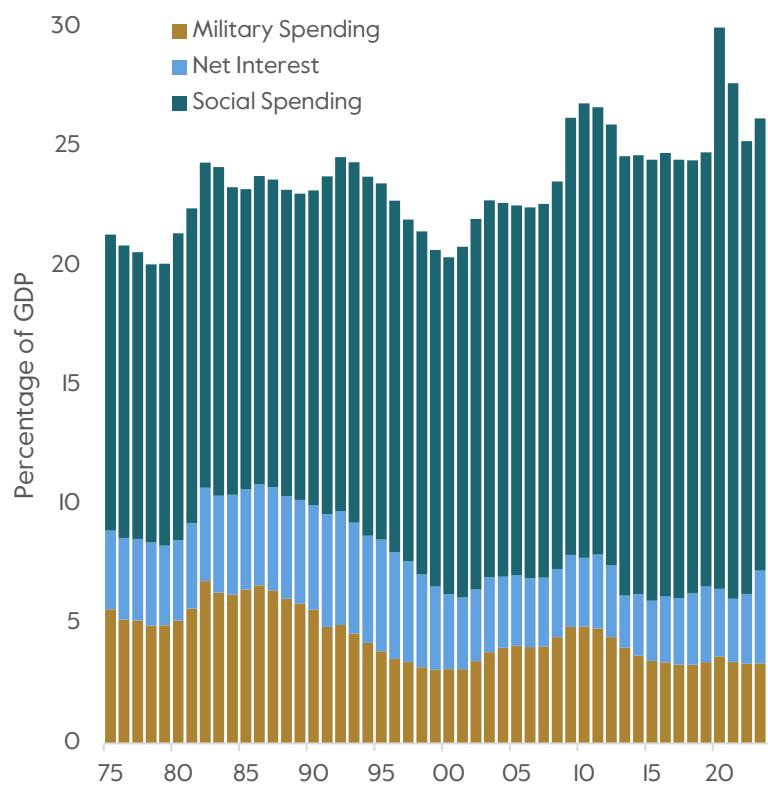


With rates now rising, interest payable on the debt is breaking out as well

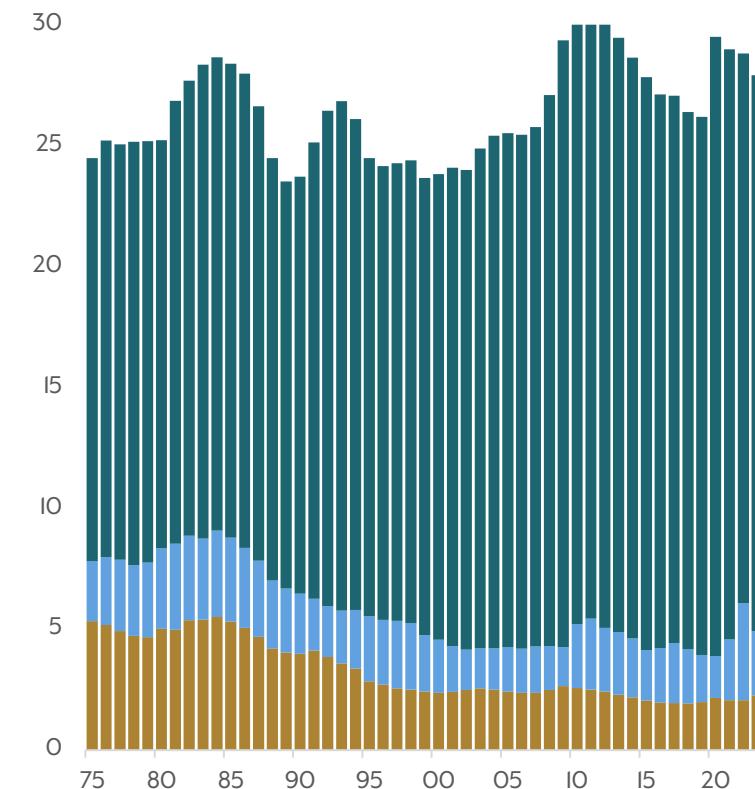


Fear, greed and compassion in government spending

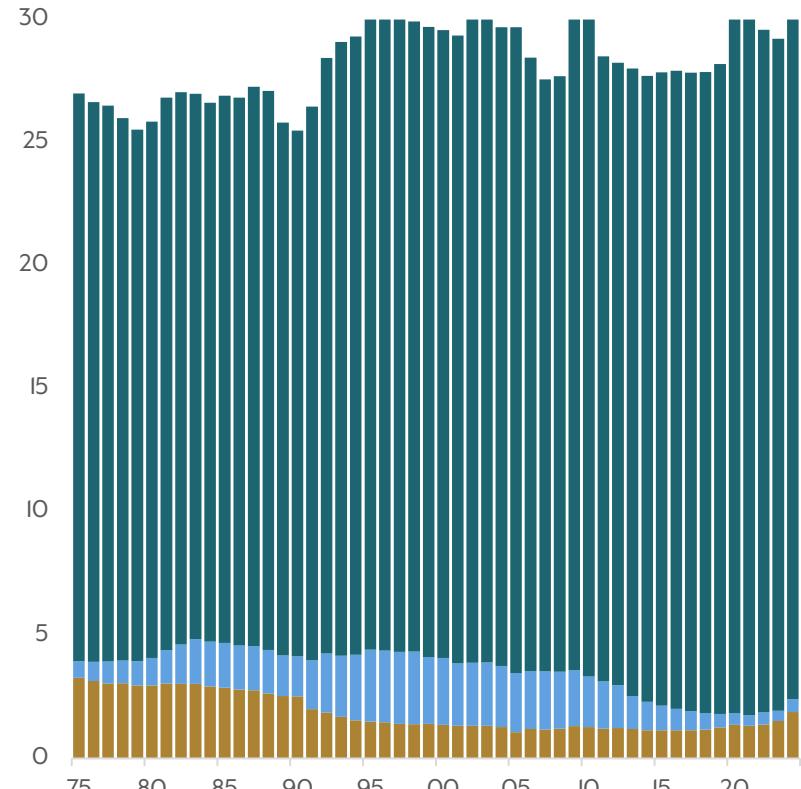
America borrows to have both guns and (more) butter now



The British, as often the case, are in the middle

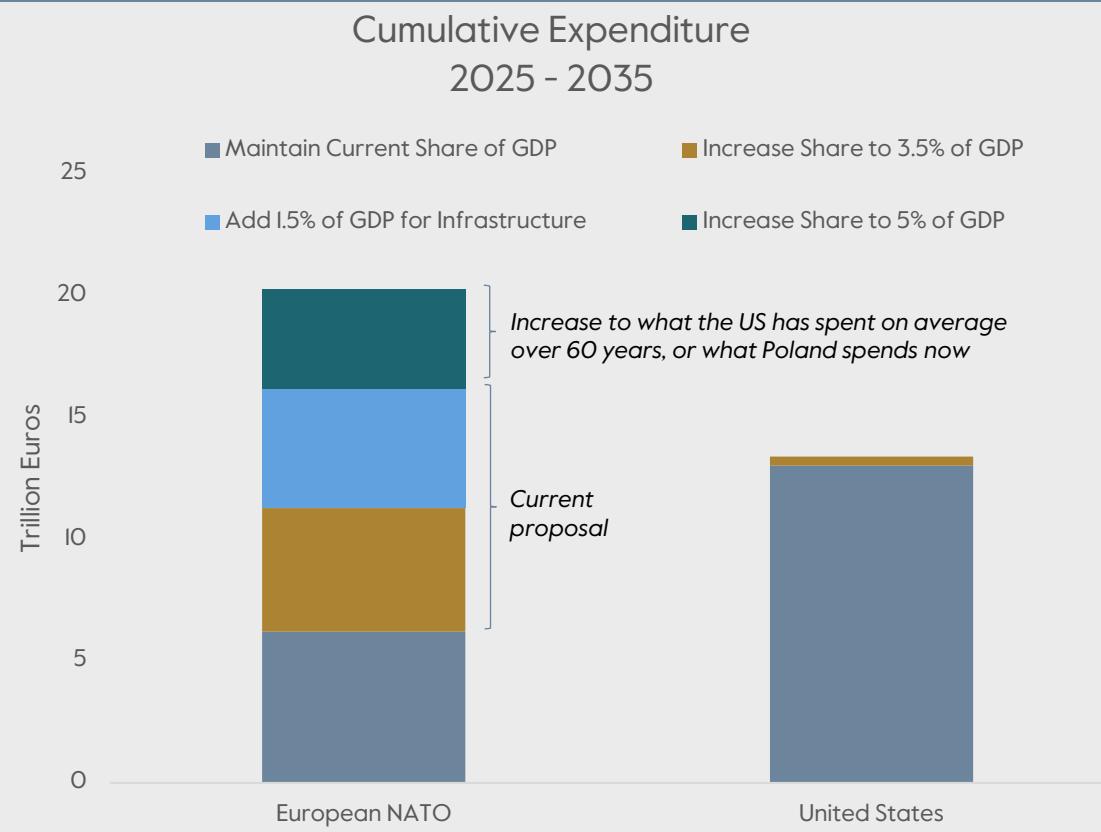


Germany has prioritized butter, which gives it capacity for guns

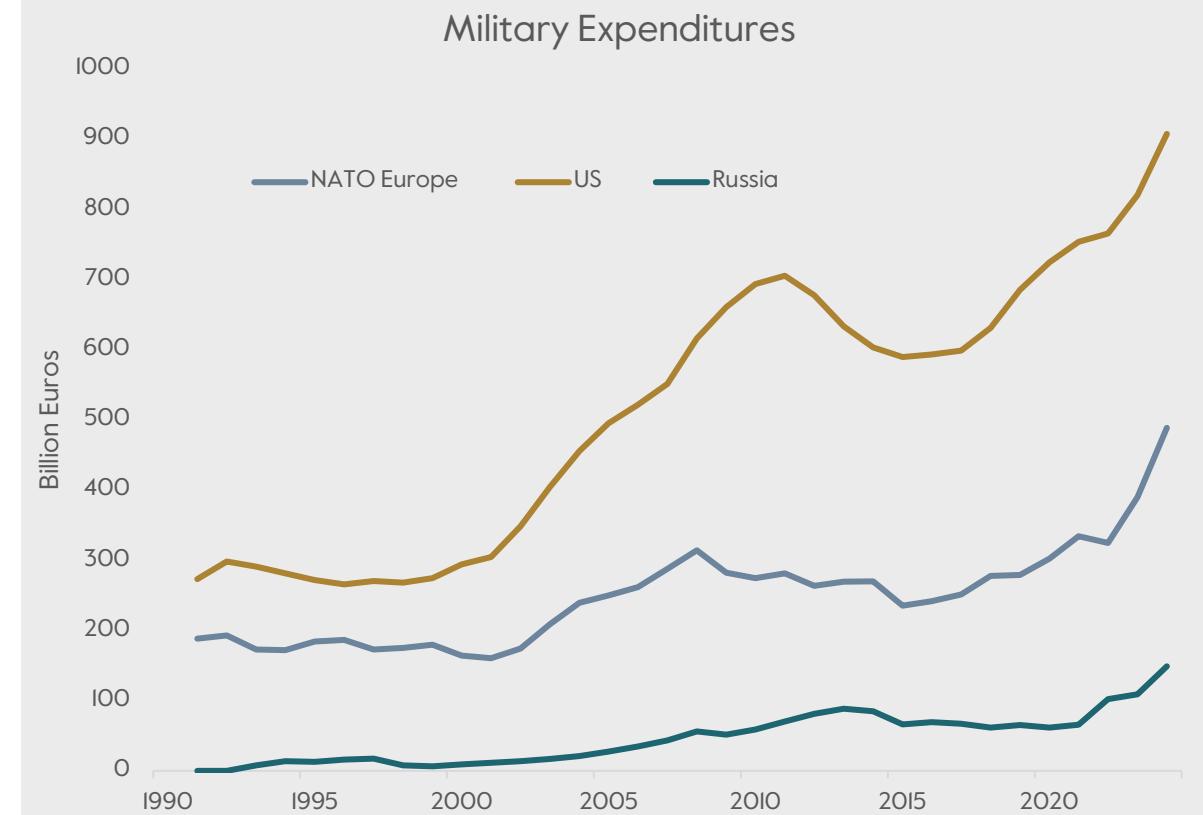


How to spend matters more than how much to spend

European allies could add anywhere from €4tn to €14tn of new spending over the next decade



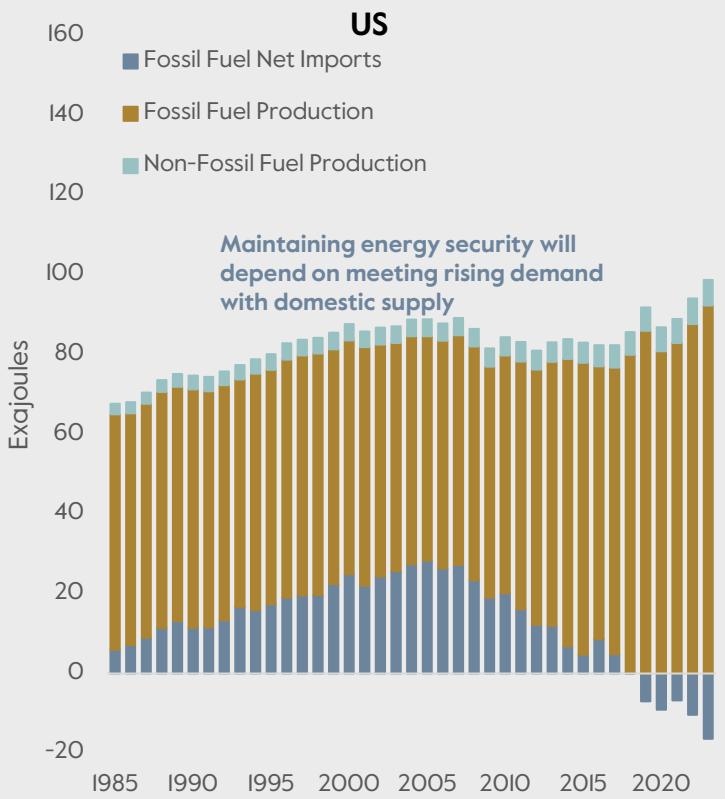
European NATO will need to get more bang for their bucks



Reducing imported fossil fuels enhances security

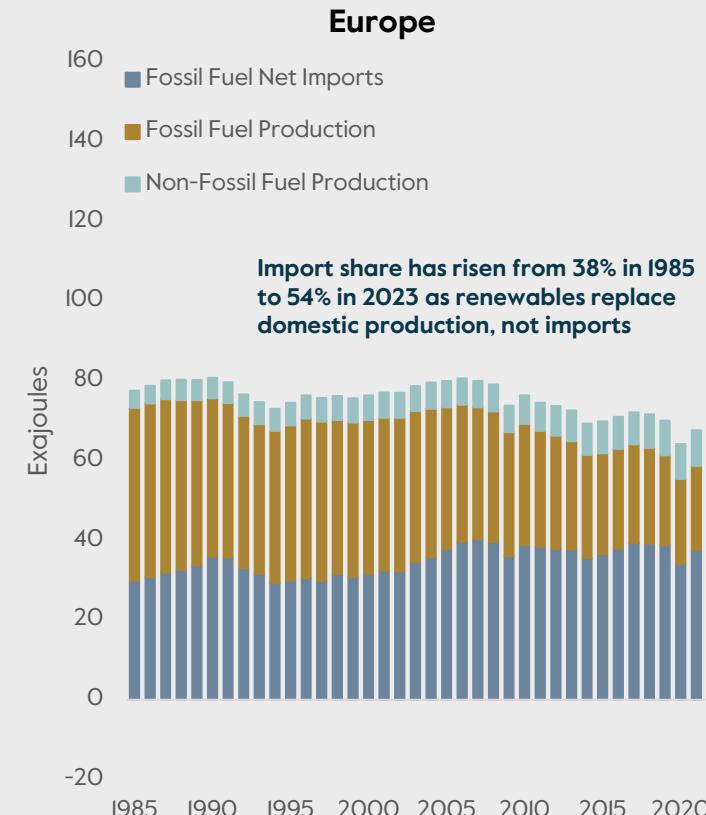
US – Energy Dominance

Shift to net exporter increased security



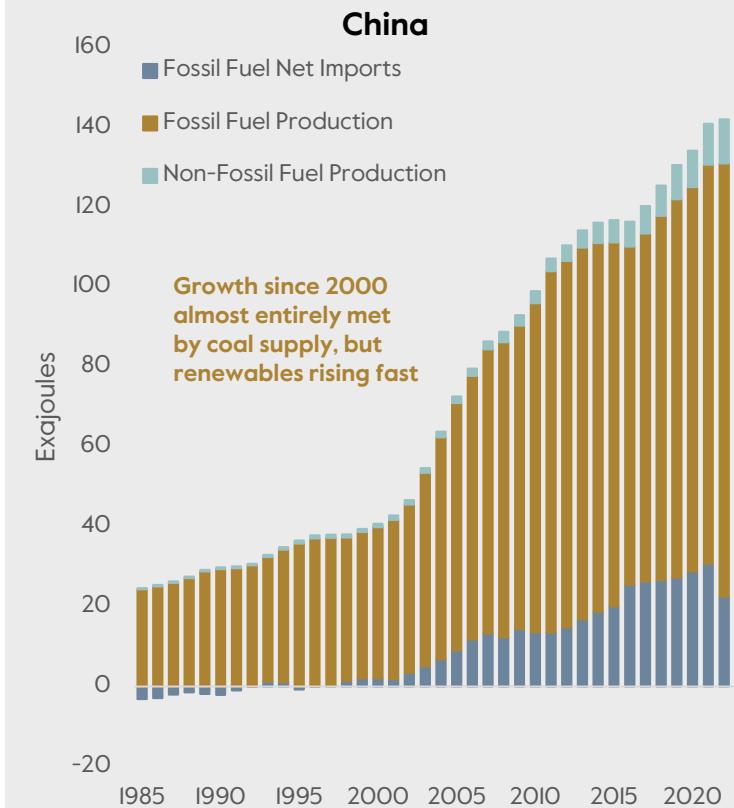
Europe - VULNERABLE

Net import share of supply still increasing



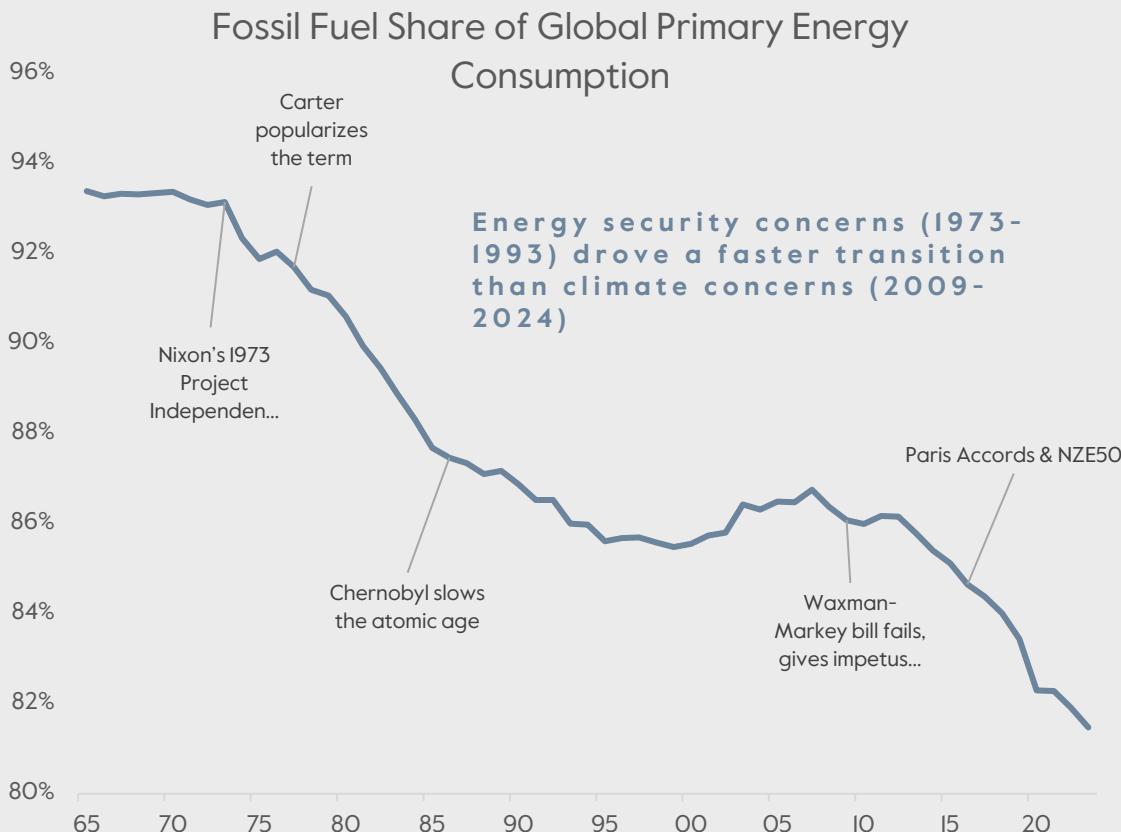
China - SHIFTING

Supply growth being satisfied domestically



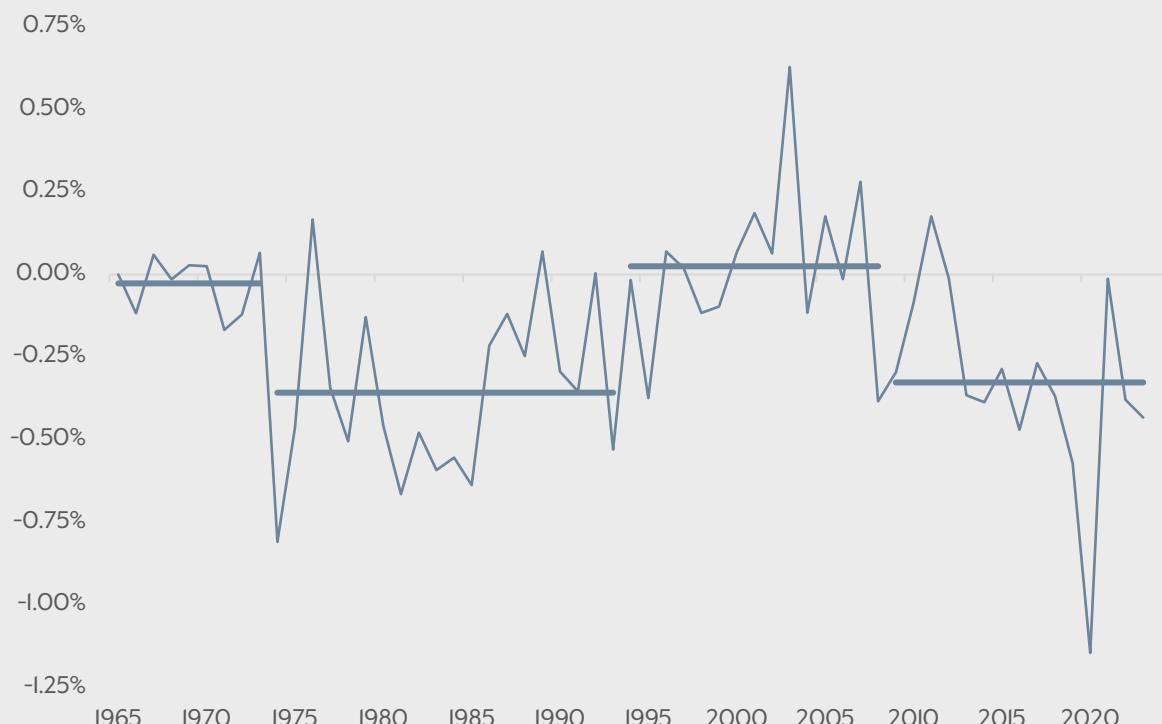
Security has driven the transition faster than environment

The Energy Transition turned 50 last year



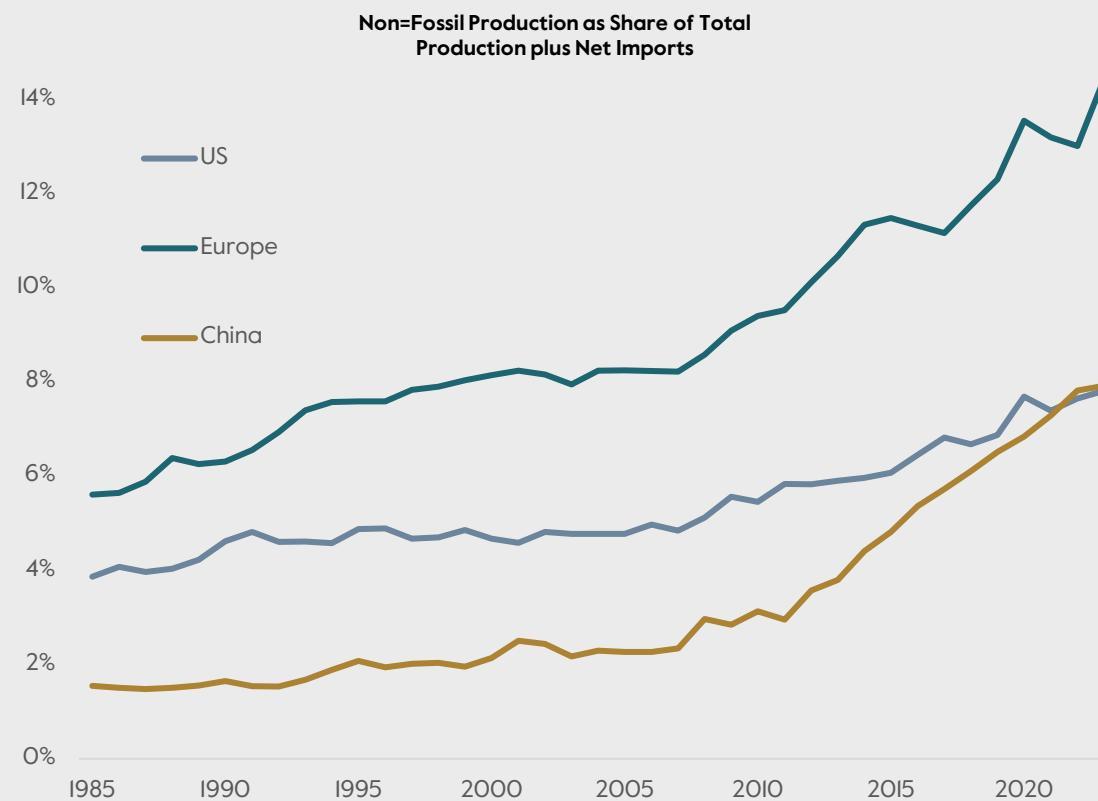
Security drove the transition in the 1970s as fast as the environment did in the 2010s

Change in Fossil Fuel Share of Global Primary Energy Consumption

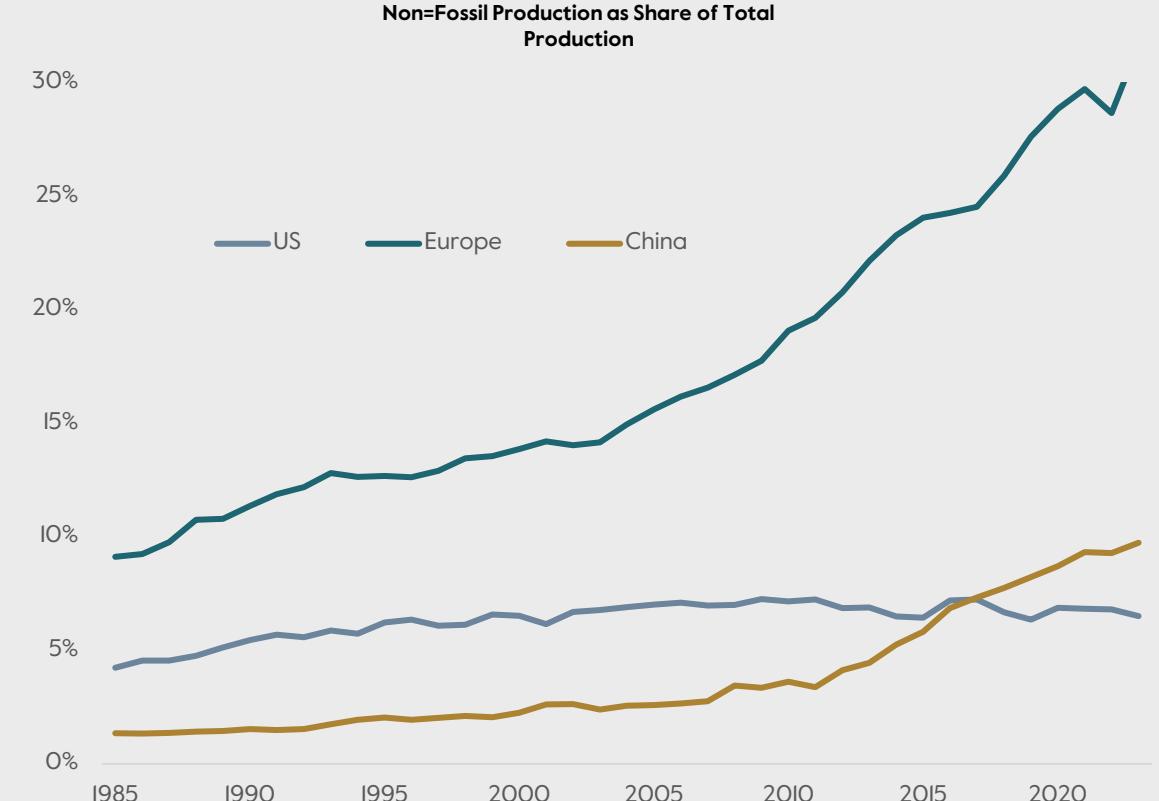


Europe and China are transitioning faster than the US

China has surpassed the US in non-fossil fuels as a share of consumption...

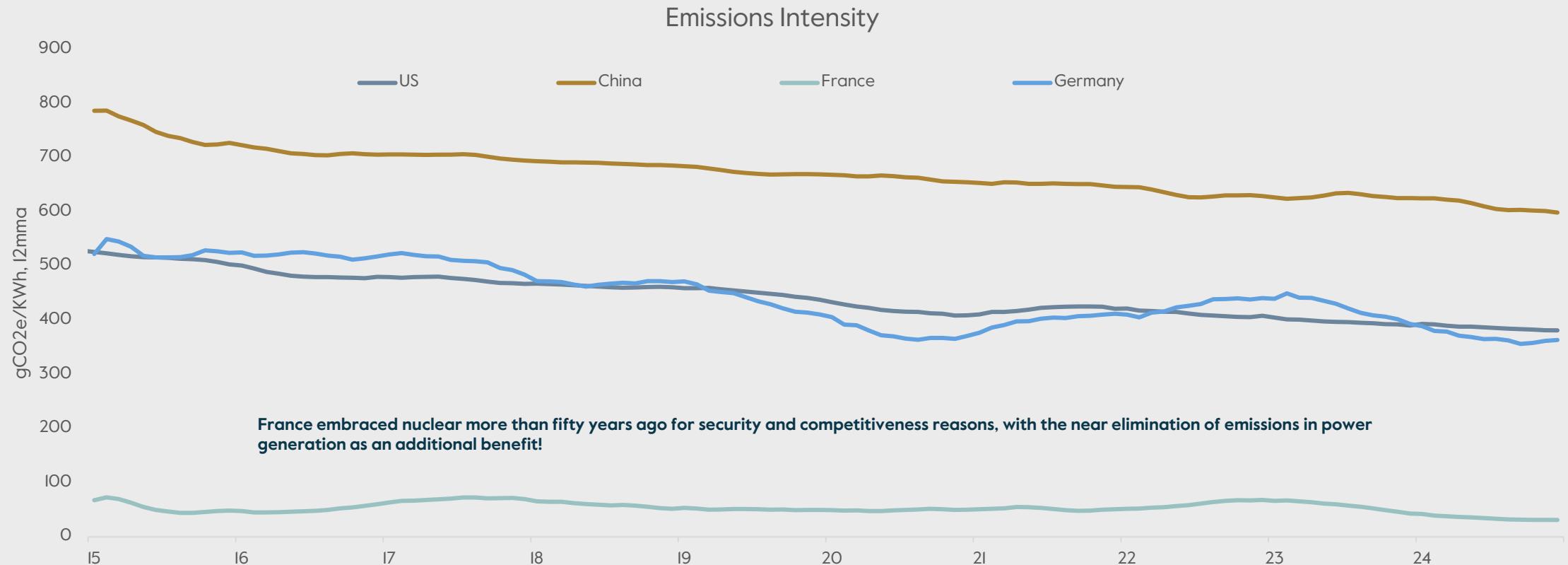


...while relative to production, the US has actually produced more fossil fuels than non-fossil fuels



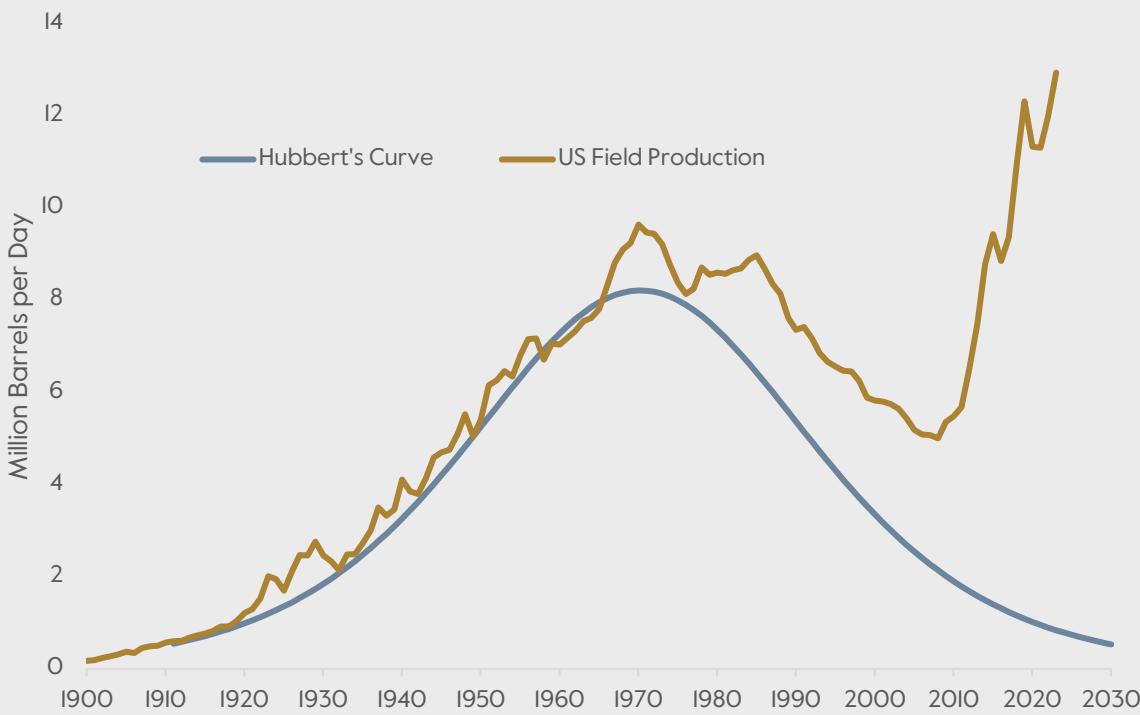
Security and profit motives can reduce emissions

Emissions are declining, but only France's nuclear fleet has made them low

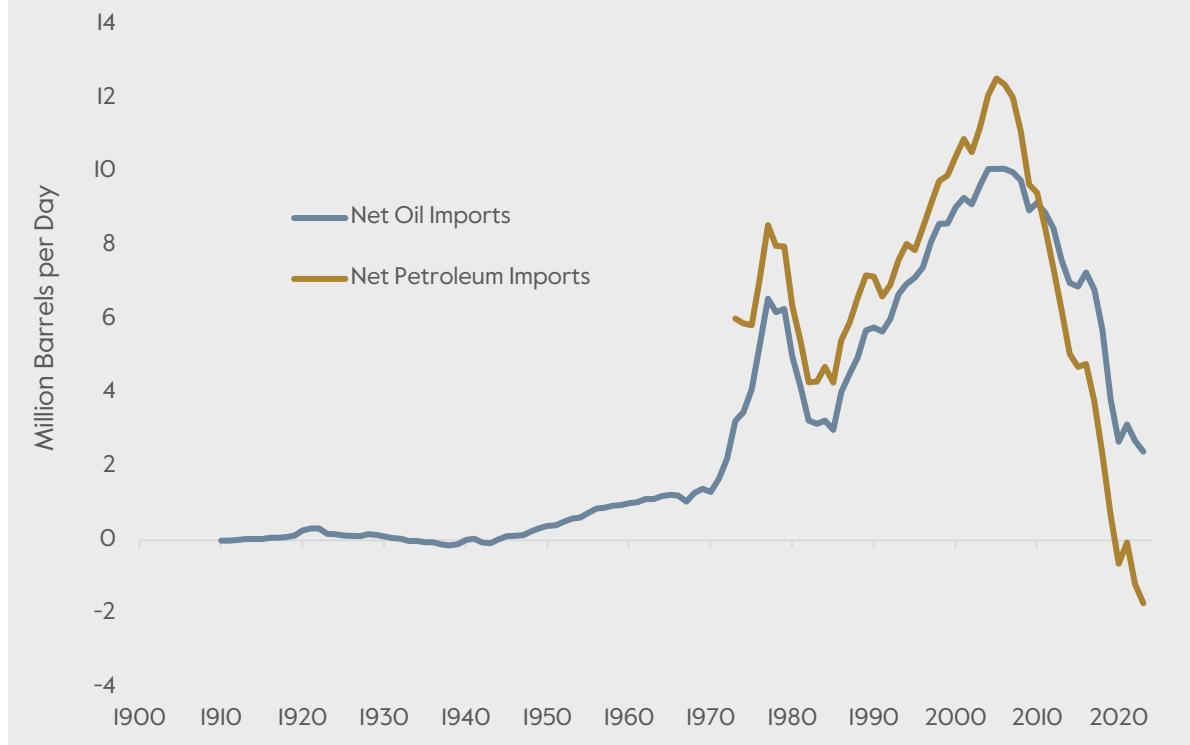


Peak oil supply didn't happen, because shale did

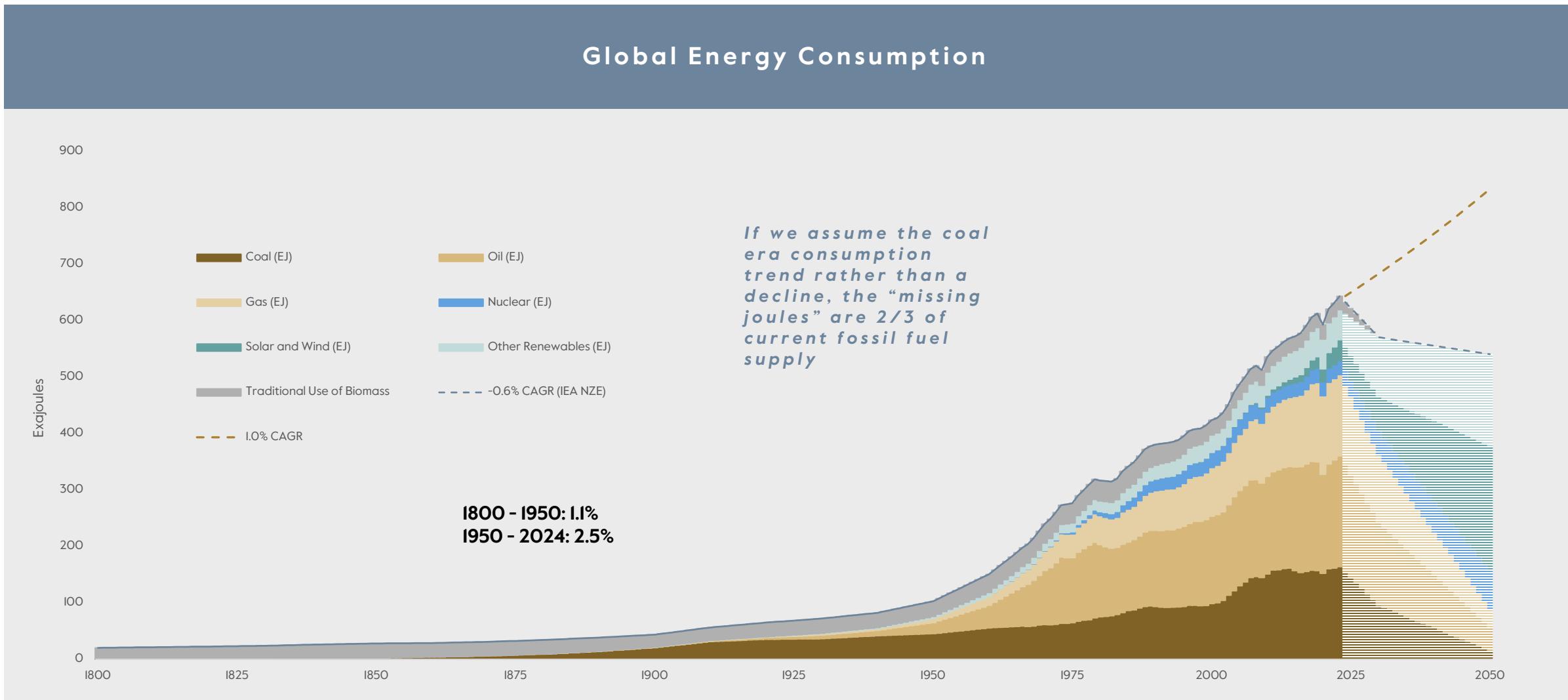
Hubbert's Curve hasn't fit, as shale caused US production to boom



The US is now a net exporter when you include petroleum products



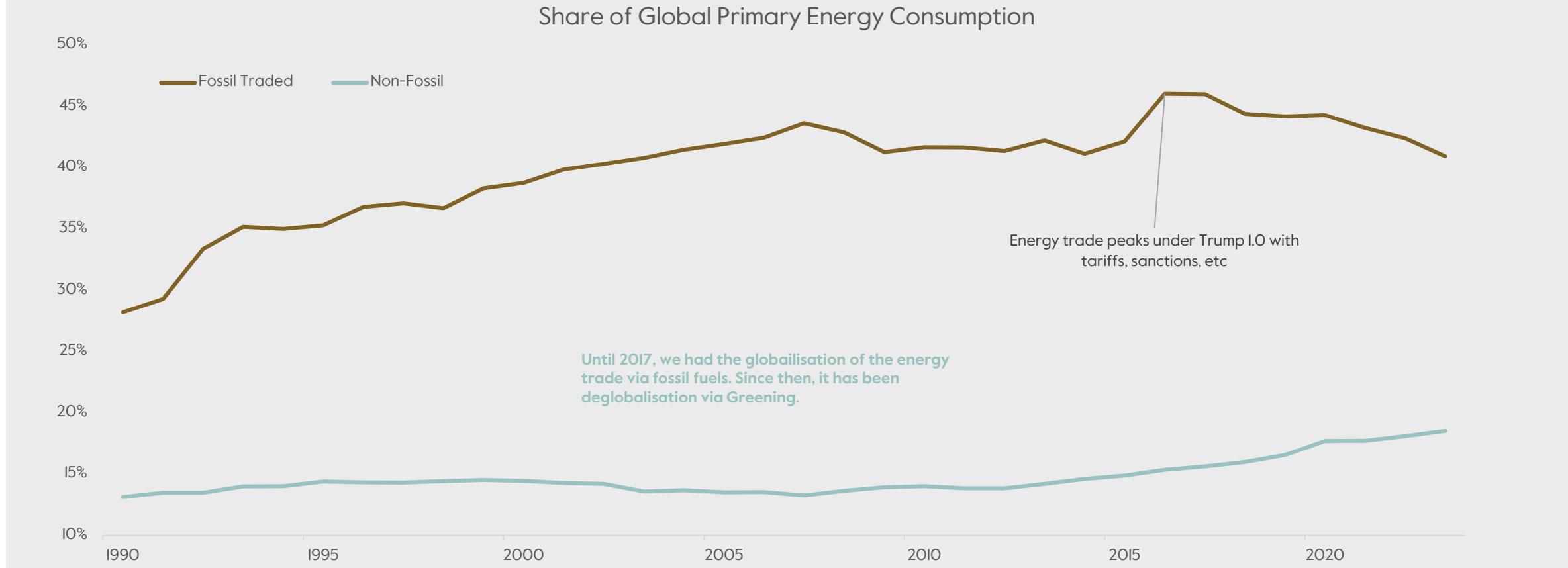
Peak energy consumption is integral to NZE2050



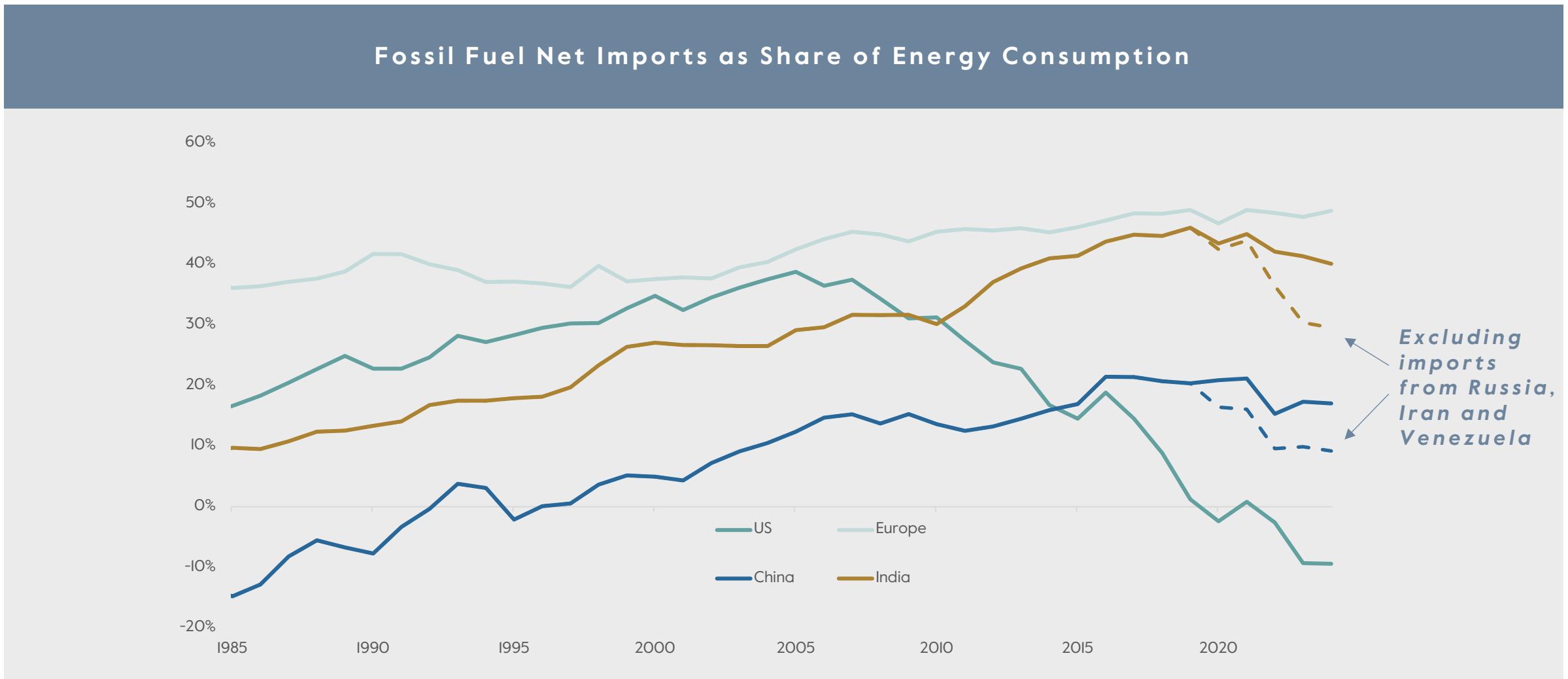
Source: Carlyle Analysis; IEA; Energy Institute; Our World In Data; Vaclav Smil (2017). There is no guarantee that any projections will be achieved or that any historical trends will continue. Certain statements made on this slide are opinions and beliefs of Carlyle and should not be relied upon as a promise or representation as to past or future performance.

Peak Oil Trade has gathered pace post-Covid

“Peak Oil” is now about global energy flows

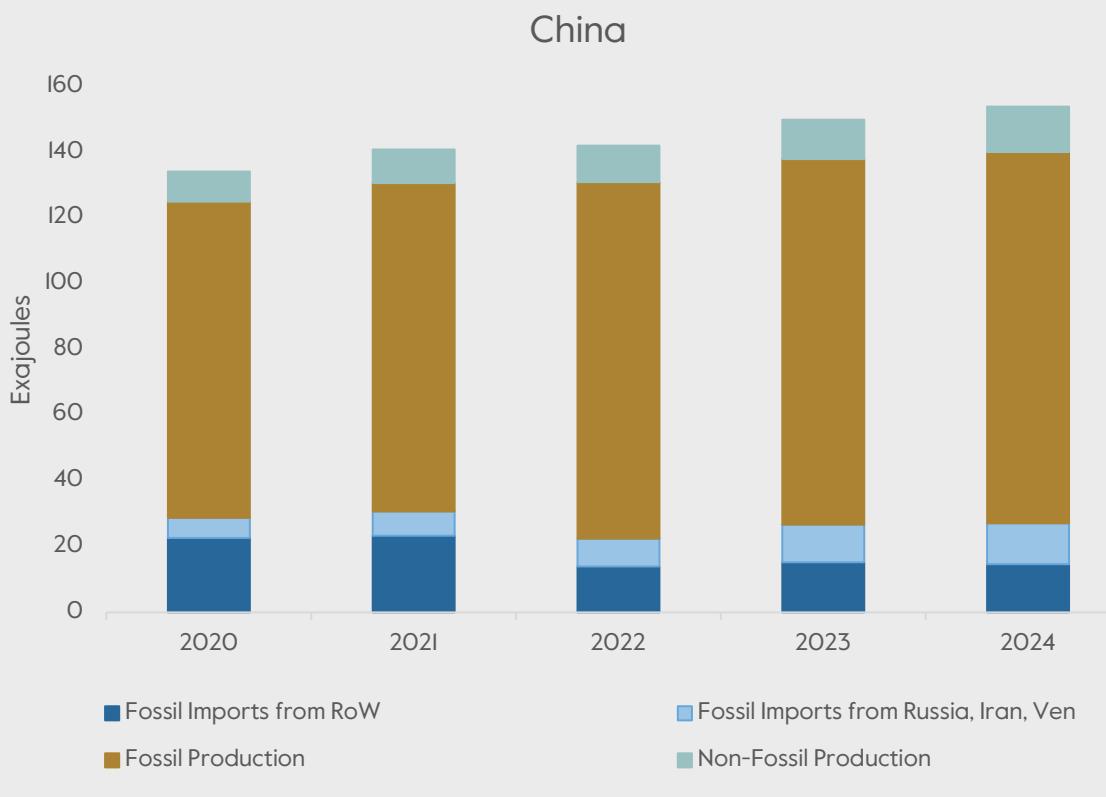


China's energy dependence is falling rapidly

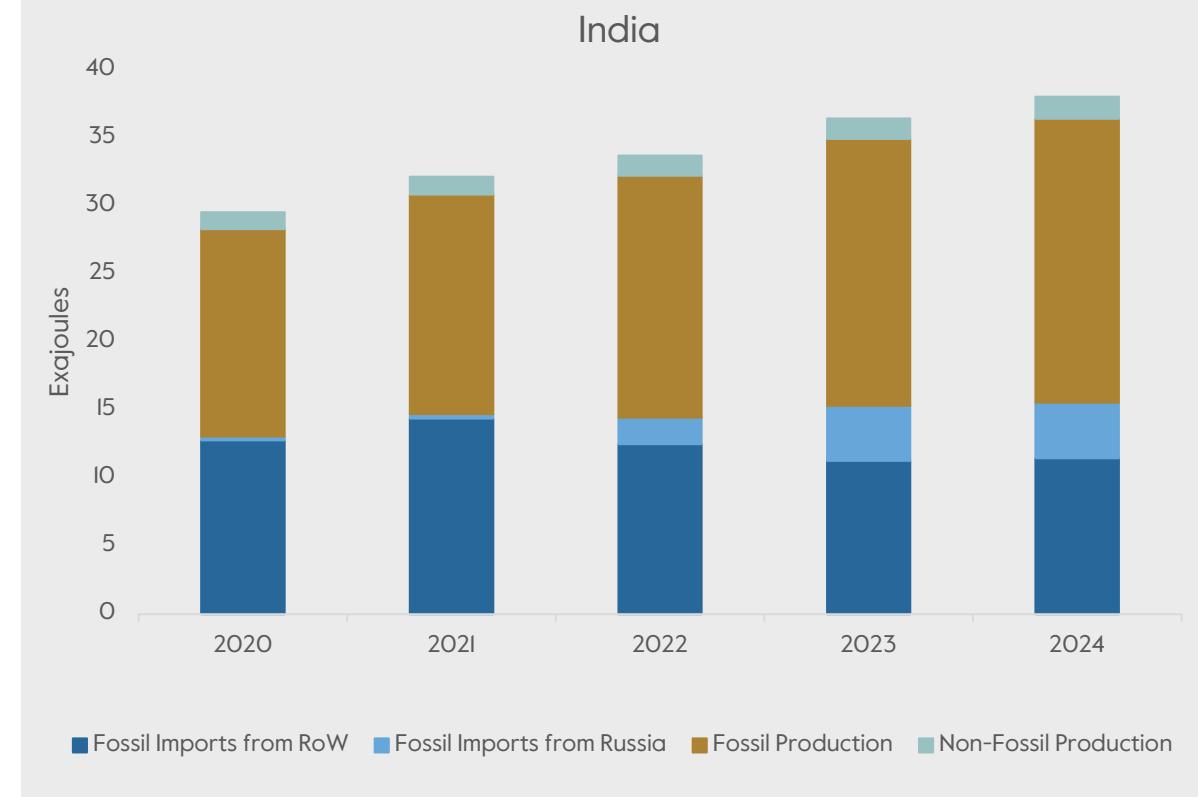


Secure fossil fuel supply has driven energy independence

China's energy independence is still driven by growing fossil fuels rather than renewables...

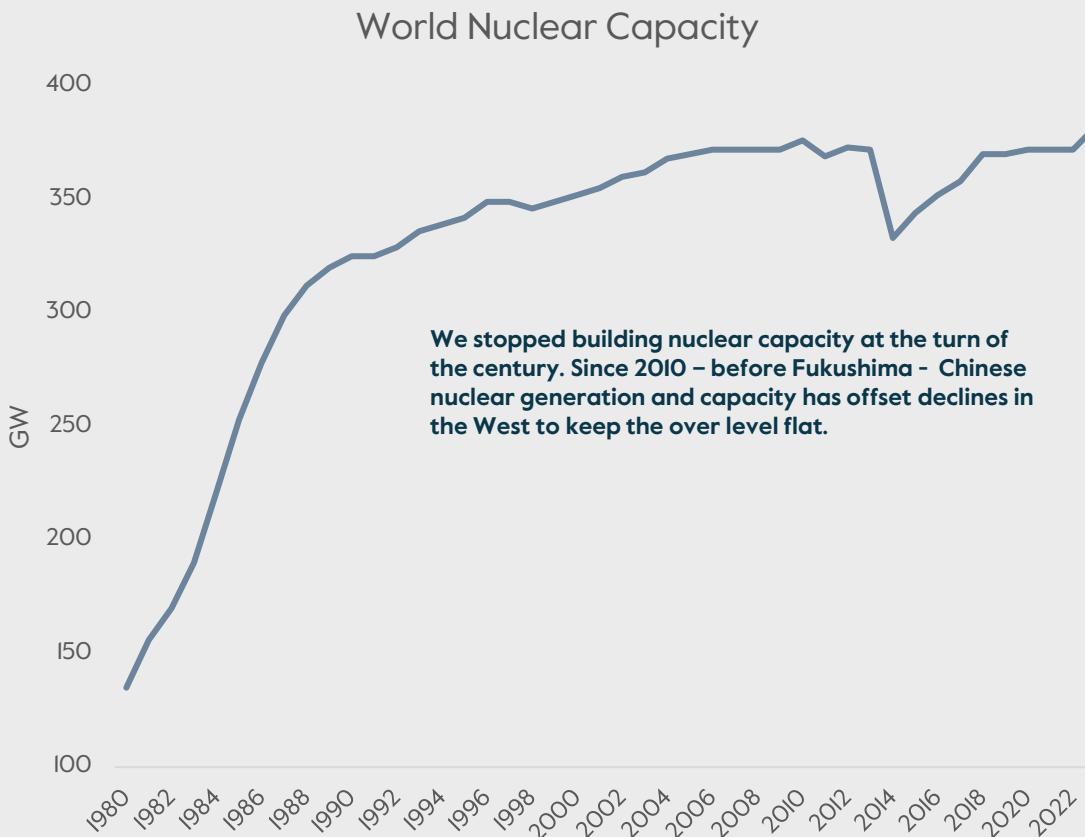


... and India is moving in the same direction

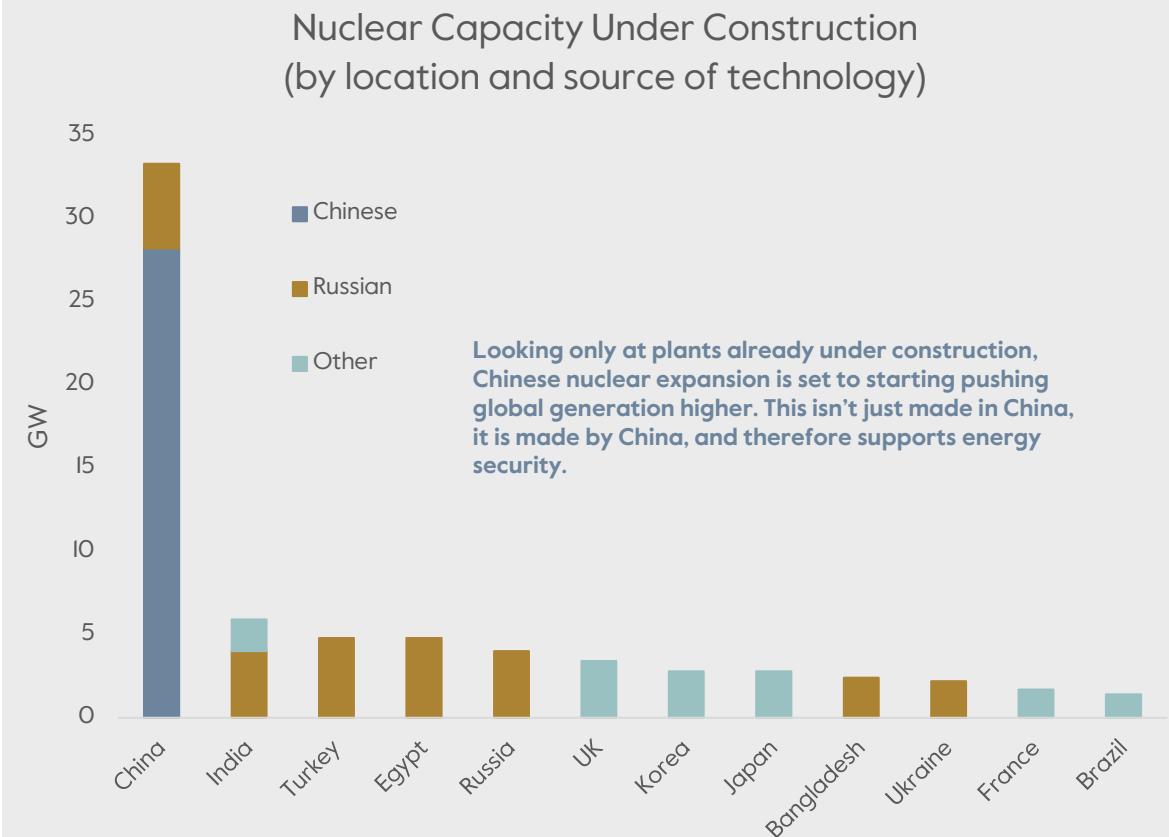


China, not the West, is building nuclear now

Capacity has been stagnant at ~380GW for decades...

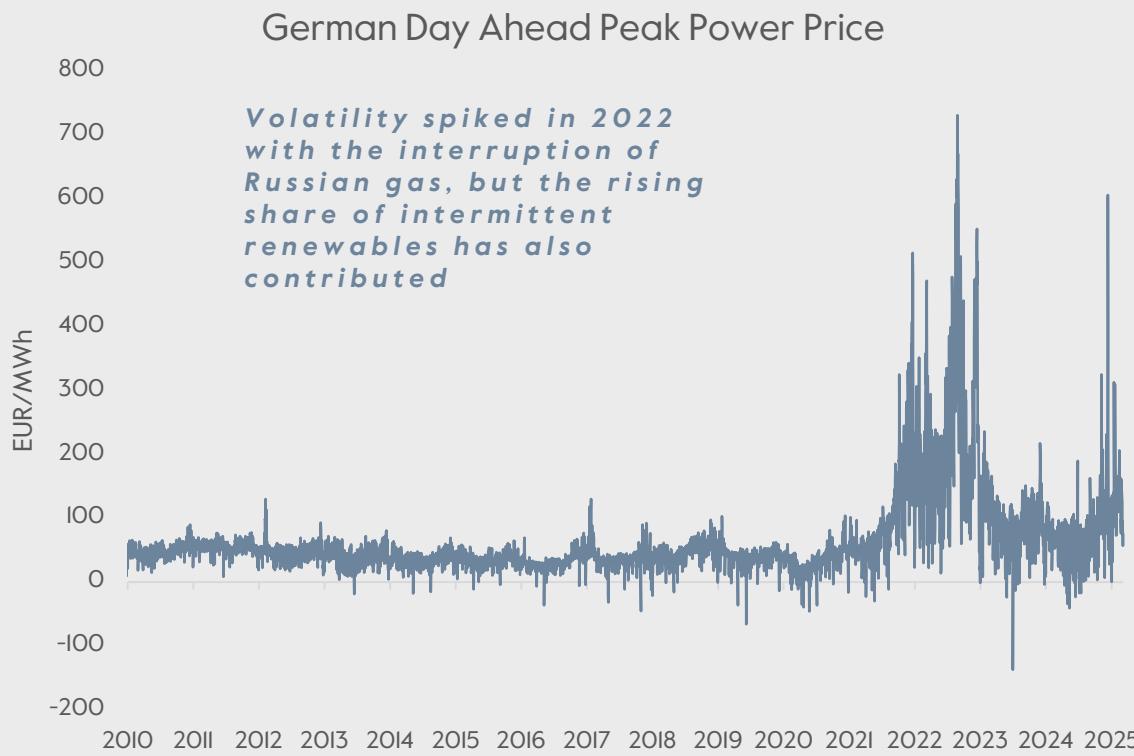


... but 70GW of Capacity is currently under construction

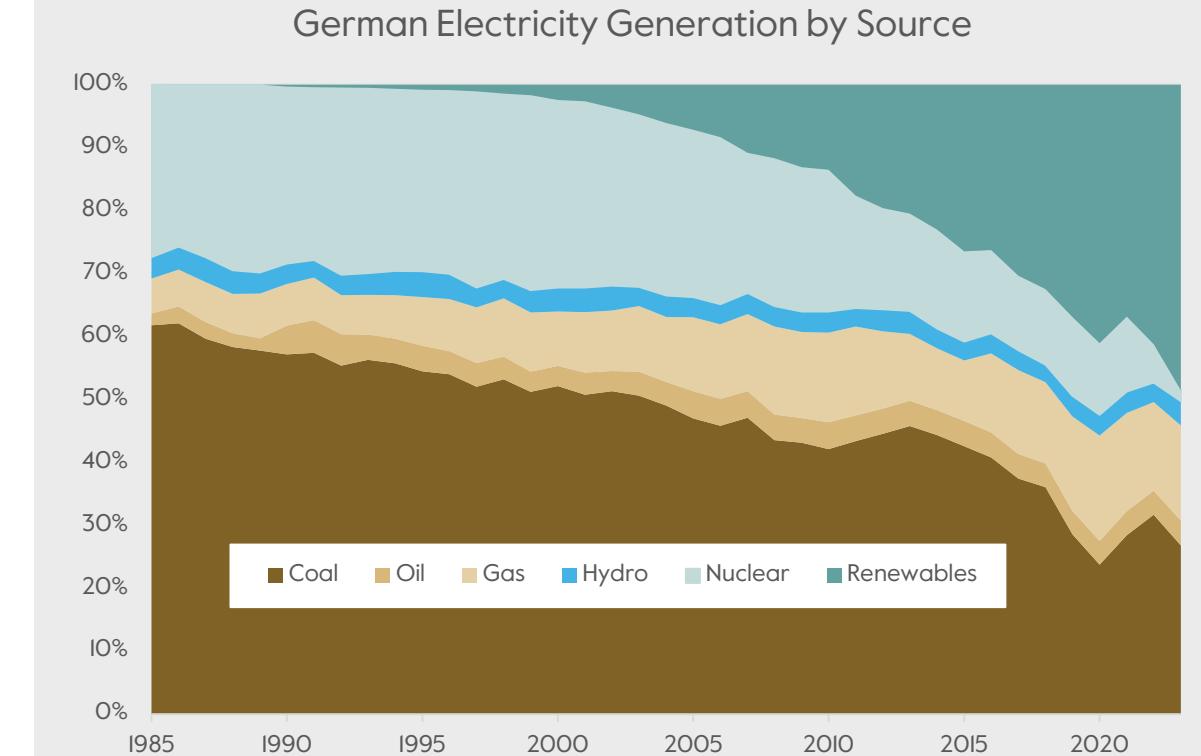


German electricity price volatility has increased

Volatility has surged as dispatchable has shrunk



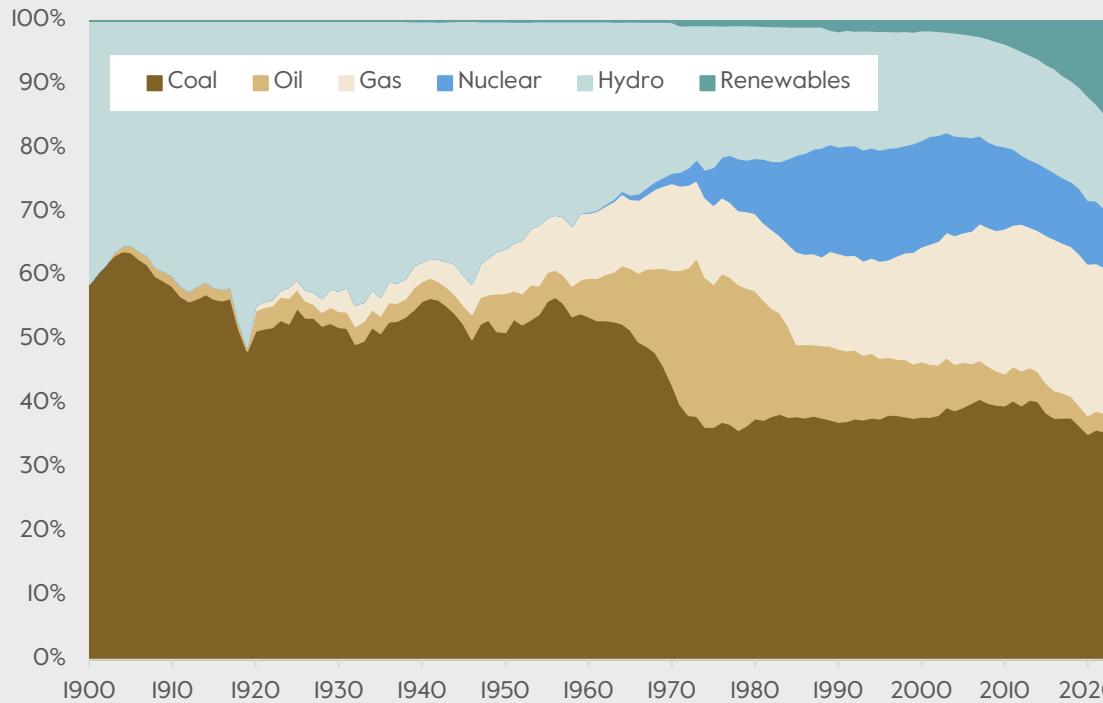
Renewables are now half of the German stack



Electrification remains on a steady trend

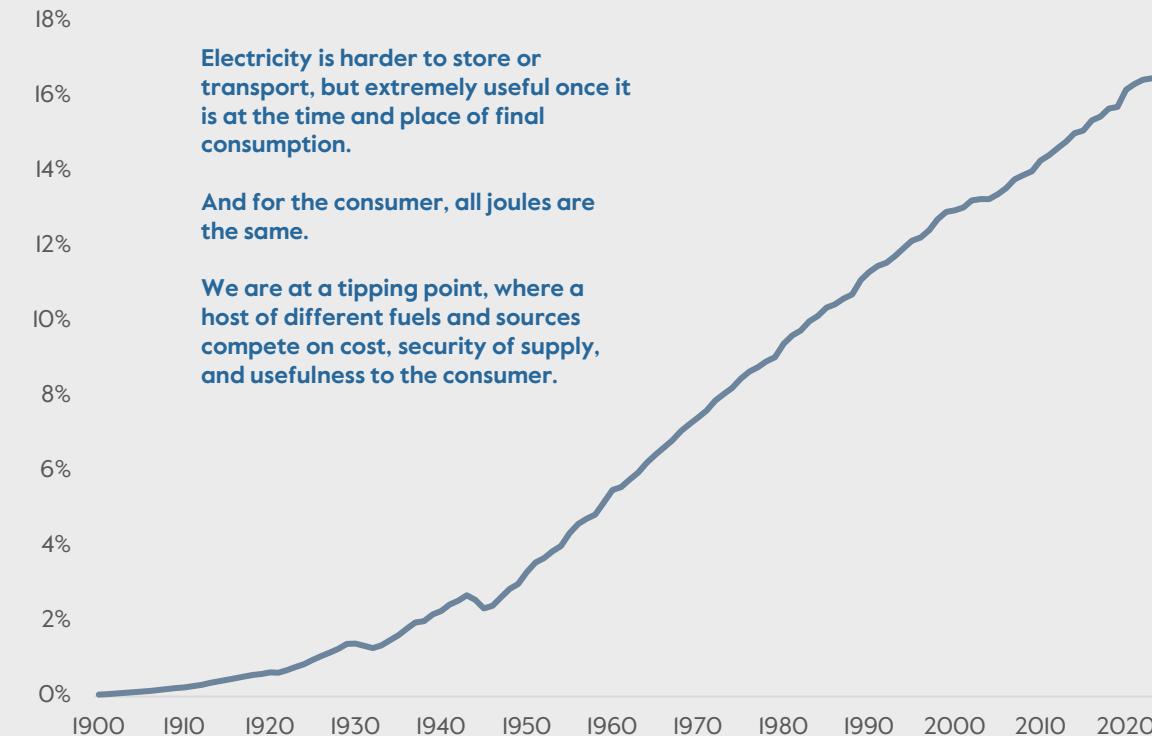
Electricity production is increasingly diverse

Electricity Generation by Source



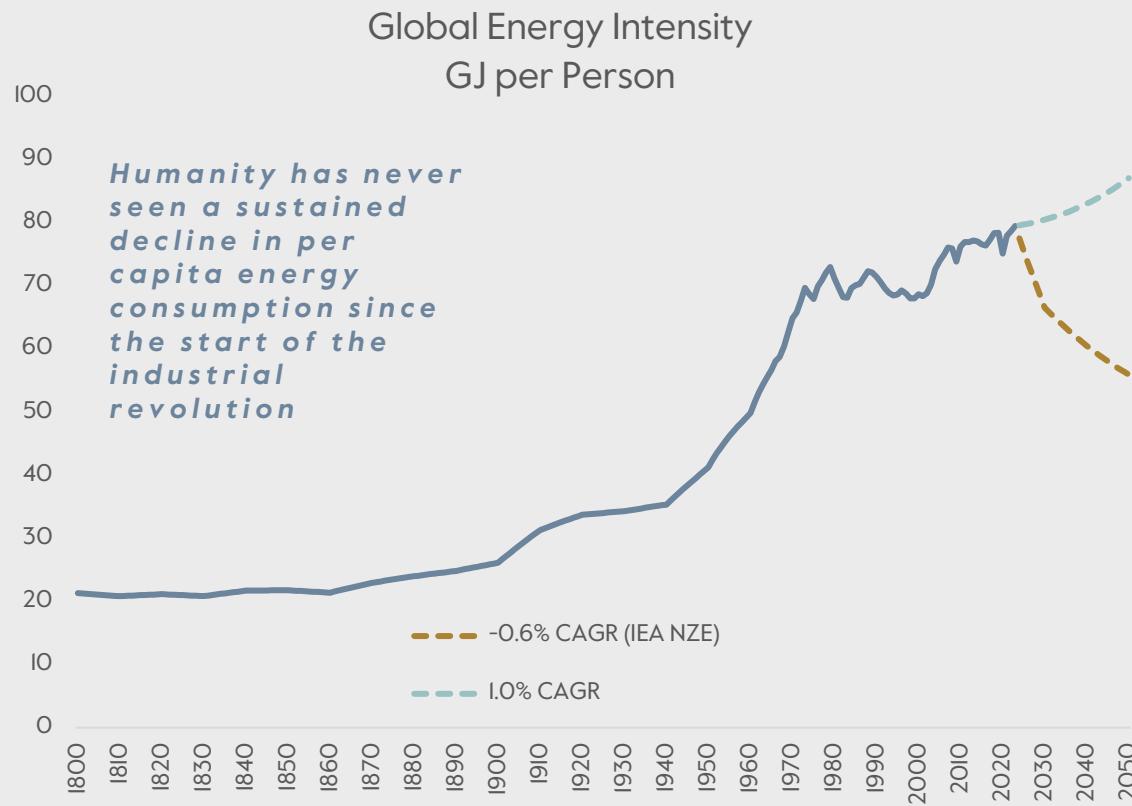
Electricity's share is rising steadily

Electricity/Total Primary

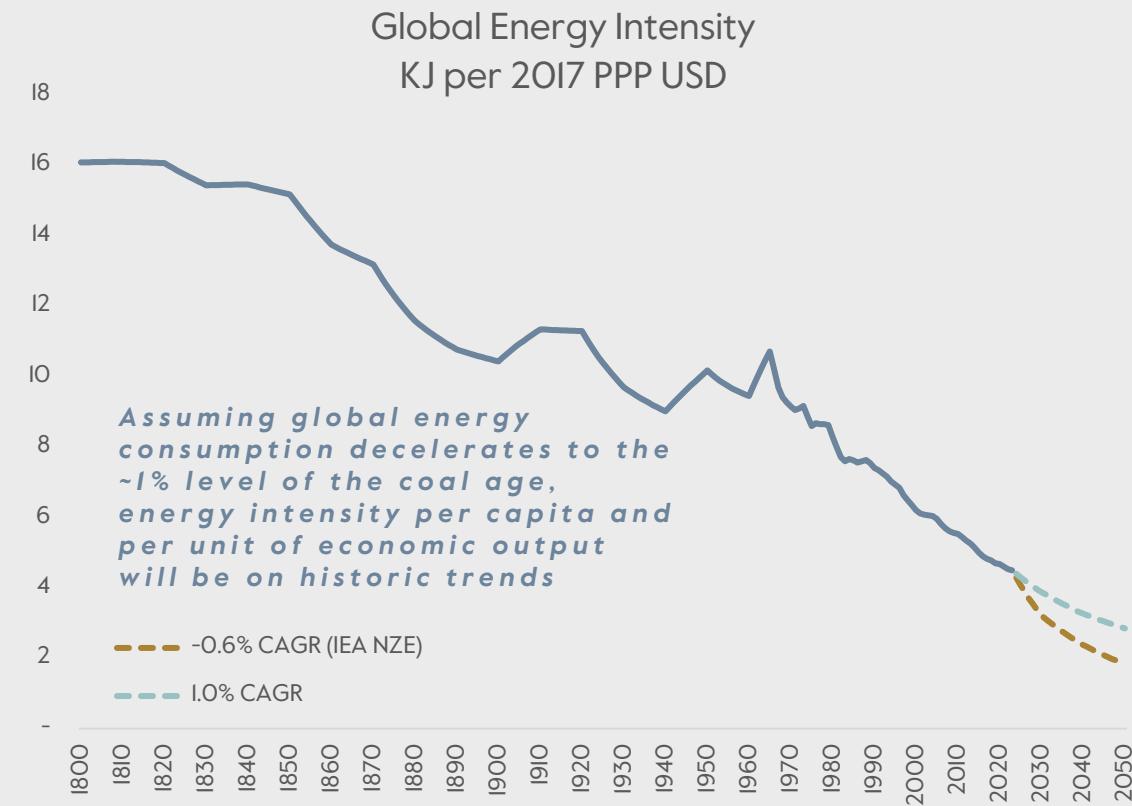


Energy demand isn't likely to fall

Energy use per person has only trended higher since the dawn of the industrial revolution

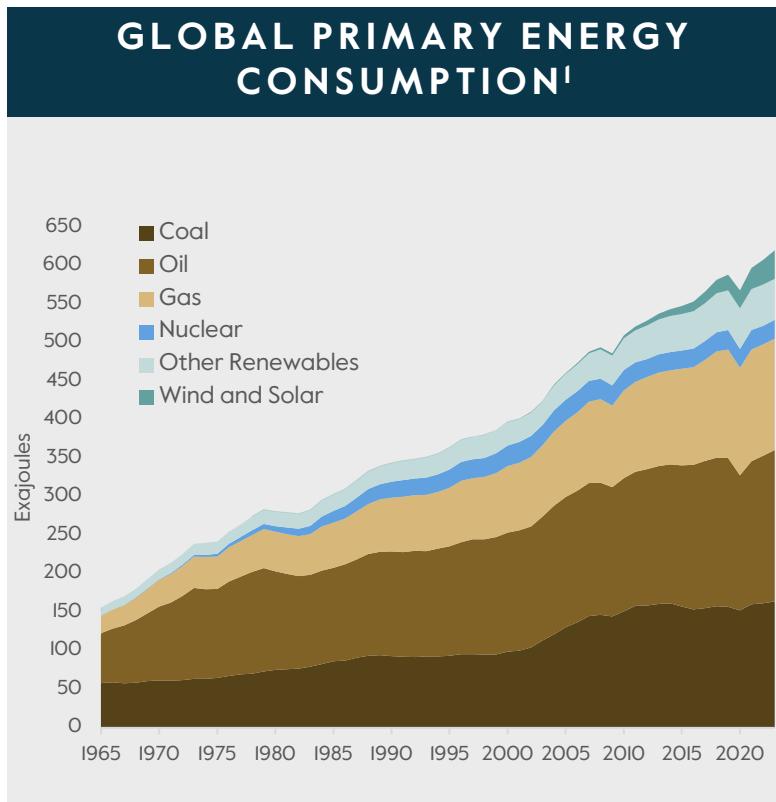


Energy efficiency gains have been steady

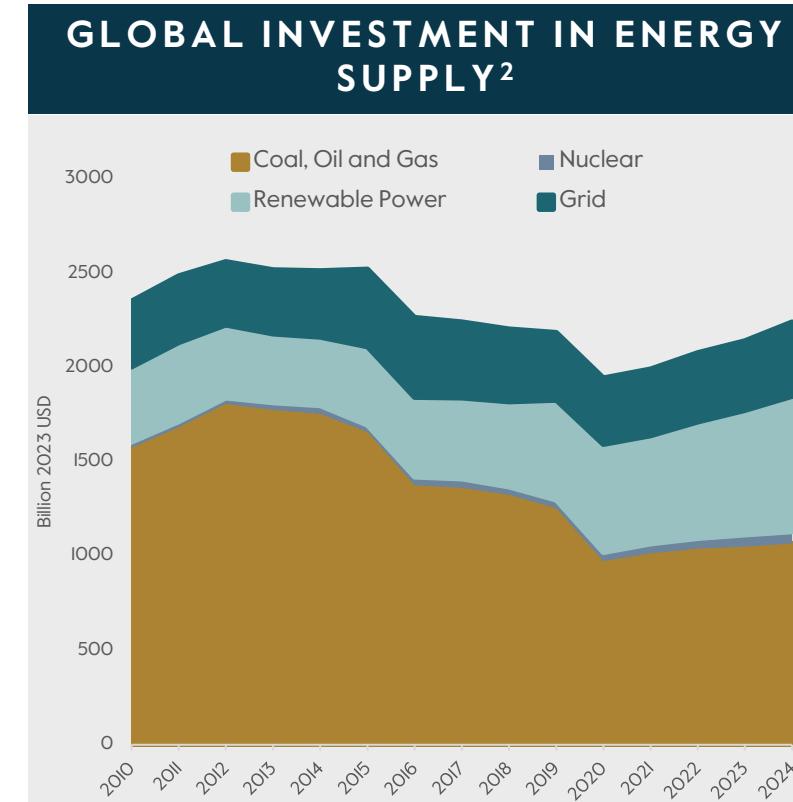


Growth in demand for joules is steady while investment in supply of joules is inadequate

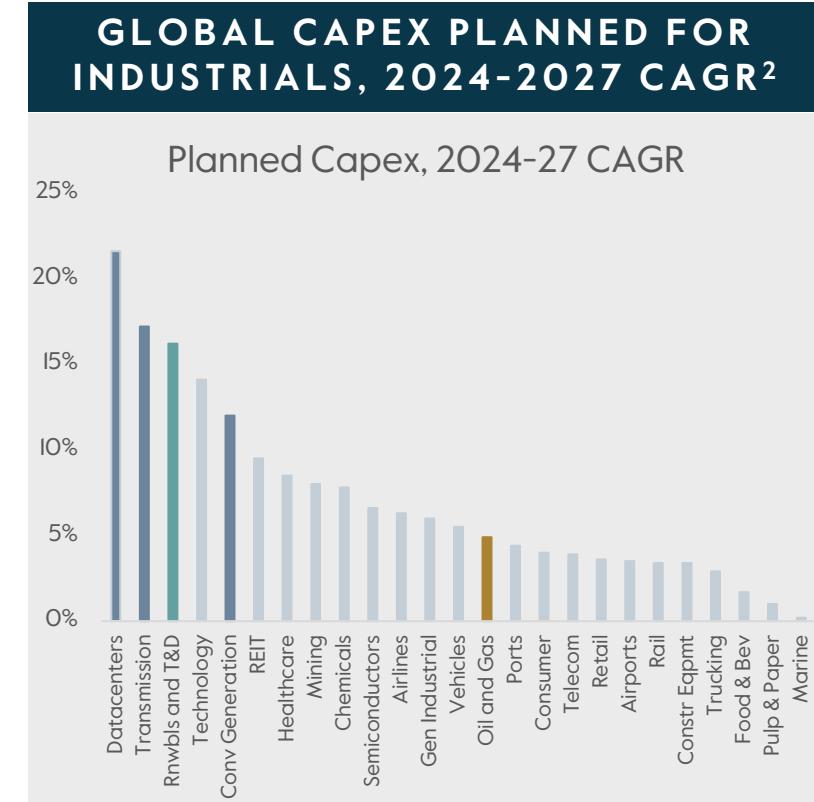
Global joules consumption has grown at a steady 2.5% annual pace over the past sixty years



Real joules investment has yet to recover from EM crisis of 2015



Order books show coming surge in capex tied to demand but not supply



The energy transition has only just begun

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