



15th Hydra Shipping Conference
Hydra, September 14, 2024

Energy Commodities and Shipping

An Introductory Presentation by **Costis Stambolis**
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Institute of Energy for SE Europe (IENE)

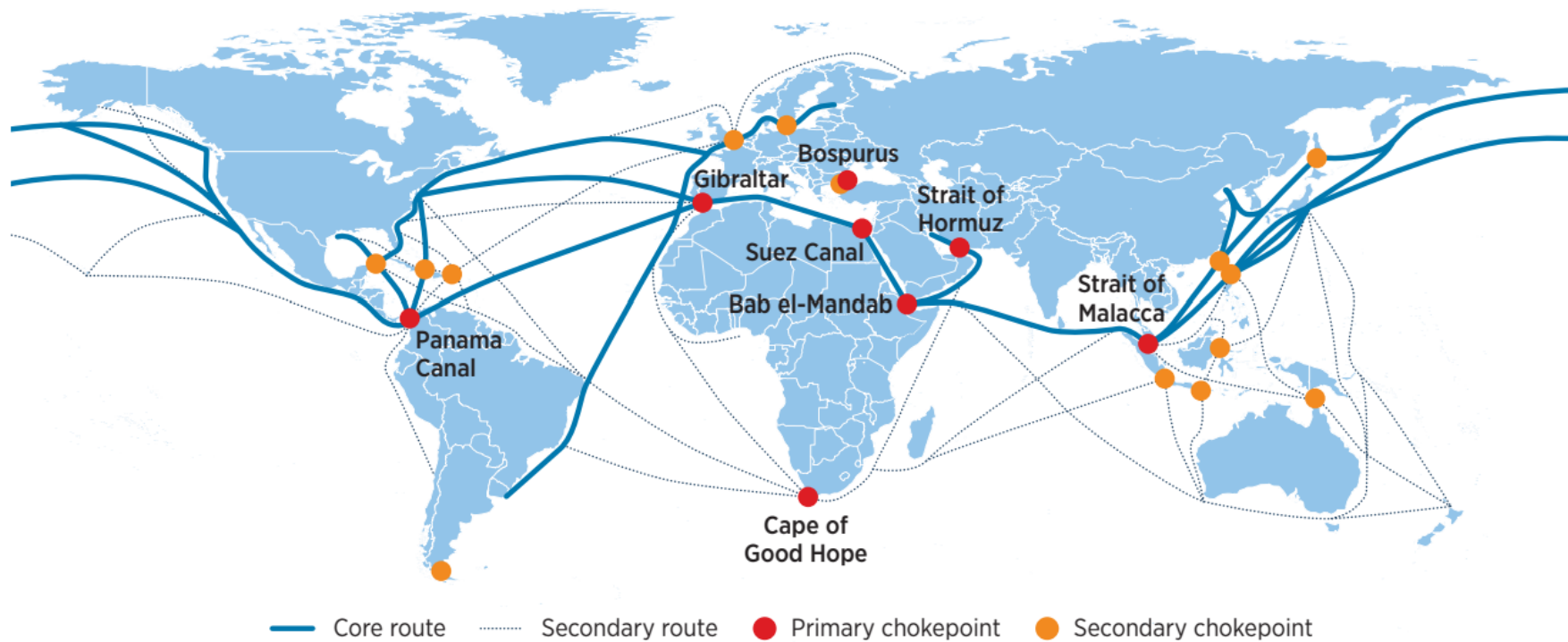
INSTITUTE OF ENERGY
FOR SOUTH EAST EUROPE



Introduction

- ❑ Energy commodities, such as crude oil and products, liquified natural gas (LNG), coal, chemical cargoes, uranium, correspond to a large chunk of global sea trade.
- ❑ According to UNCTAD, some 40% by weight of total sea trade corresponds to oil, coal, gas and petrochemicals - 4,500 million tons out of 11,000 million tons of total maritime shipping.
- ❑ In view of the fact that Greek-owned vessels transport large amounts of energy cargoes, roughly corresponding to 50% of global volume, it is important to know the mid- to long-term outlook of fossil fuel related sea trade.
- ❑ As energy transition gathers pace, which the EU and some countries are promoting with religious zeal, the cardinal question for long-term strategy is whether in 5 to 10 years from now there will be enough oil, gas and coal to ship around, or should shipowners start looking at other options.
- ❑ Given the pressure from international bodies, including the EU and the United Nations, and the huge public mobilisation to enforce an energy transition, based exclusively on Renewable Energy Sources, Hydrogen, Electric Vehicles and other so called clean energy sources, including nuclear power, the impression has been created that it is only a matter of time for fossil fuels to become redundant as in very few years, latest by 2040, the world will not need them as everything will run on electricity generated by RES and nuclear power.
- ❑ Is the above a pragmatic scenario?
- ❑ Using data provided by the International Energy Agency (IEA), OPEC, BP, the Energy Institute and the EIA we take a hard look on the mid- and long-term prospects of fossil fuel supply and their impact on shipping.

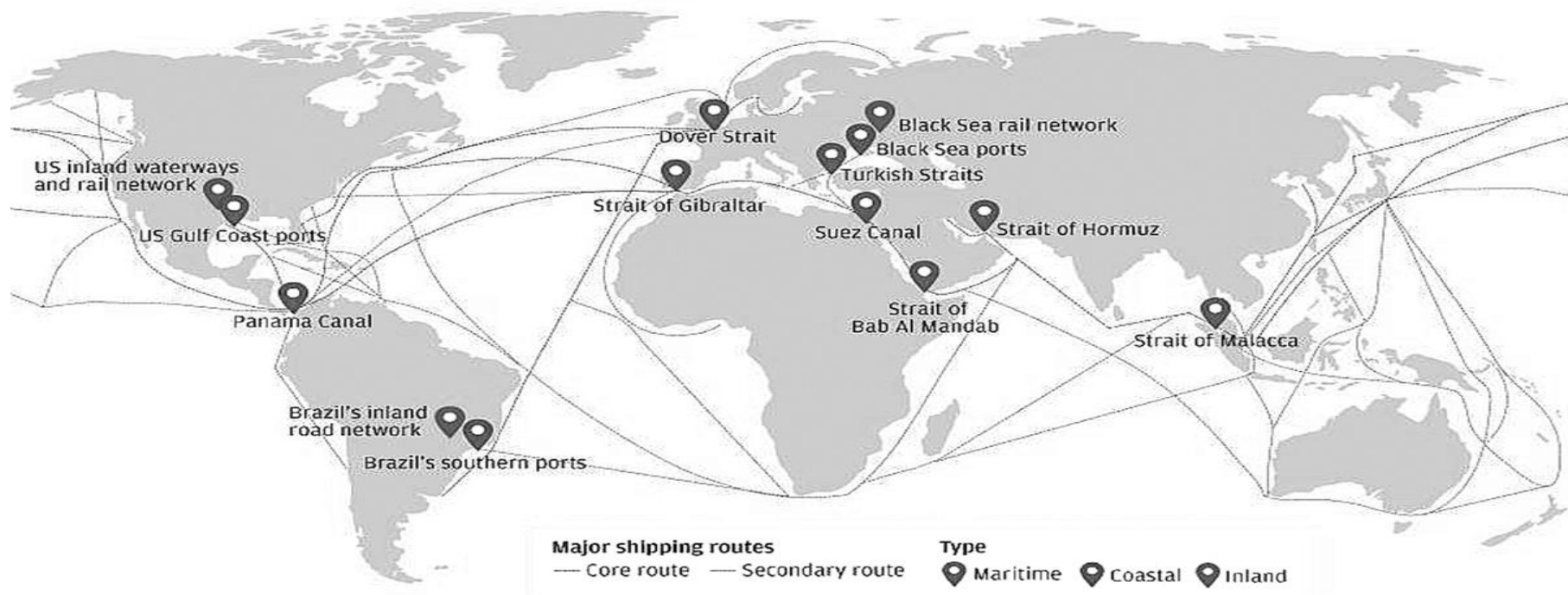
Main Maritime Shipping Traffic Routes



Source: IRENA Decarbonising Shipping 2021

Main Maritime Choke Points

▶ Maritime, coastal and inland choke points and major shipping routes
 ○ Trade volume (million tonnes)

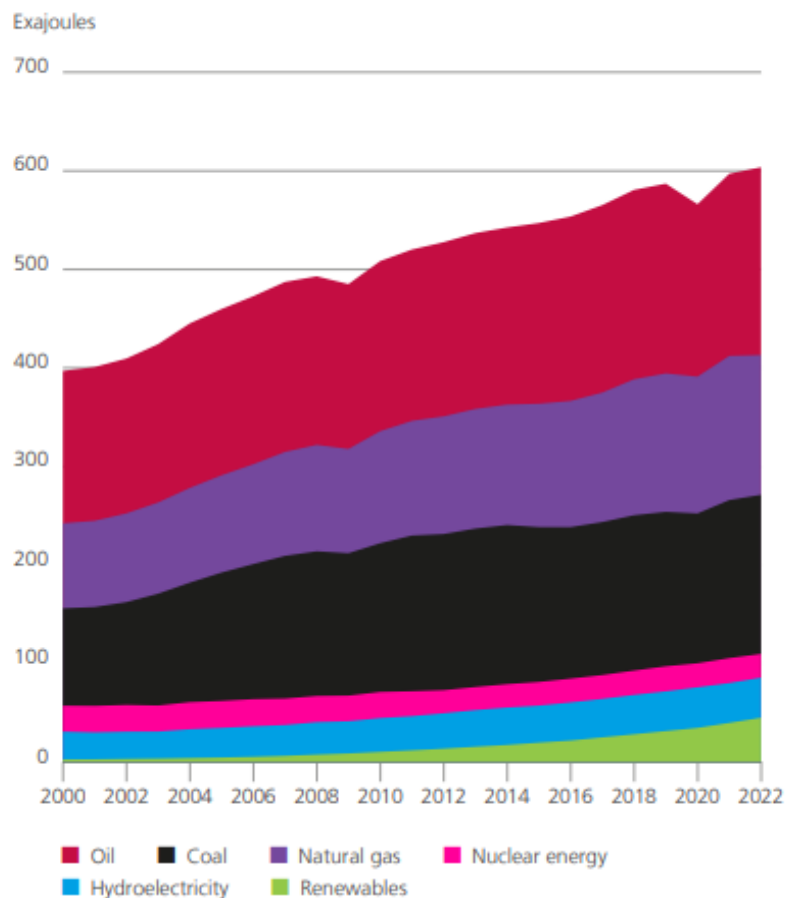


Source: Chatham House

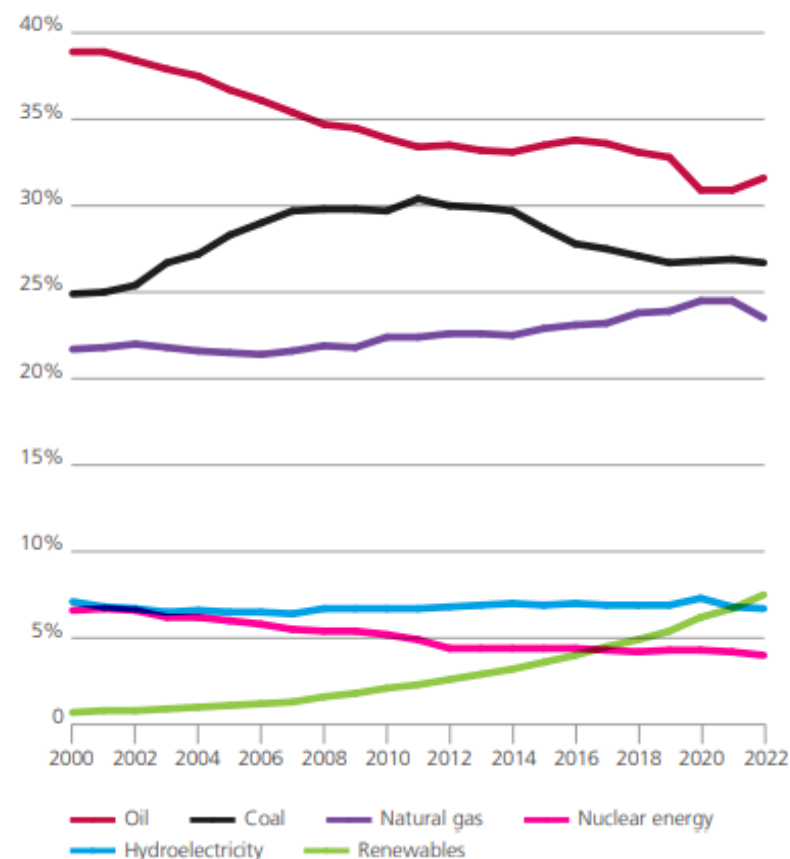
Choke points in maritime transport around the globe

Global Energy Consumption and Shares of Global Primary Energy

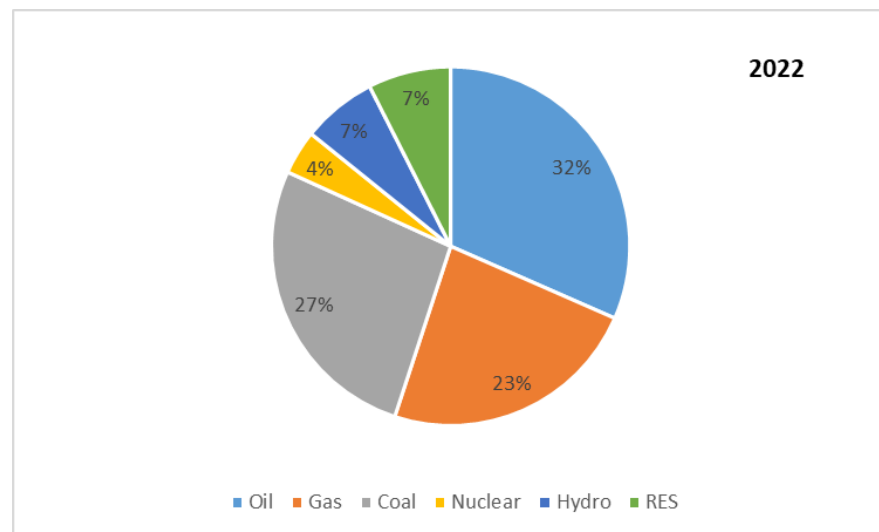
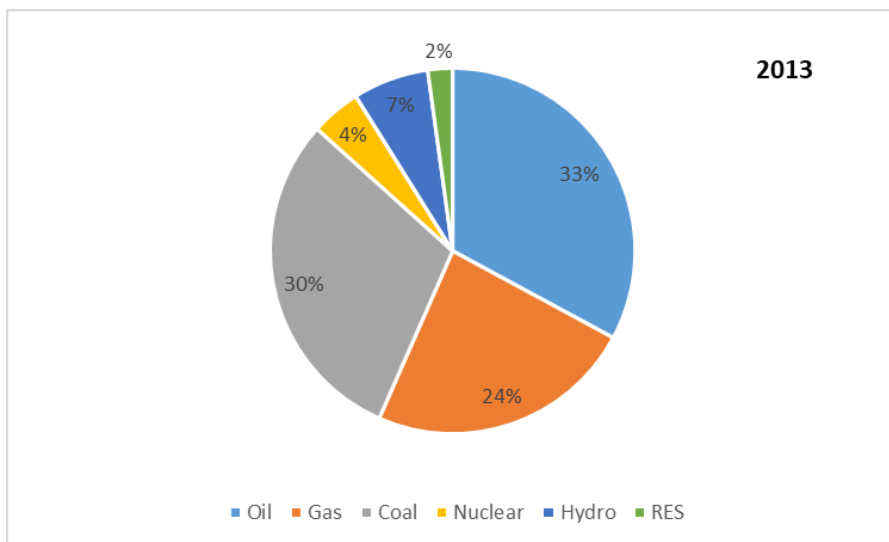
World consumption



Share of global primary energy

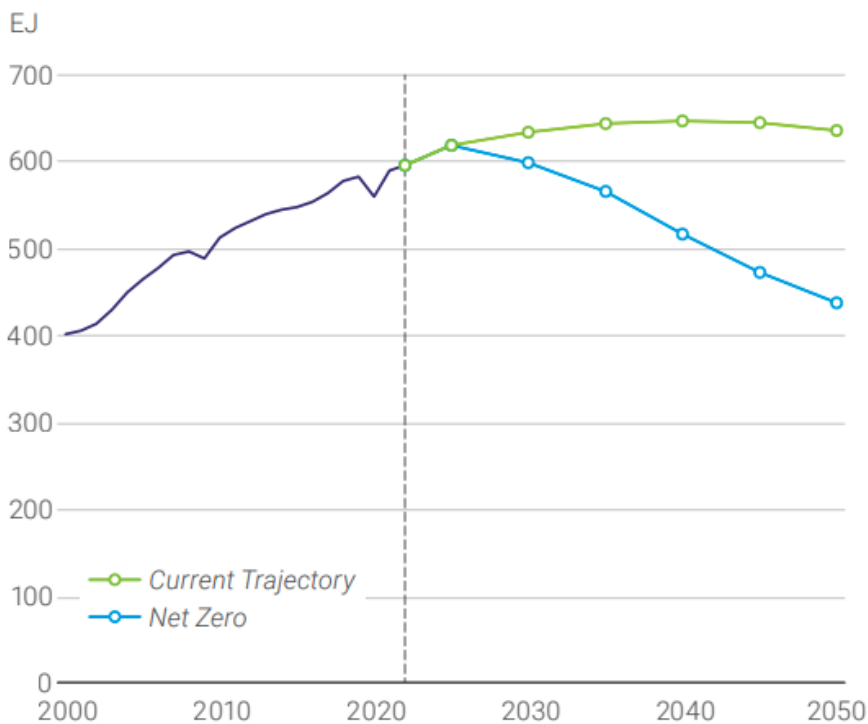


Global Energy Mix, 2013 and 2022

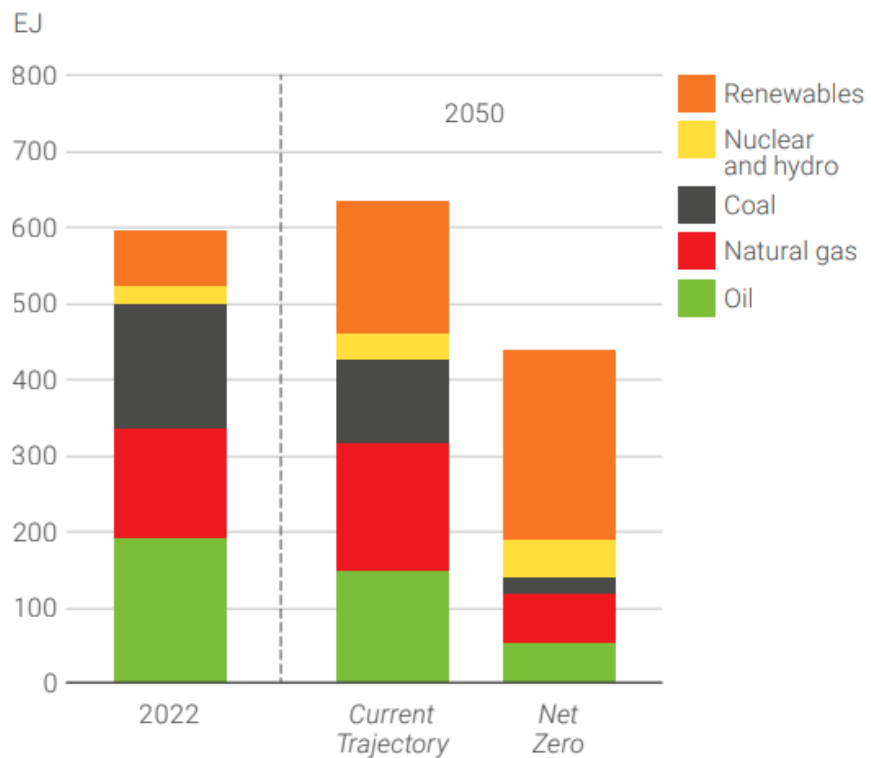


Primary Energy Demand Gradually Decarbonizes, Driven By Rapid Growth in Renewable Energy

Primary energy

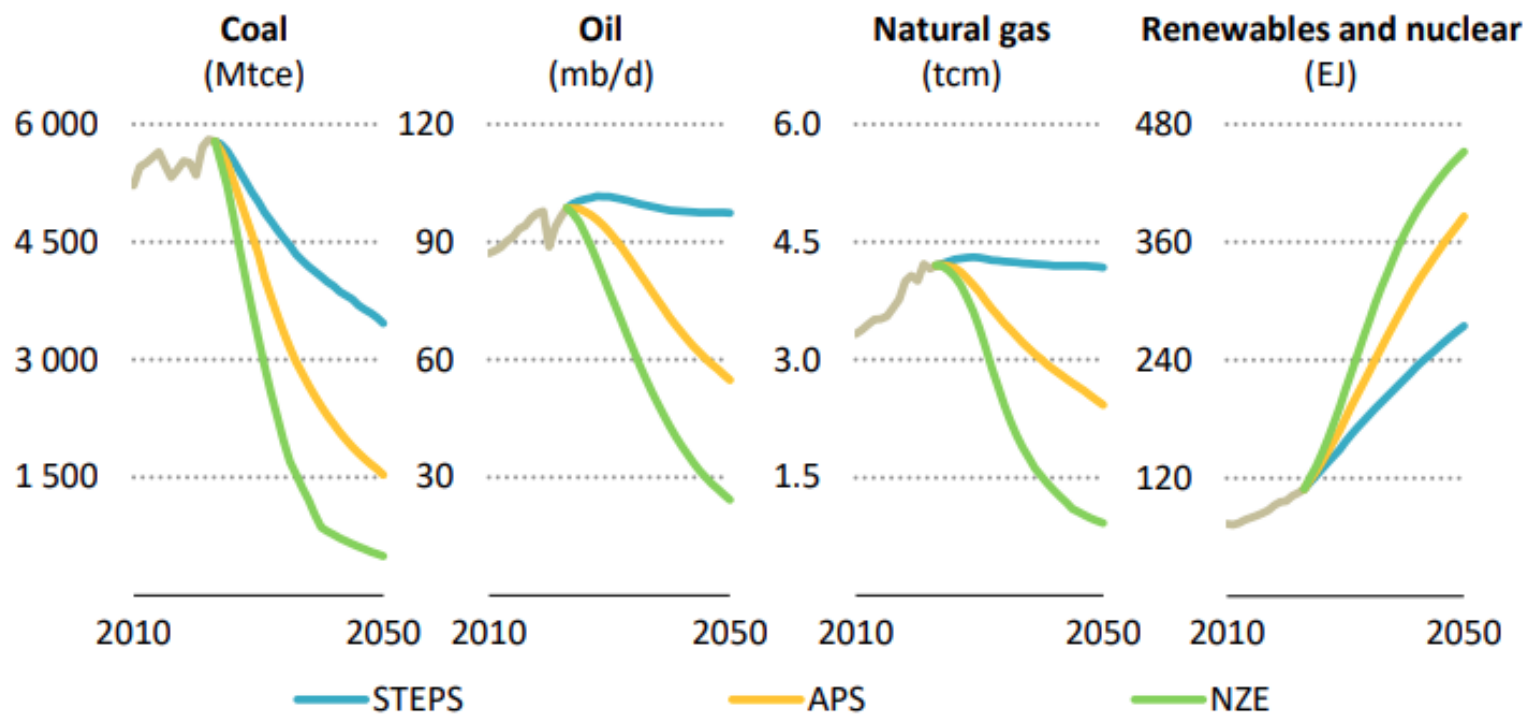


Primary energy by energy type



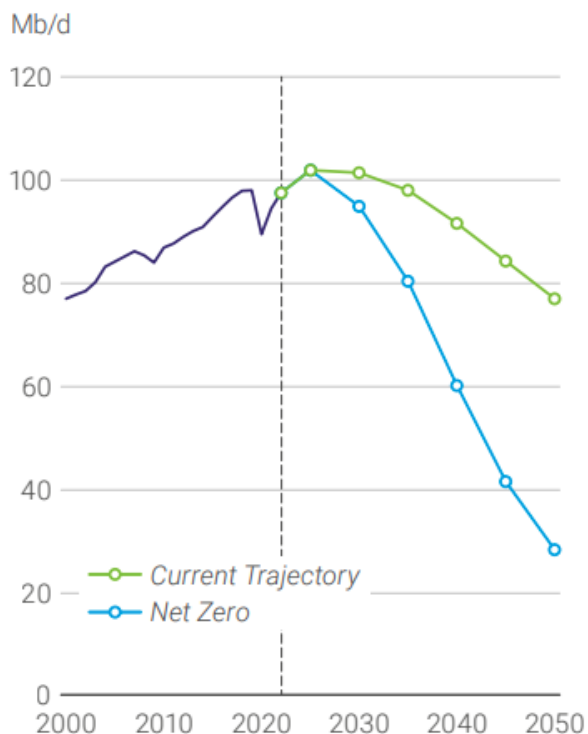
Source: BP Energy Outlook 2024

IEA: Global Total Energy Demand by Fuel and Scenario, 2010-2050

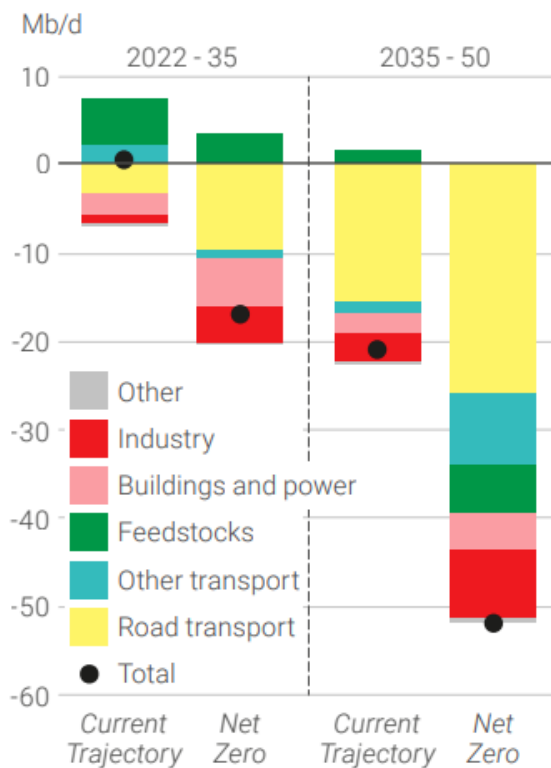


Oil Demand Falls Over the Outlook Driven By Falling Use in Road Transport

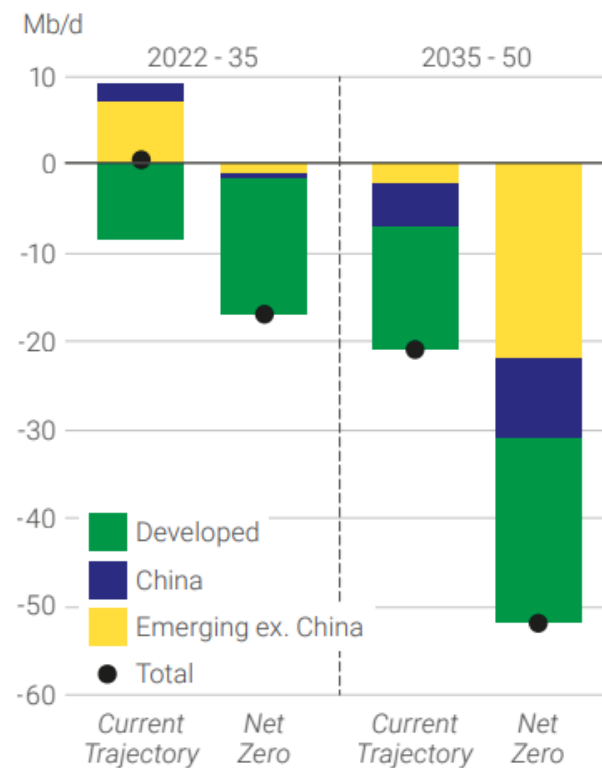
Oil demand



Change in oil demand by sector



Change in oil demand by region

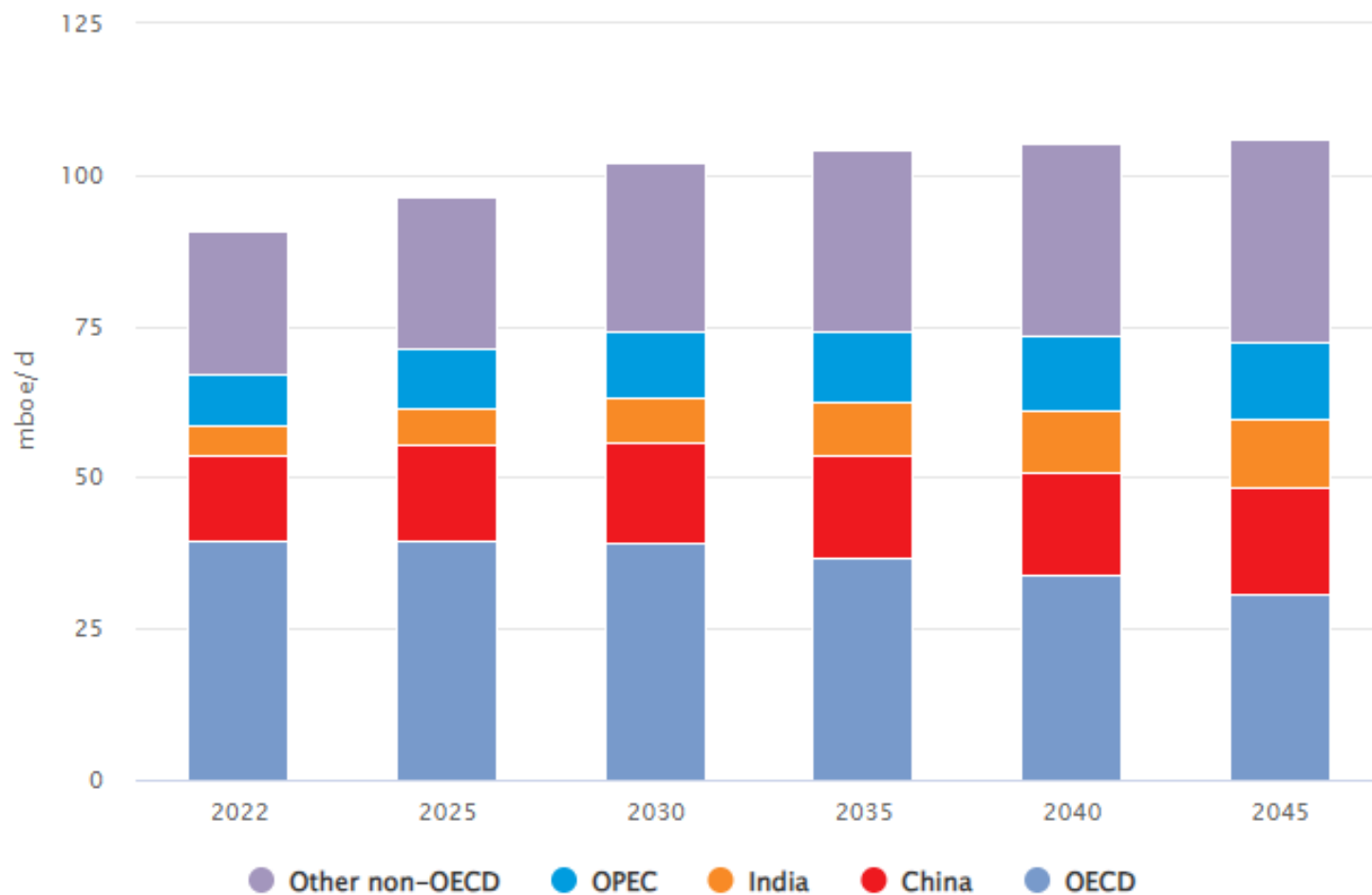


IEA: Global Oil Demand by Region (mb/d), 2019-2030

	2019	2020	2021	2022	2023	2024	2025	2026	2027	2028	2029	2030	2023-30 Growth Rate	2023-30 Growth
North America	24.9	21.9	23.7	24.3	24.6	24.5	24.6	24.4	24.0	23.7	23.4	23.0	-0.9%	-1.6
S&C America	6.7	5.7	6.4	6.7	6.9	6.9	7.0	7.1	7.1	7.2	7.3	7.3	1.0%	0.5
Europe	15.8	13.7	14.5	14.9	14.8	14.7	14.6	14.5	14.4	14.2	14.0	13.8	-1.0%	-1.0
Africa	4.2	3.9	4.2	4.3	4.3	4.4	4.5	4.7	4.8	4.9	5.0	5.2	2.6%	0.8
Middle East	8.8	8.1	8.4	8.9	9.0	9.0	9.2	9.3	9.3	9.3	9.1	9.0	0.0%	0.0
Eurasia	4.3	4.2	4.5	4.6	4.6	4.5	4.6	4.7	4.7	4.8	4.8	4.9	0.8%	0.3
Asia Pacific	35.9	34.2	35.8	36.3	38.1	39.1	39.8	40.4	41.0	41.5	41.9	42.3	1.5%	4.2
World	100.6	91.7	97.5	100.1	102.2	103.2	104.2	105.0	105.3	105.5	105.6	105.4	0.4%	3.2
Annual change	0.5	-8.9	5.8	2.6	2.1	1.0	1.0	0.7	0.4	0.2	0.0	-0.1		

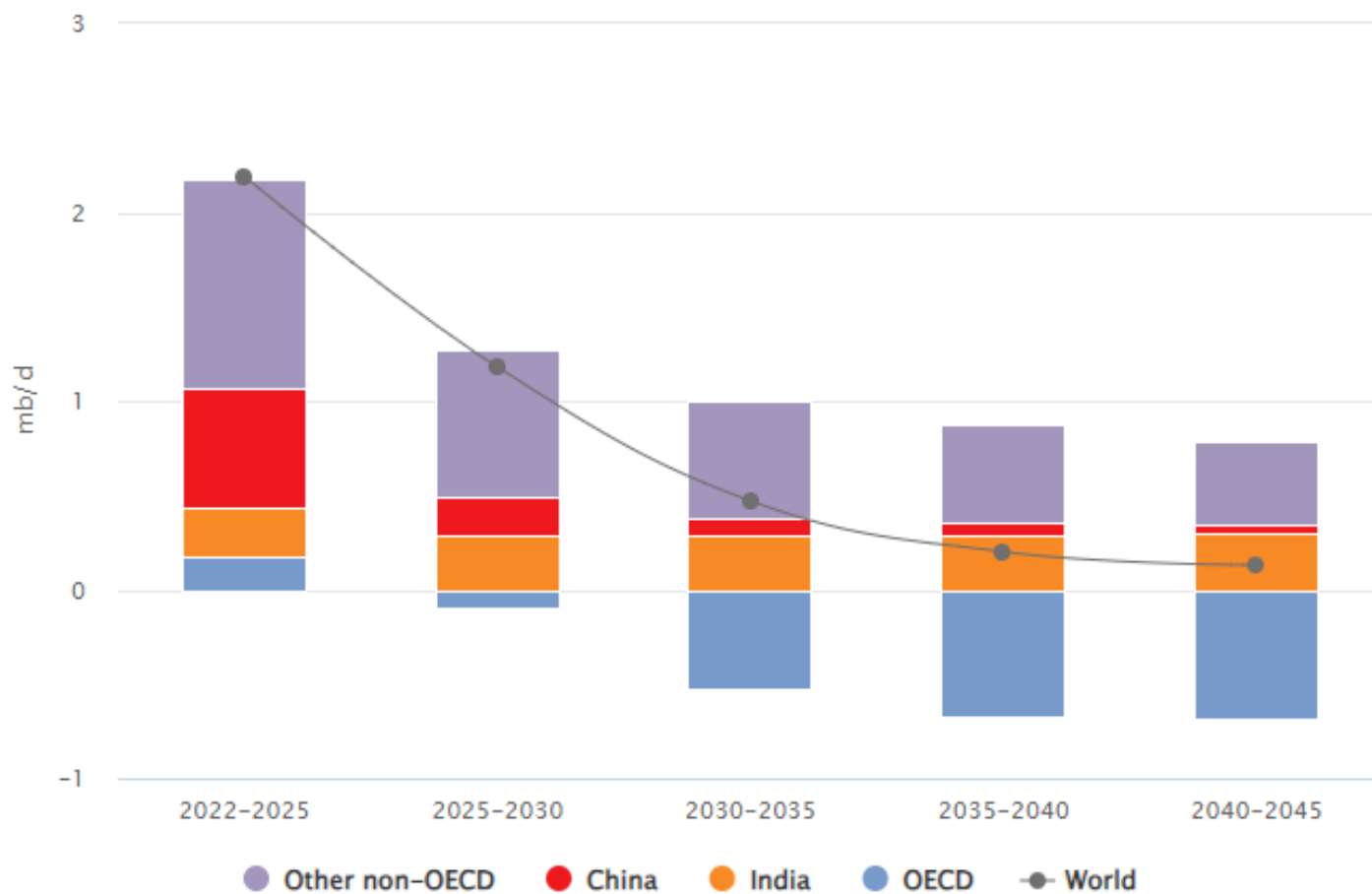
Source: IEA Oil 2024

OPEC: Oil Demand by Region, 2022-2045



Source: OPEC World Oil Outlook 2045

Average Annual Oil Demand by Region, 2022-2045



Source: OPEC World Oil Outlook 2045

Growth in Global Oil Demand by Product, 2022-2045

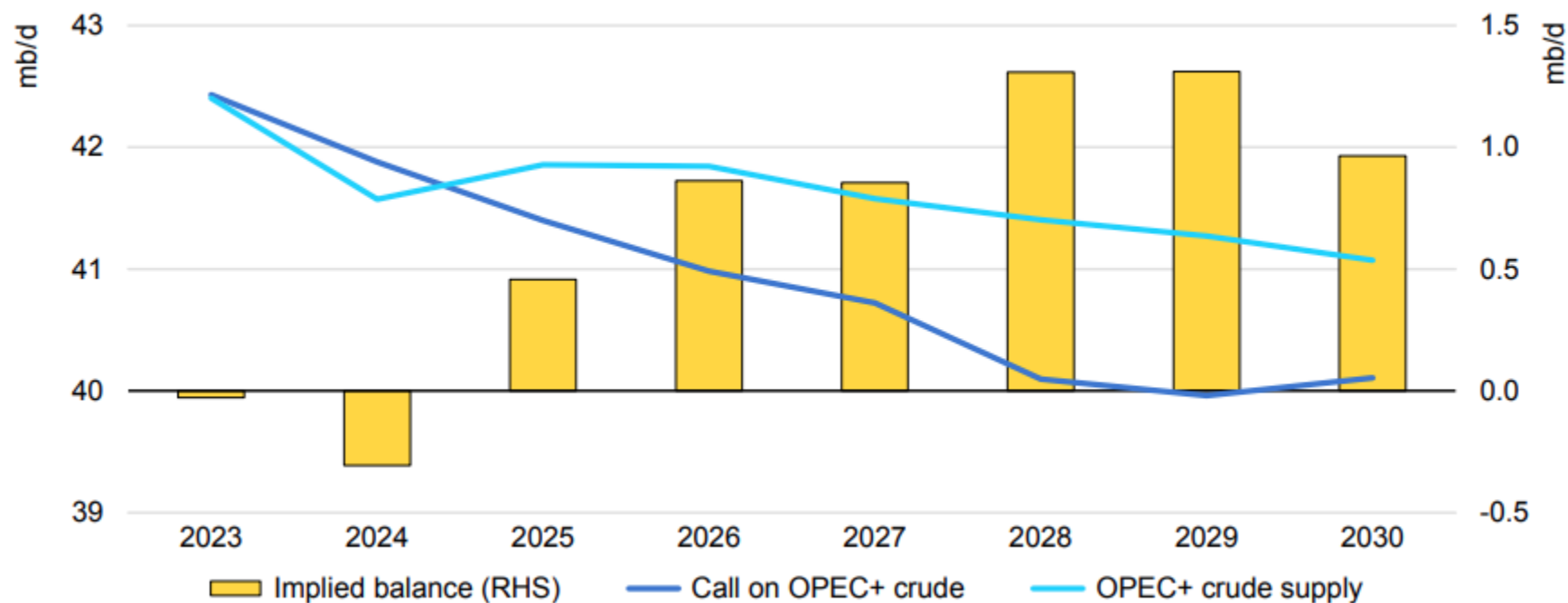


Source: OPEC World Oil Outlook 2045

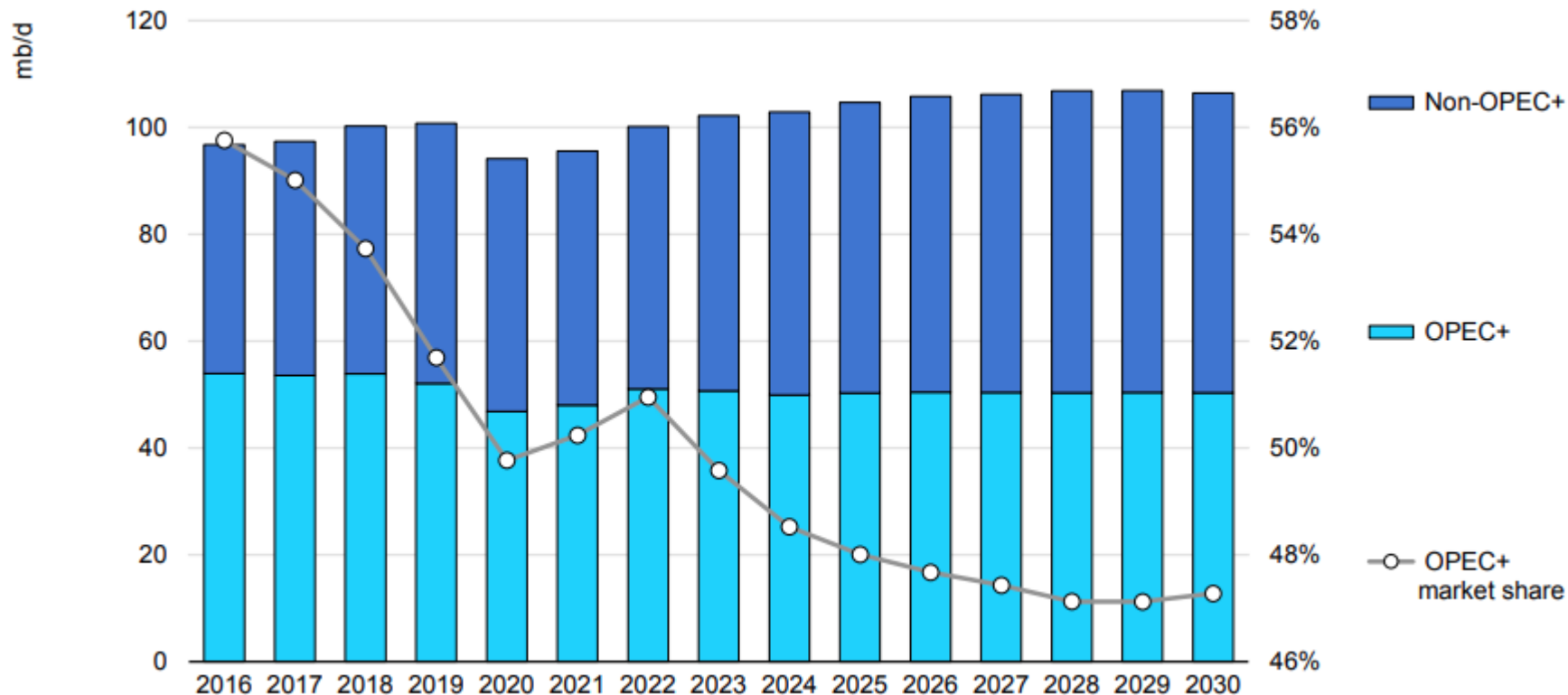
The Ever-Shifting Peak Oil

- ❑ Ever since the coming of the oil age, there has been a fear of an impending crisis concerning the availability of the resource due to uncontrolled demand
- ❑ Later on, after the war, the fear returned as global oil consumption kept rising and governments started to worry about resource depletion
- ❑ Thanks to modern exploration methods and the discovery of substantial oil fields beyond the Middle East and the USA, this fear subsided as oil companies were able to report increased proved reserves on a sustainable basis
- ❑ Fast forward in the 21st century and the discussion on peak oil has returned on a new basis. The issue is now how soon will oil demand (and consequently oil production) will start to recede so as to help lower greenhouse emissions. The same argument applies to natural gas
- ❑ Over the last 20 years or so, since Climate Change has been determining energy policies, with the IEA and other organisations speculating as to when peak oil could be achieved setting one target after the other. First it was 2020, then it was 2025, 2028, 2030 and so forth.
- ❑ Such arbitrary targets systematically underestimate the developing world's insatiable thirst for oil and gas as they are still (together with coal) the cheapest and most easily available forms of energy to satisfy rising energy needs. With RES contributing more energy but which is channeled almost exclusively for power generation.

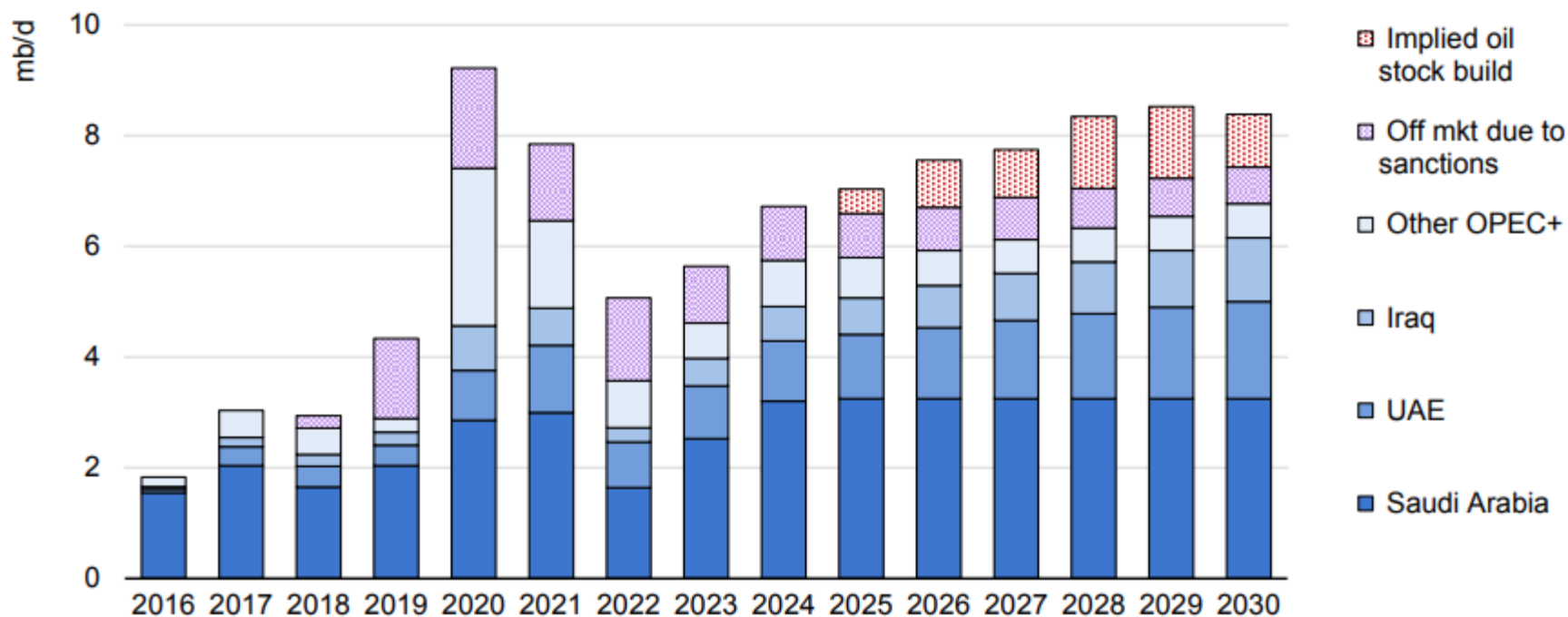
World Producers to Pump More Than Enough to Keep Market in Balance



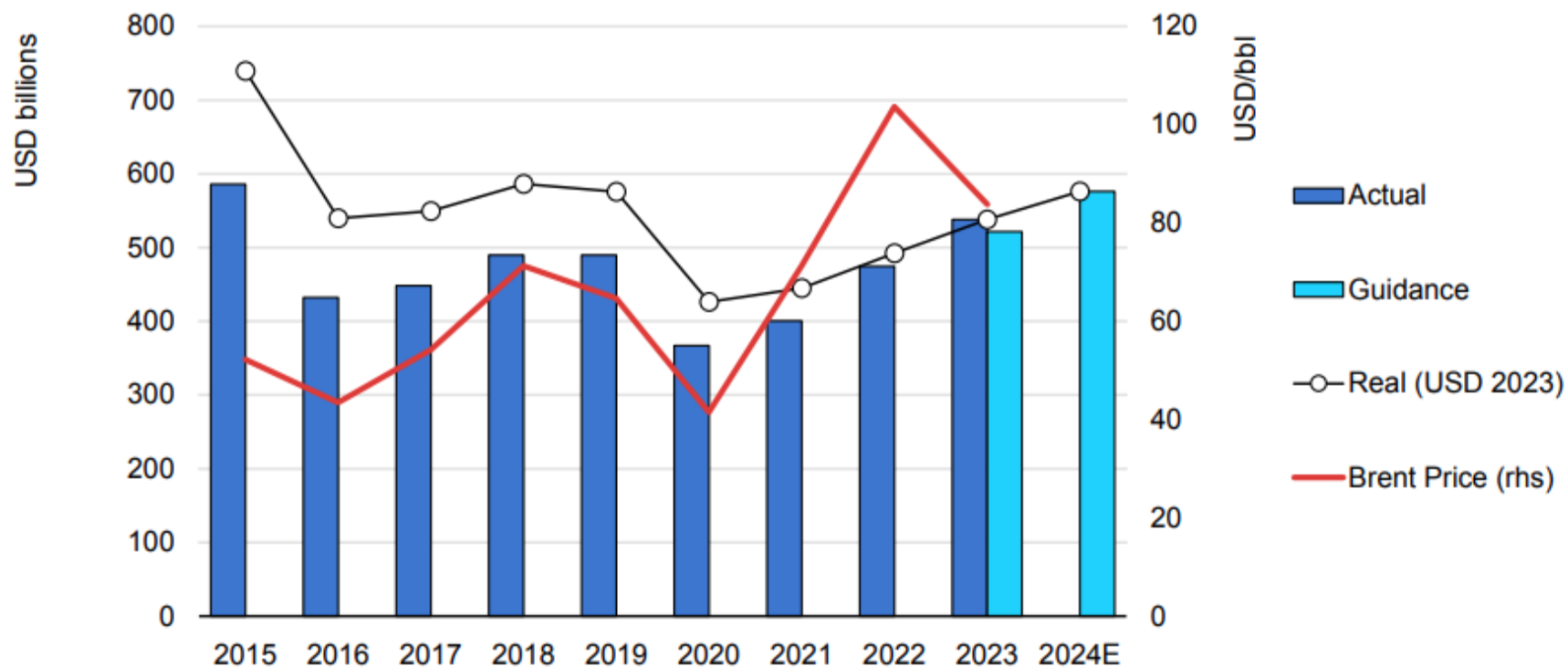
OPEC+ Reclaims Market Share Towards the End of Medium-term Forecast



OPEC+ Spare Crude Production Capacity and Implied Total Oil Stock Build, 2016-2030

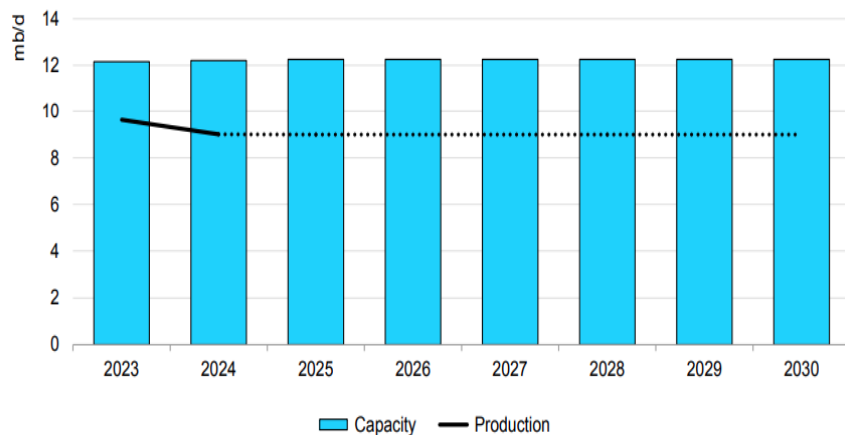


Global Oil and Gas Upstream Capital Spending

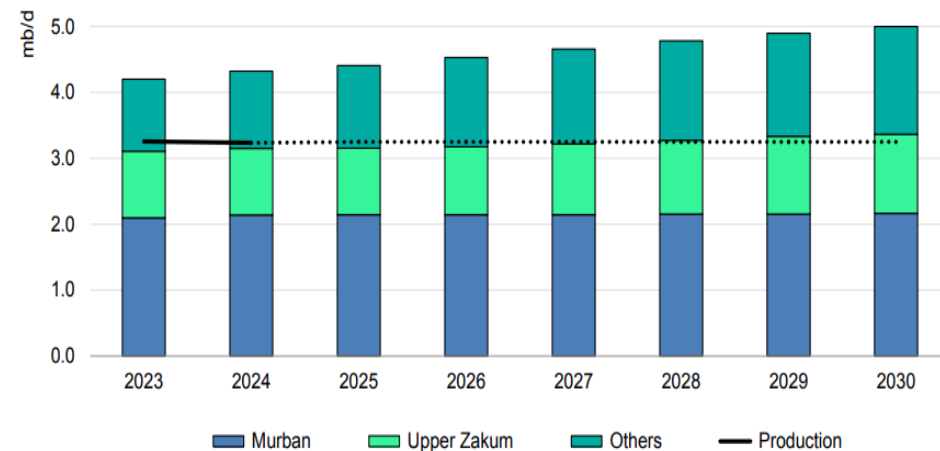


Crude Oil Production and Capacity of Saudi Arabia and UAE, 2023-2030

Saudi Arabia estimated crude oil production and capacity, 2023-2030

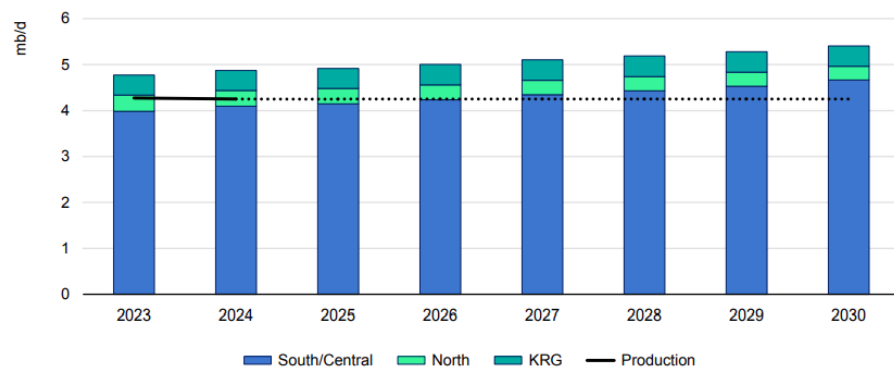


UAE estimated crude oil production and capacity, 2023-2030

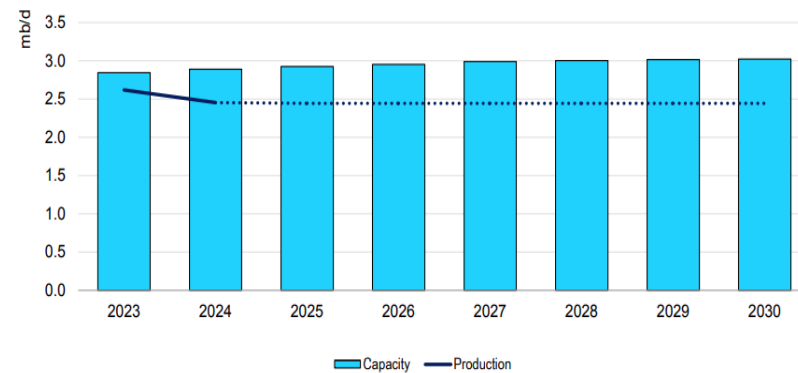


Crude Oil Production and Capacity of Iraq and Kuwait, 2023-2030

Iraq estimated crude oil production and capacity, 2023-2030

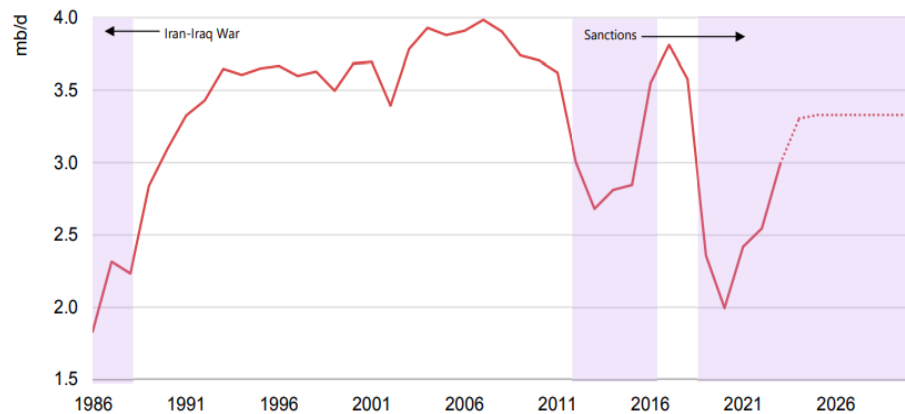


Kuwait estimated crude oil production and capacity, 2023-2030

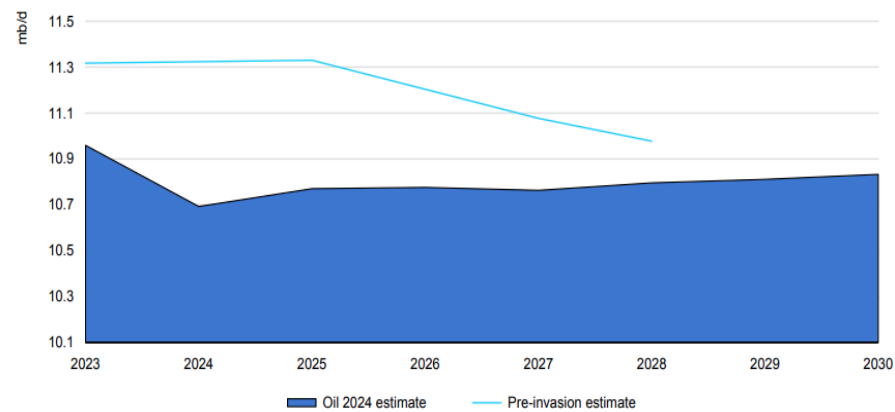


Crude Oil Production of Iran and Russian Total Oil Supply

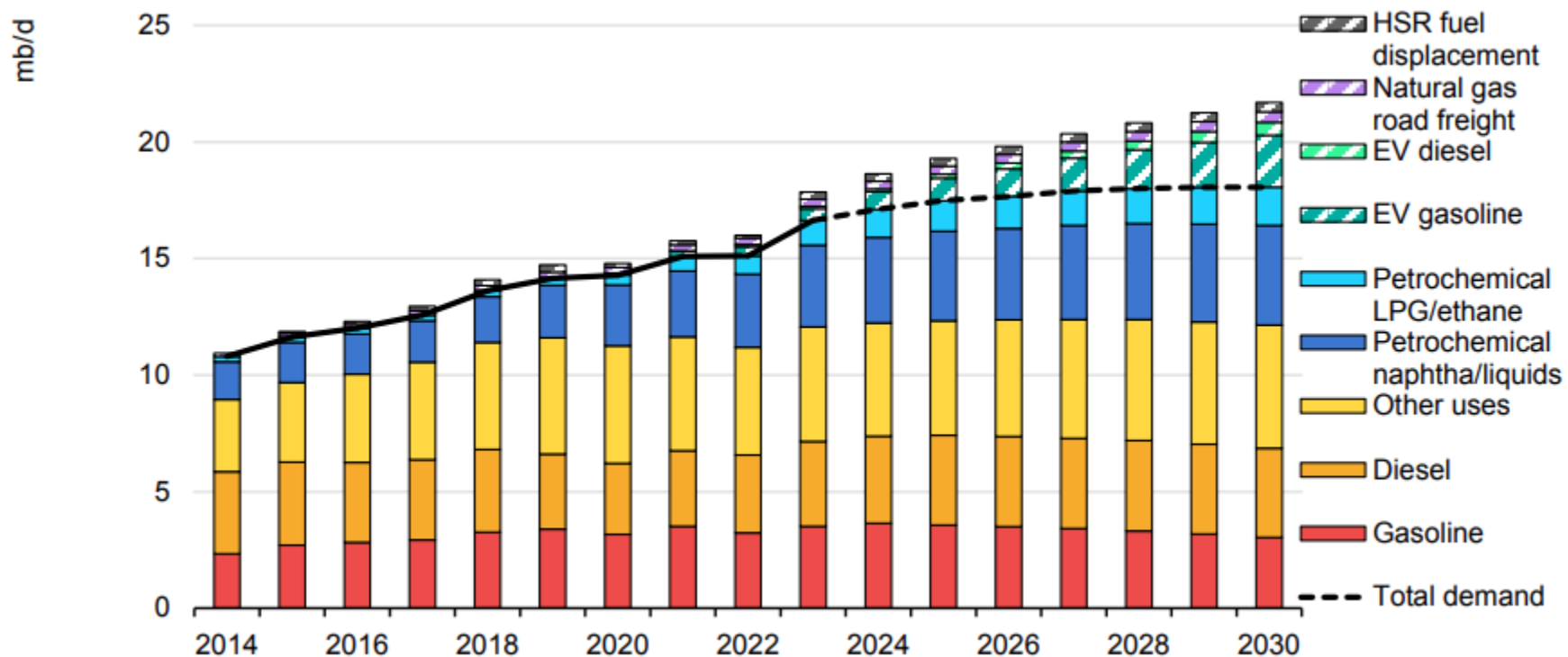
Iran crude oil production, 1986-2030



Russia total oil supply, 2023-2030



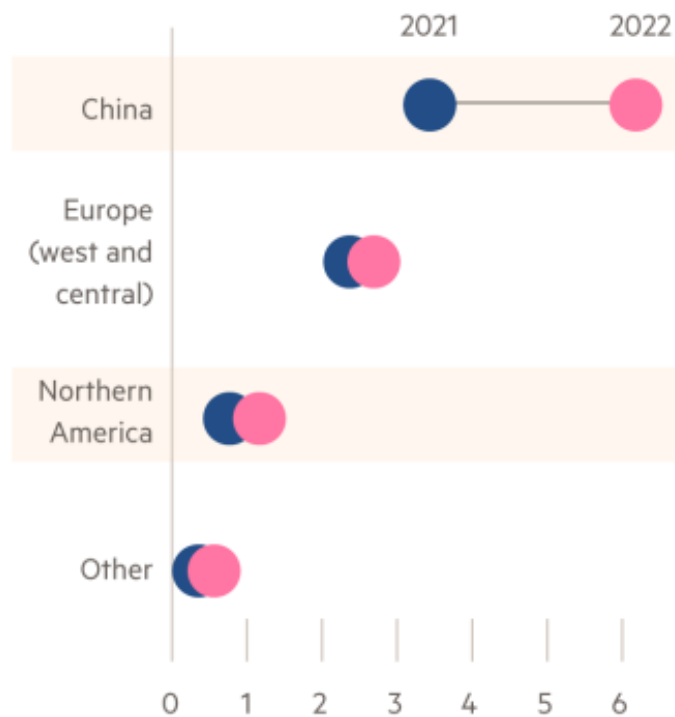
China Oil Demand and Substitution, 2014-2030



China is Driving Global EV Sales (LHS) and Oil Demand Set to Plateau (RHS)

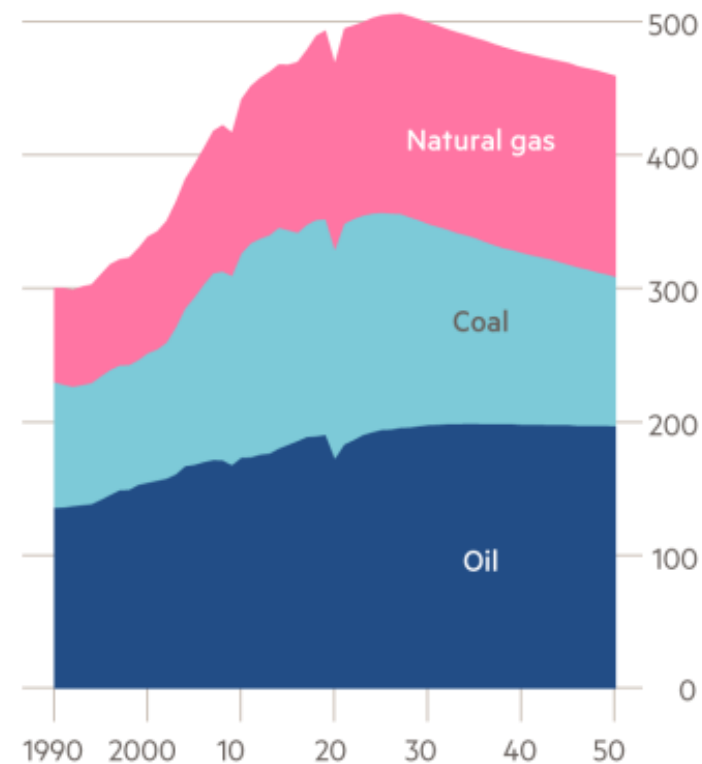
China is driving global EV sales

Plug-in electric vehicle sales worldwide by main market (mn)

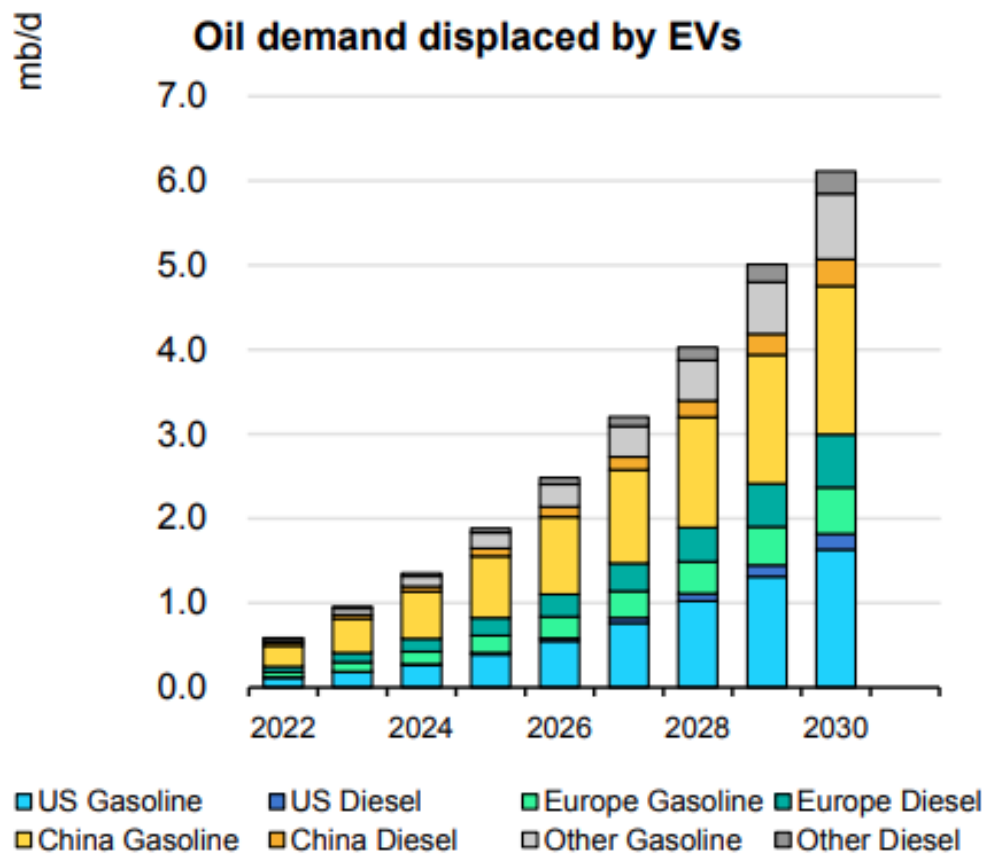


Oil demand set to plateau

Exajoules

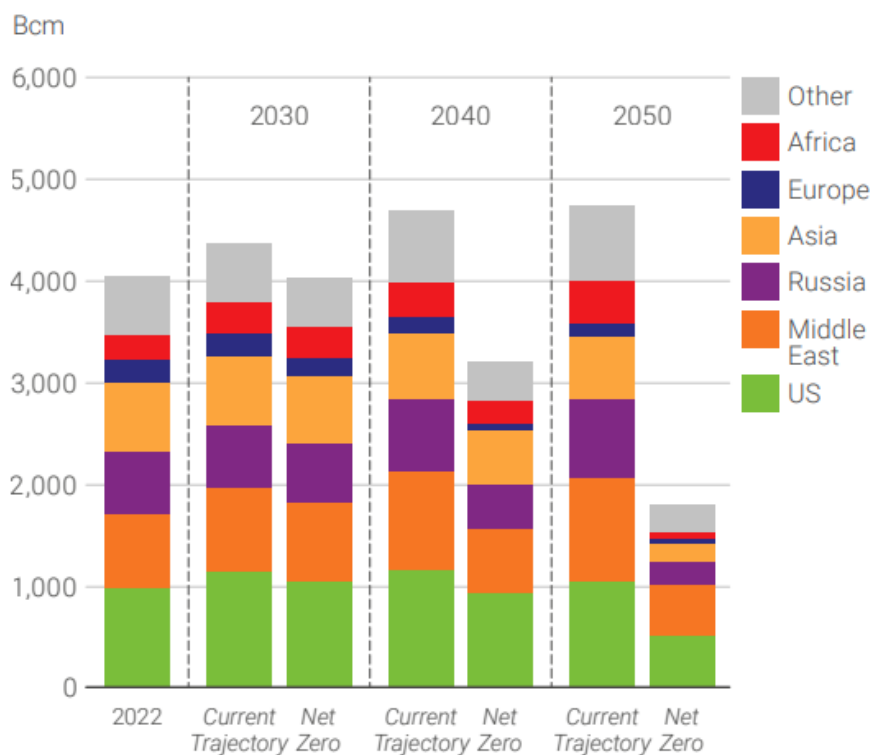


Oil Demand Displaced by EVs

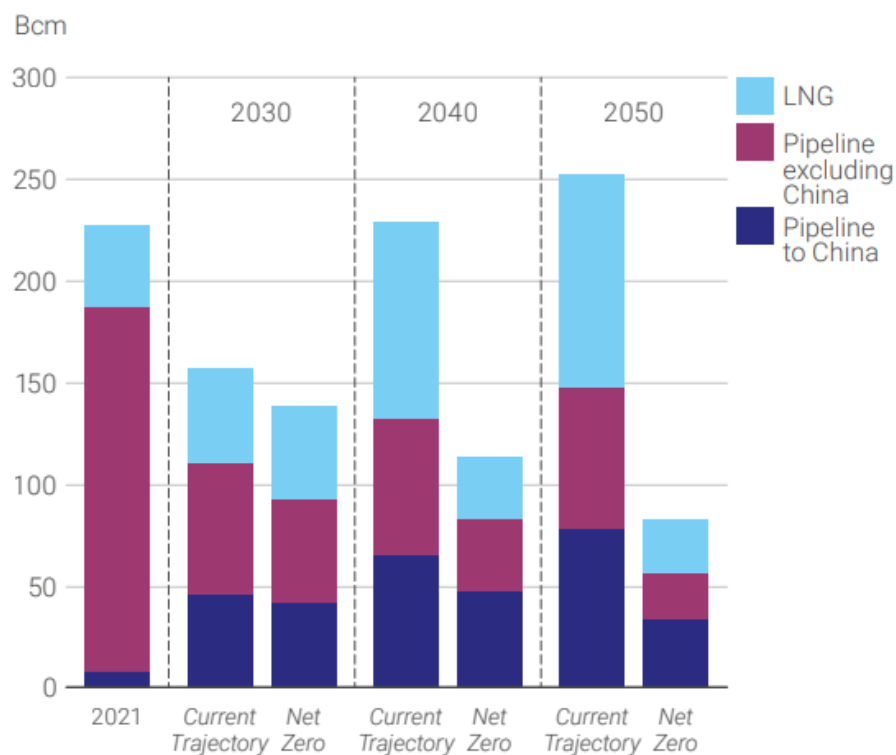


The Global Pattern of Natural Gas Production is Increasingly Driven By Developments in LNG Trade

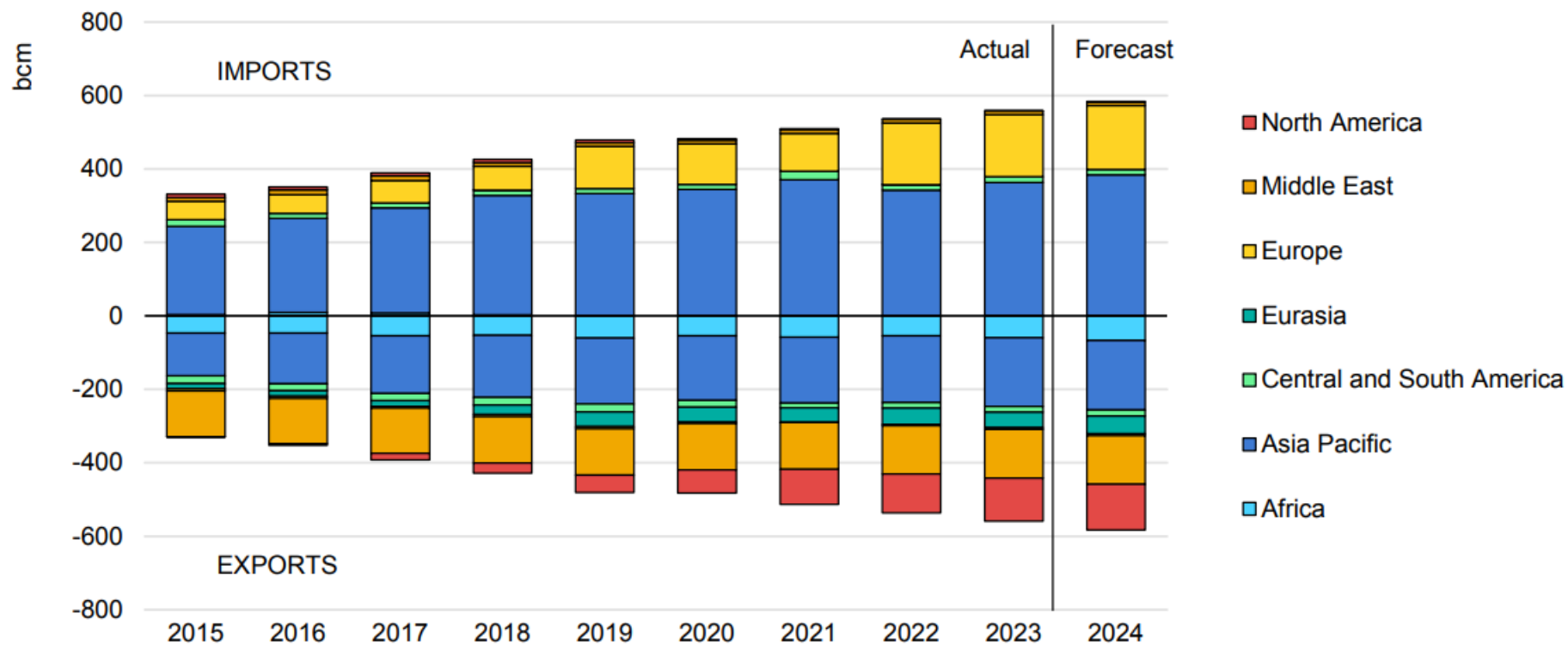
Natural gas production by region



Russian natural gas exports



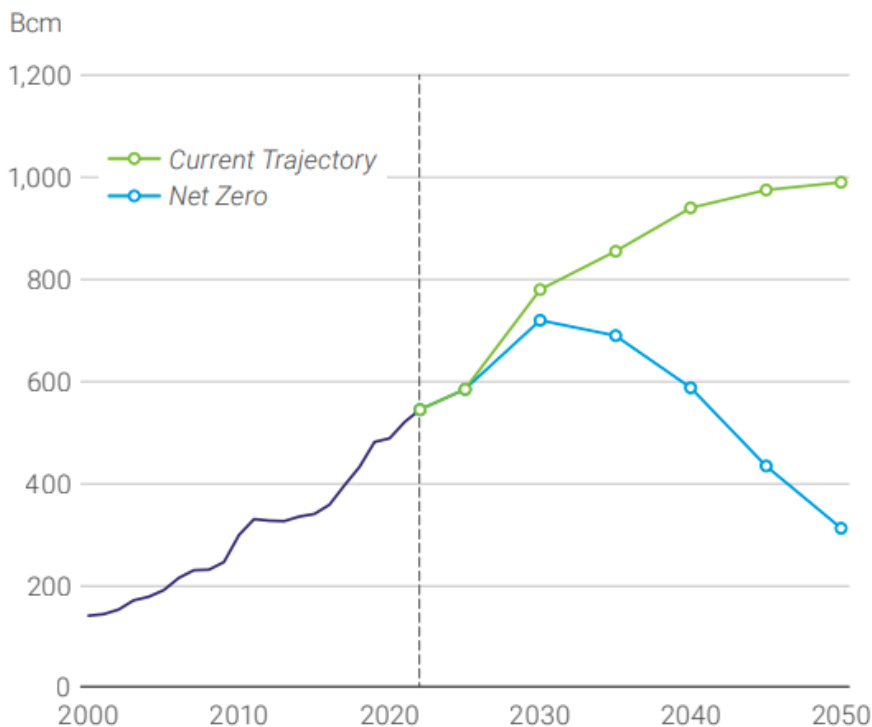
Global LNG Imports and Exports by Region, 2015-2024



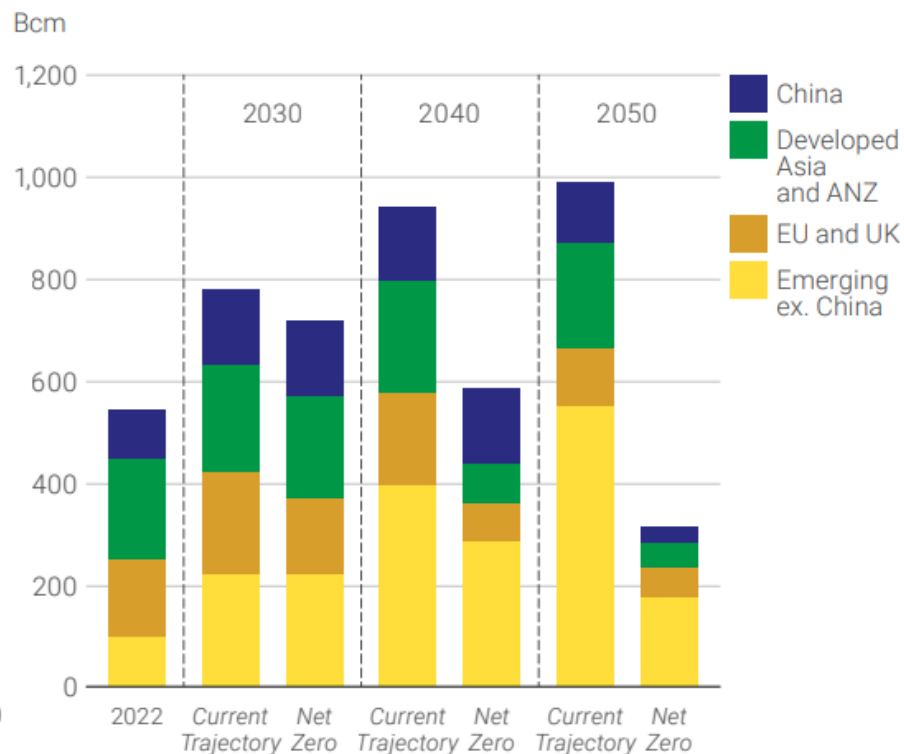
Source: IEA Global Gas Security Review 2023

LNG Demand Depends On Gas Consumption in Europe and Asia, Which are Reliant on LNG Imports For Supplies of Gas

LNG traded volume

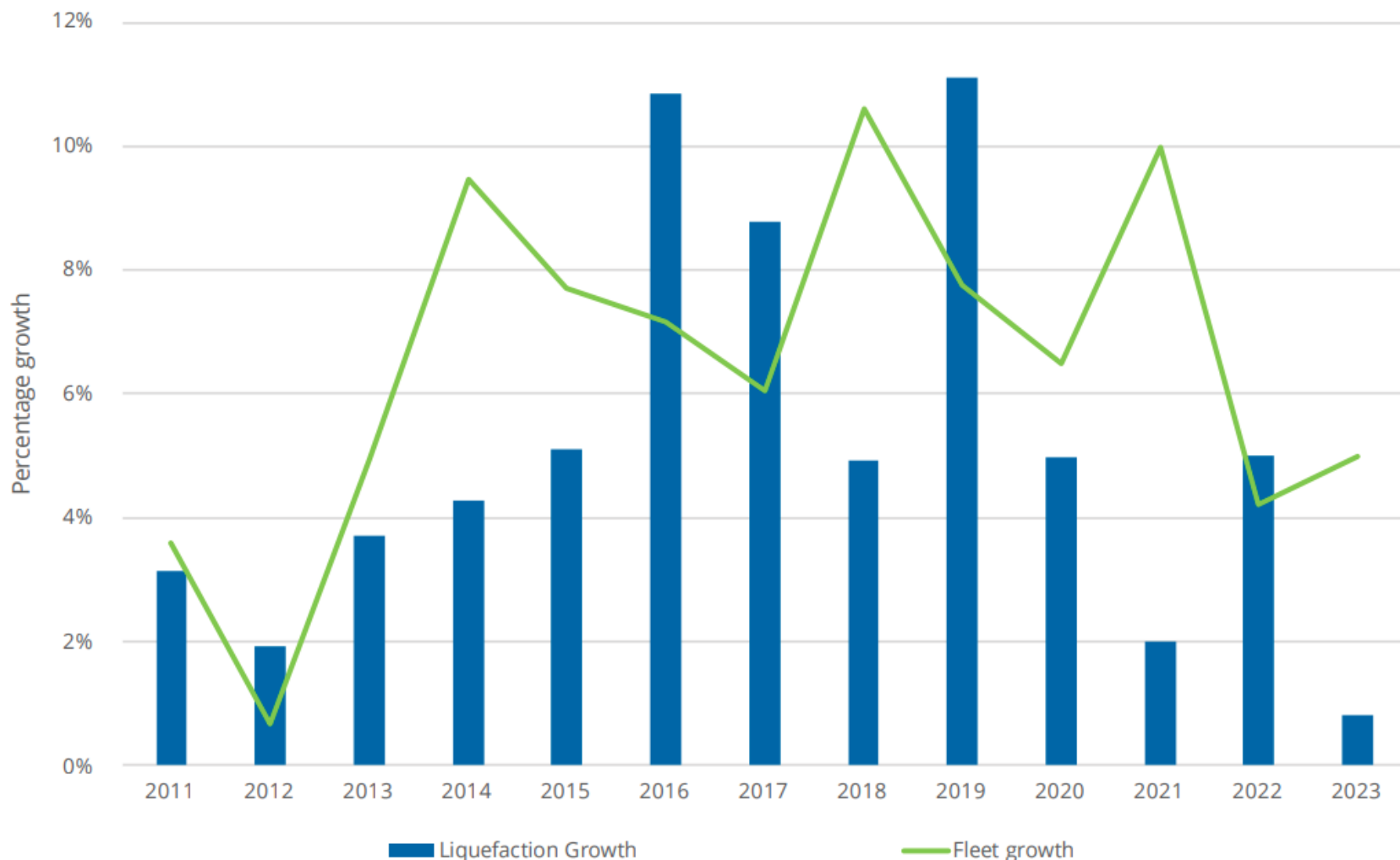


LNG imports by region

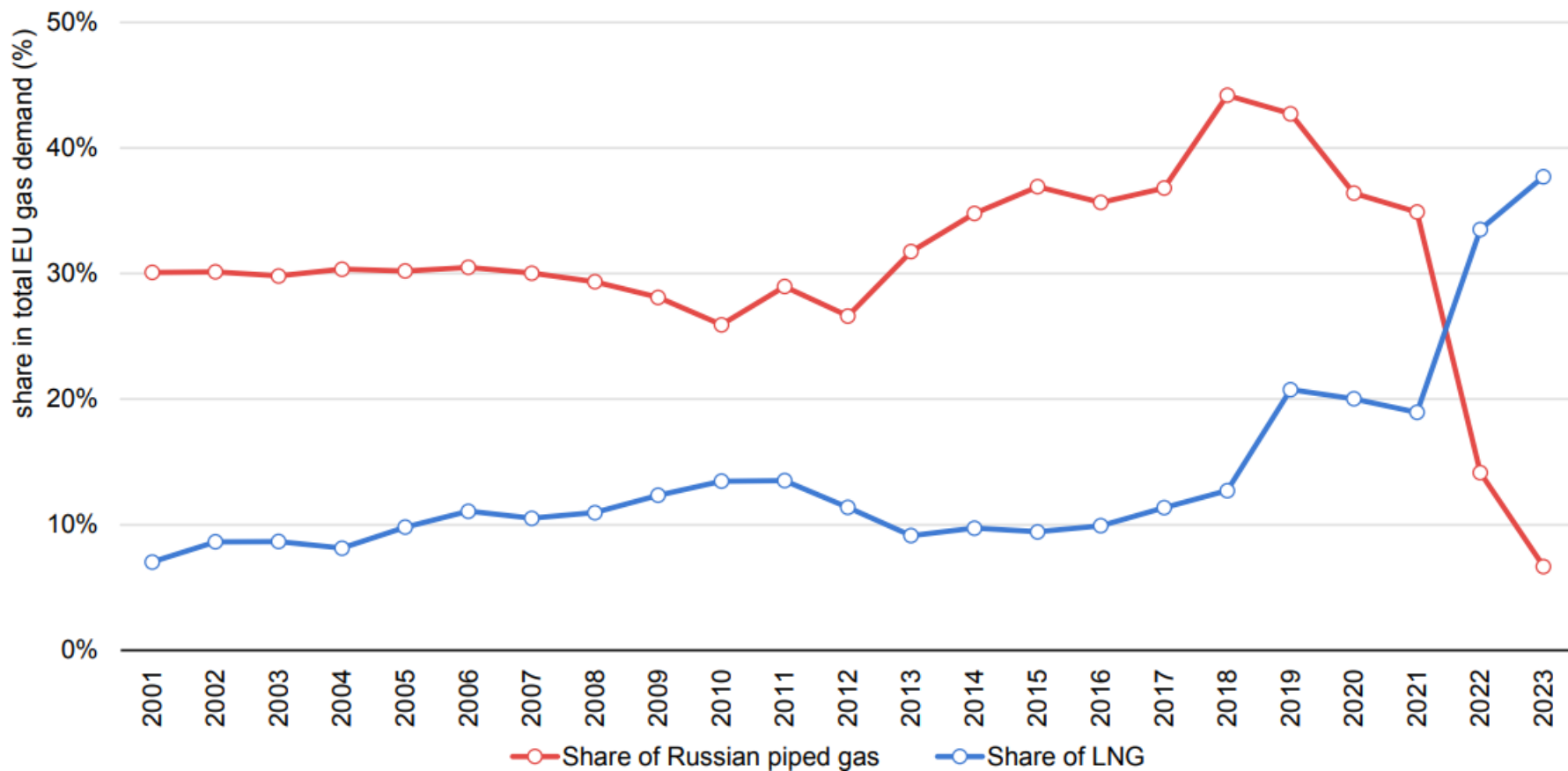


Includes all global LNG imports. Developed Asia comprises developed economies in Asia, and is dominated by Japan, South Korea and Singapore.

Liquefaction Capacity Growth Vs LNG Global Fleet Count Growth, 2011-2023

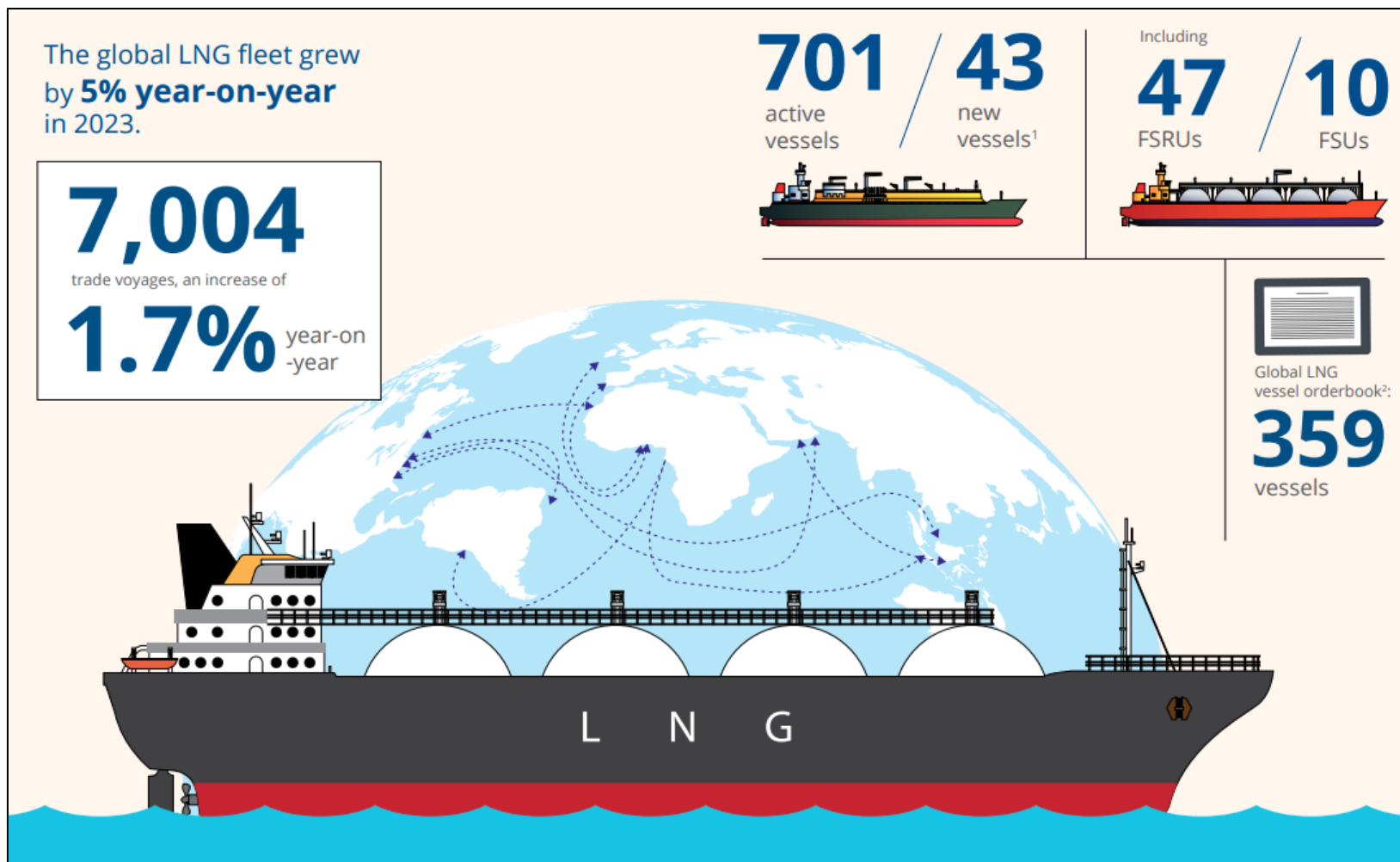


The Share of LNG and Russian Piped Gas in the EU's Gas Demand (2001-2023)



Source: IEA Global Gas Security Review 2023

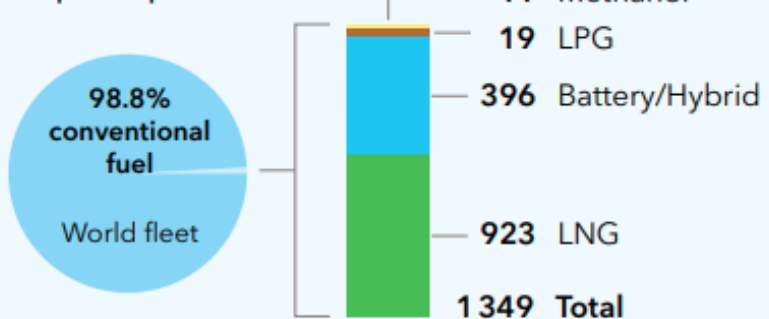
Global LNG Shipping



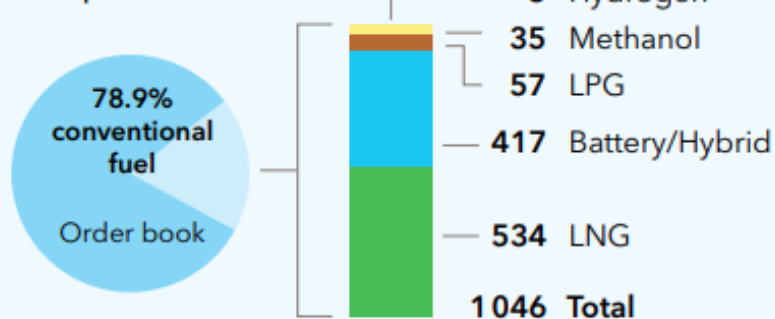
Alternative Fuel Uptake in the World Fleet by Number of Ships and Gross Tonnage

NUMBER OF SHIPS

Ships in operation

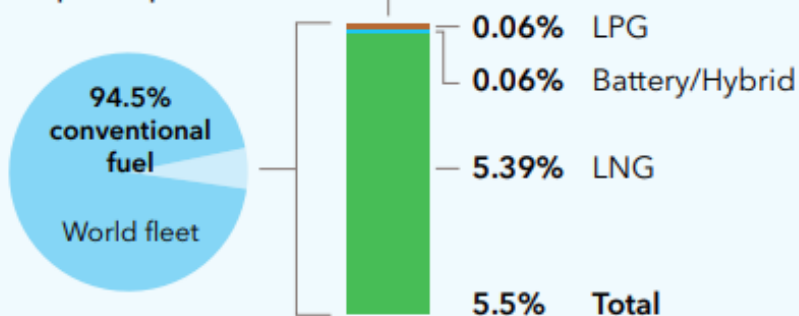


Ships on order

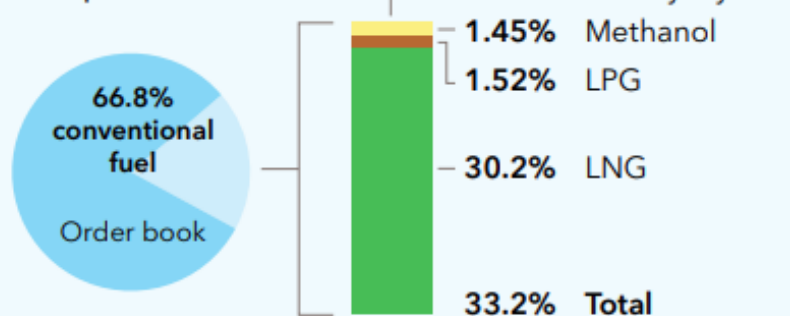


IN % OF GROSS TONNAGE

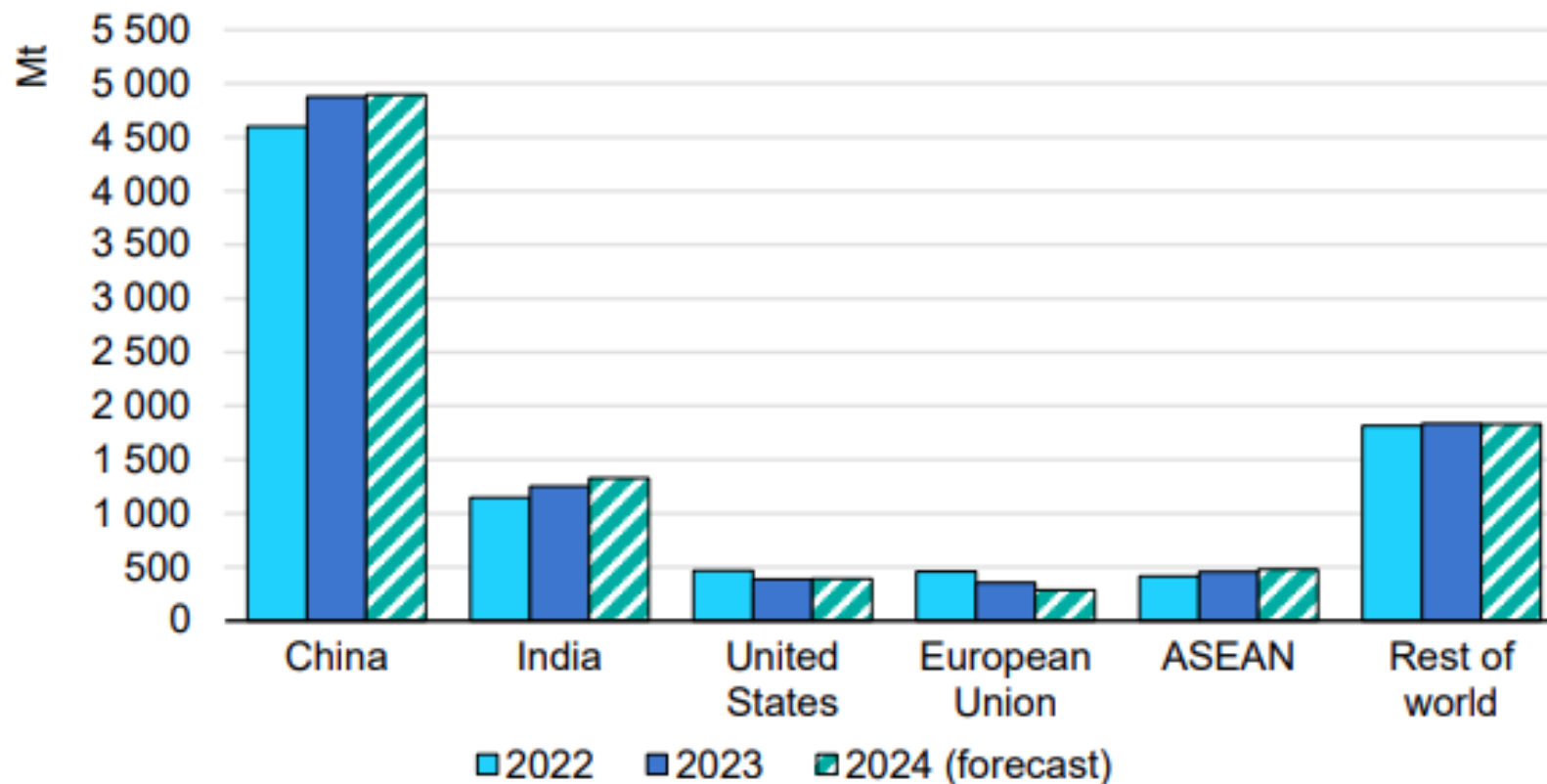
Ships in operation



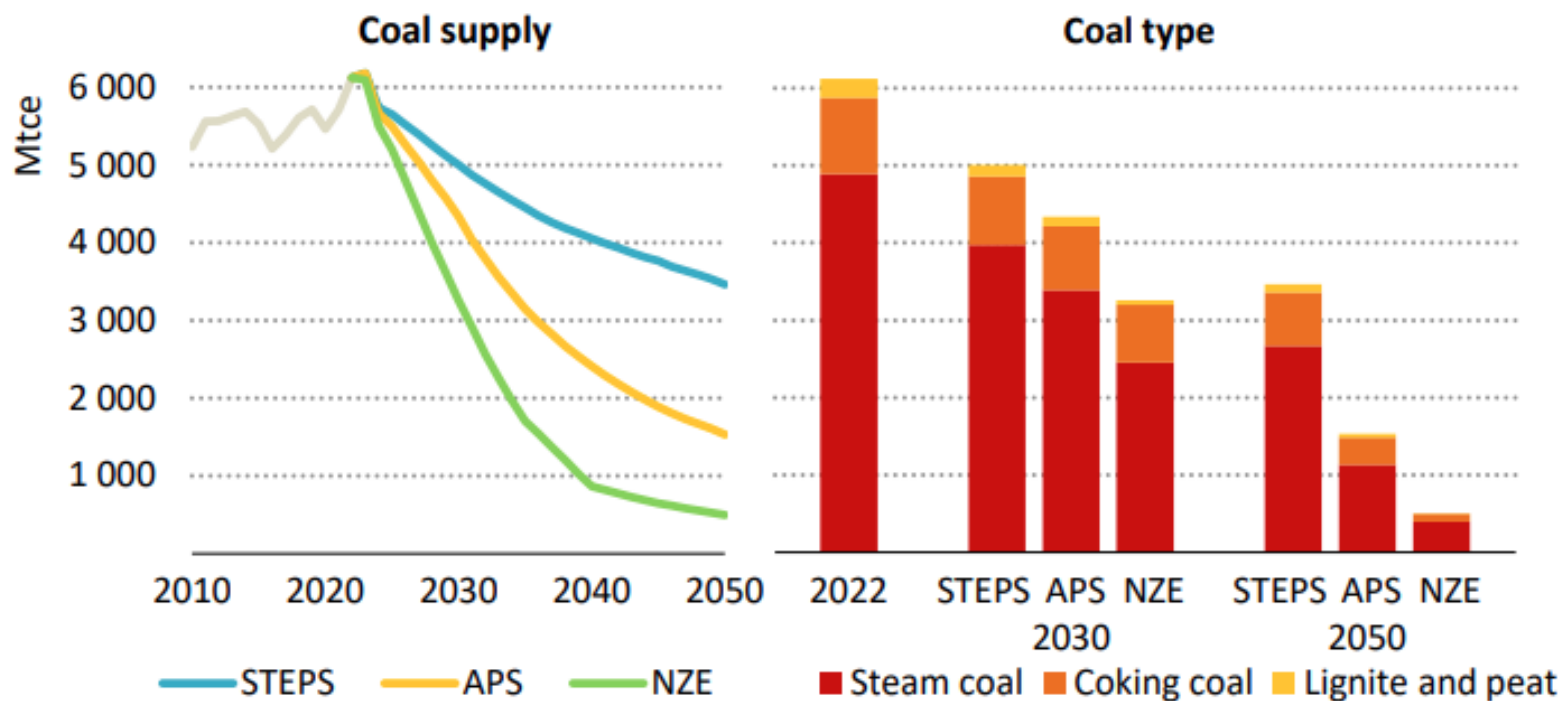
Ships on order



Global Coal Consumption, 2022-2024



Coal Supply by Scenario, 2010-2050



ICE Brent Crude Oil Front Month Prices

5 years

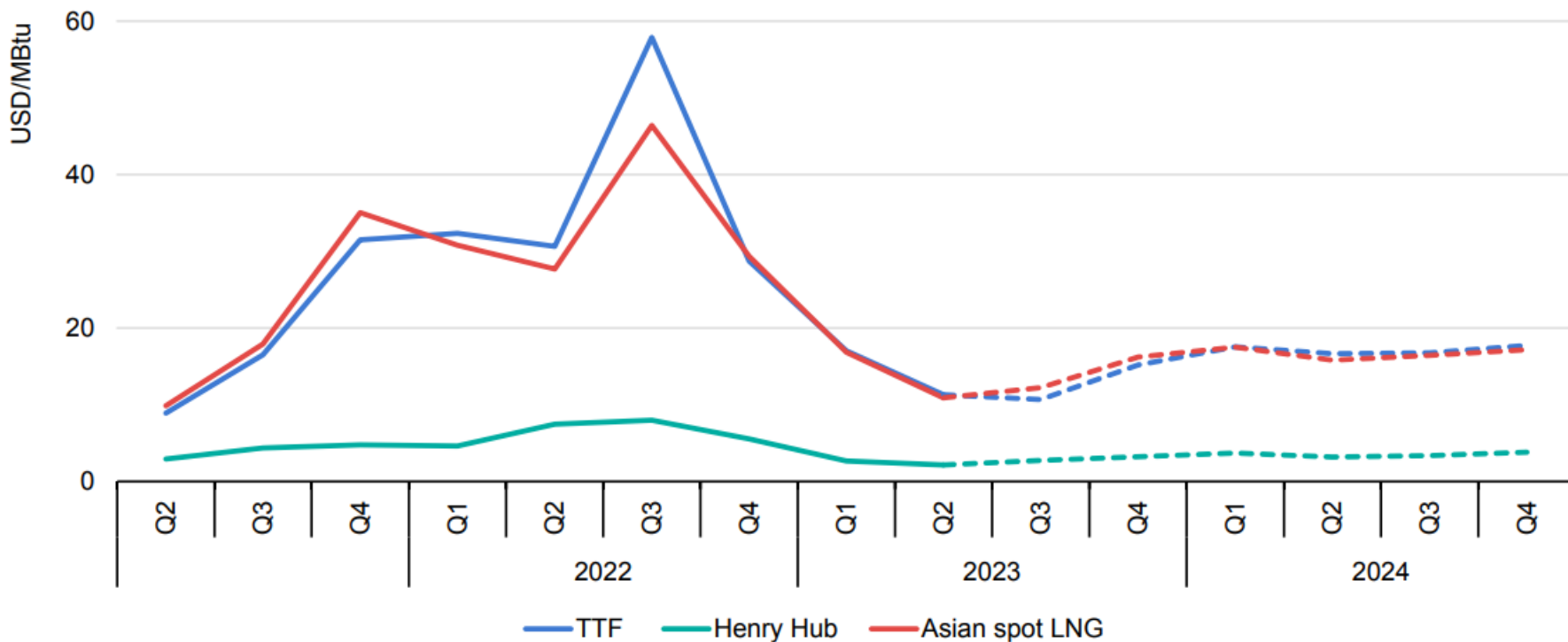


6 months



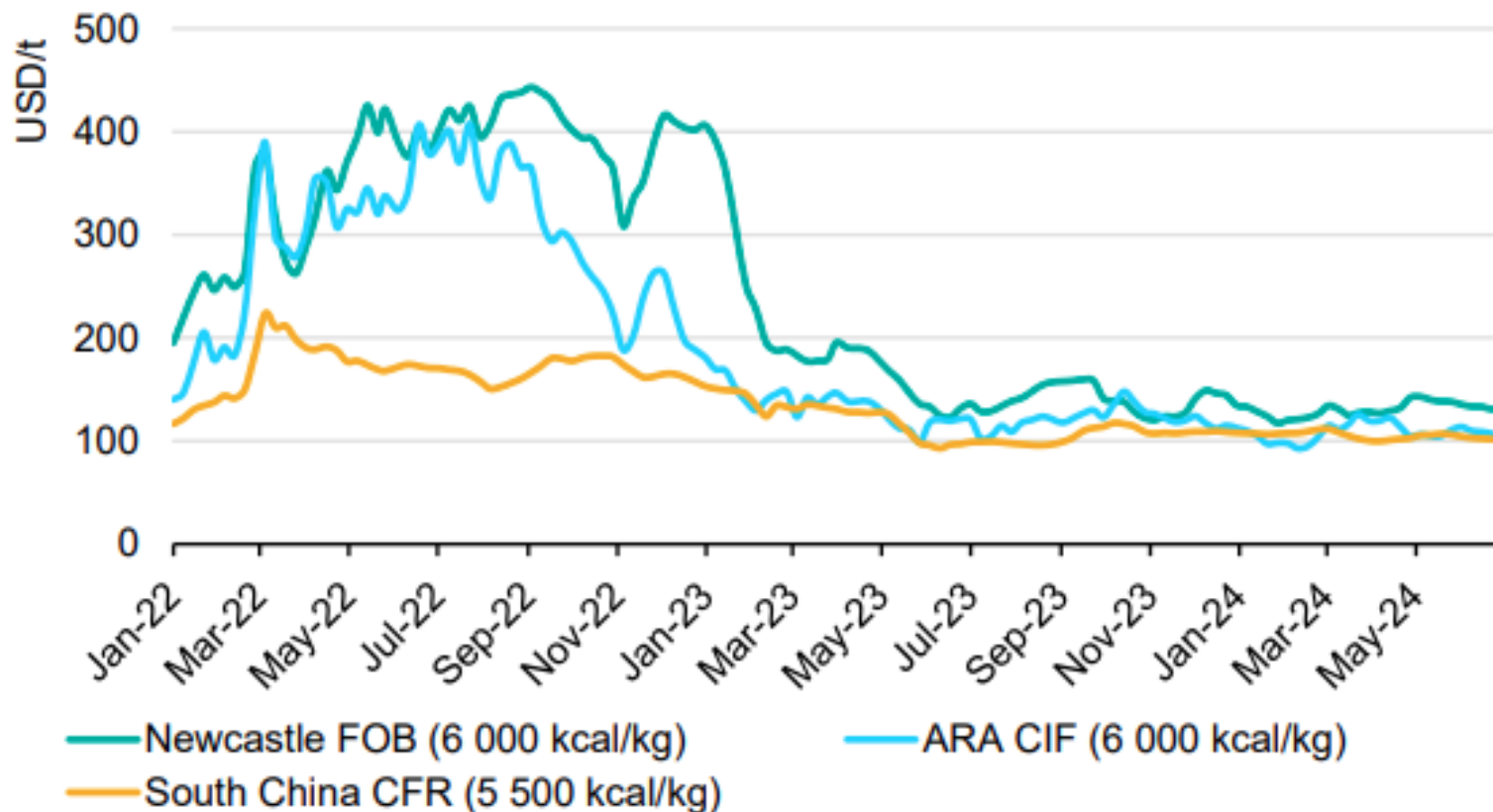
Sources: ICE, Financial Times

Main Spot and Forward Natural Gas Prices, 2020-2024



Source: IEA Global Gas Security Review 2023

Thermal Coal Price Markers, 2022-2024



Concluding Remarks

- ❑ Pressure by governments and international organisations to fast track energy transition by imposing emission inspired changes on fuel in industries, transportation, buildings and shipping have not been successful in curtailing demand for oil, gas and coal. On the contrary, we see a rise in demand.
- ❑ Peak oil demand is now forecasted beyond 2040 while gas demand may not climax until a much later, and so we can take a breath.
- ❑ In any event, there are divergent views among forecasters and nobody really knows when exactly we might see peak fossil fuel demand happening – but not very soon!
- ❑ It is safe to assume that beyond 2050 the global energy mix will shift towards greater electricity input. This means that over the 20-25 years we shall need more vessel capacity to transport energy related commodities, especially LNG and special cargo vessels.
- ❑ There are opportunities in new type of special type vessels such as CO₂, Hydrogen, Methanol, Ammonia carriers as CCUS technologies take hold.
- ❑ At the same time and in view of increased environmental regulation and the weighing of ESG criteria in shipping and chartering operations, a clear direction will be towards new builds.
- ❑ The extra costs involved for the building and operation of vessels which comply with the new low carbon criteria will be covered by improved efficiencies in the management and running of vessels (e.g. lowering of fuel costs, increased automation, etc.).
- ❑ Greek shipowners are well placed to take advantage of the new global energy and environmental order. By constantly modernising their fleets and showcasing responsible ship management (by expertly managing HR and environmental issues) and versatility in operations Greek shipowners will continue to compete successfully in a most challenging global environment.
- ❑ Hence, the mid- to long-term prospects, say over a 10-15 year span, for seaborne energy commodities can be regarded as positive with increased volumes requiring transportation.



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The background of the slide is a dark blue image of a globe. Overlaid on the globe are numerous glowing blue lines that represent energy transmission or a network. These lines are curved and interconnected, creating a complex web of energy paths across the continents.

*Thank you
for your attention!*

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