Insights from the World Energy Outlook 2024

Hugh Hopewell, Courtney Turich

British Institute of Energy Economics, International Association for Energy Economics
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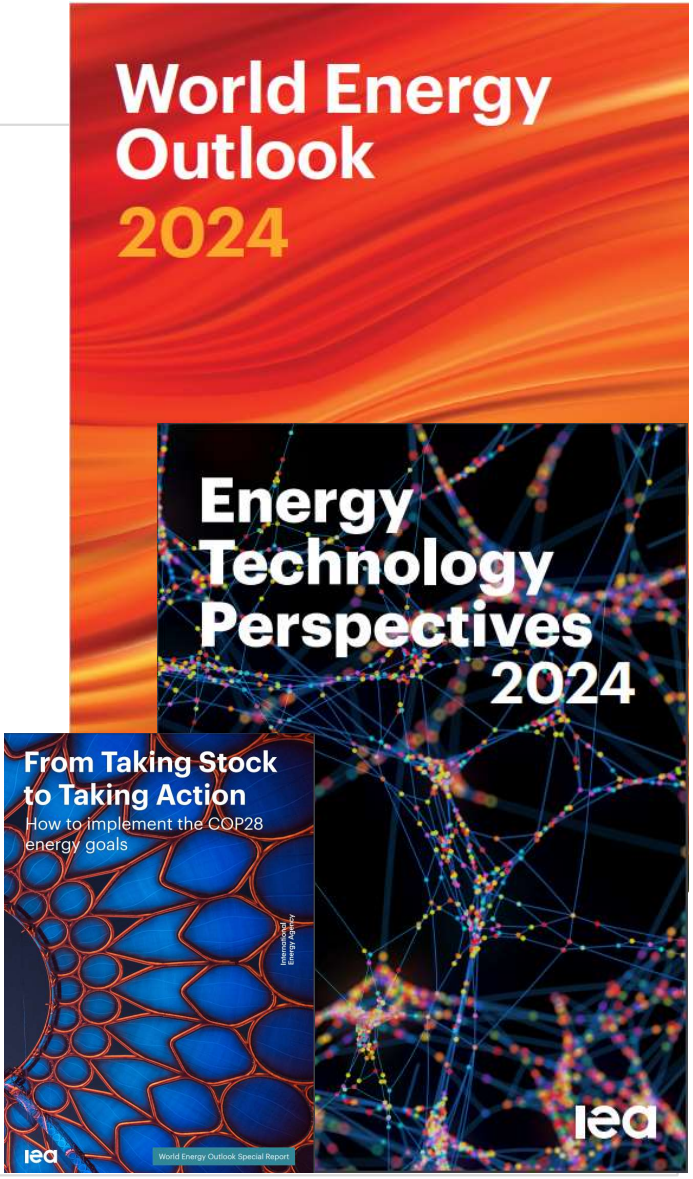
International Energy Agency

Scenario analysis in the World Energy Outlook

The *World Energy Outlook (WEO)* uses the latest available data to analyse energy, emissions and climate trends.

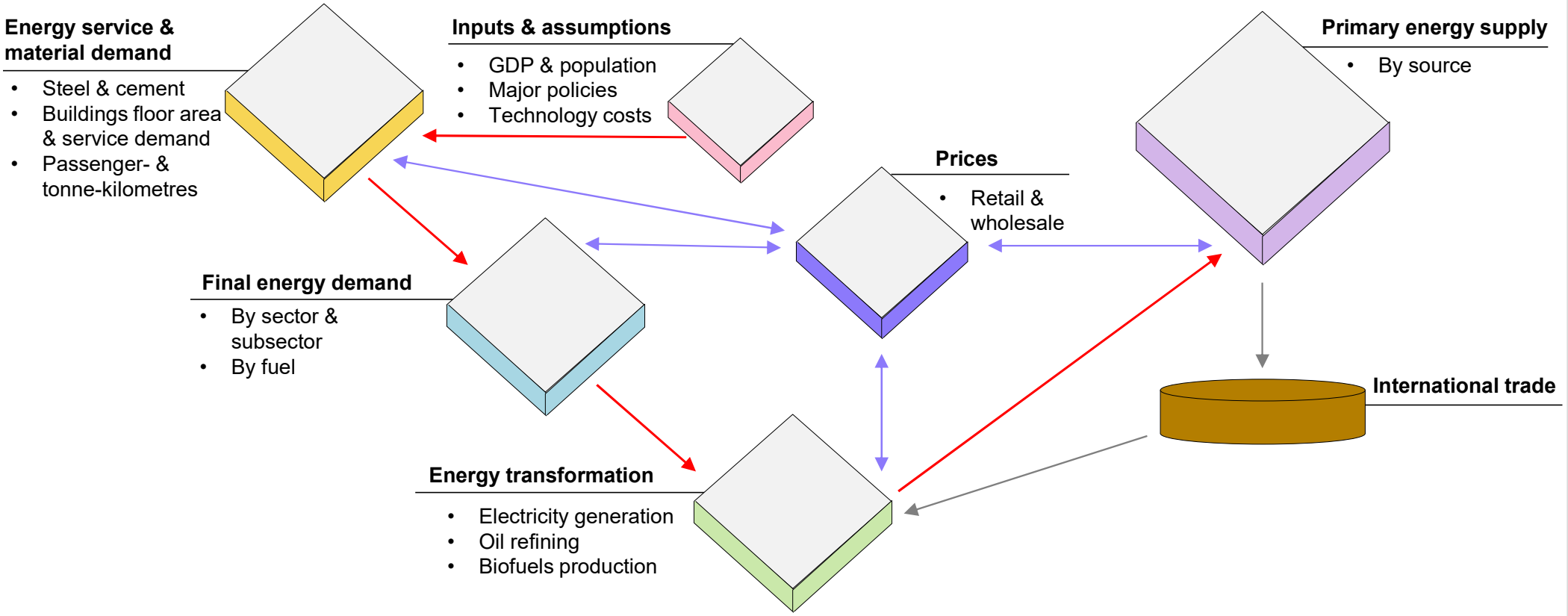
3 core scenarios

Where do existing policies take us?	*What is the impact of announced net zero and other pledges if they are met in full?*	*What is required for the energy sector to reach net zero CO_2 emissions by 2050?*
STEPS	**APS**	**NZE**
Stated Policies Scenario	Announced Pledges Scenario	Net Zero Emissions by 2050 Scenario



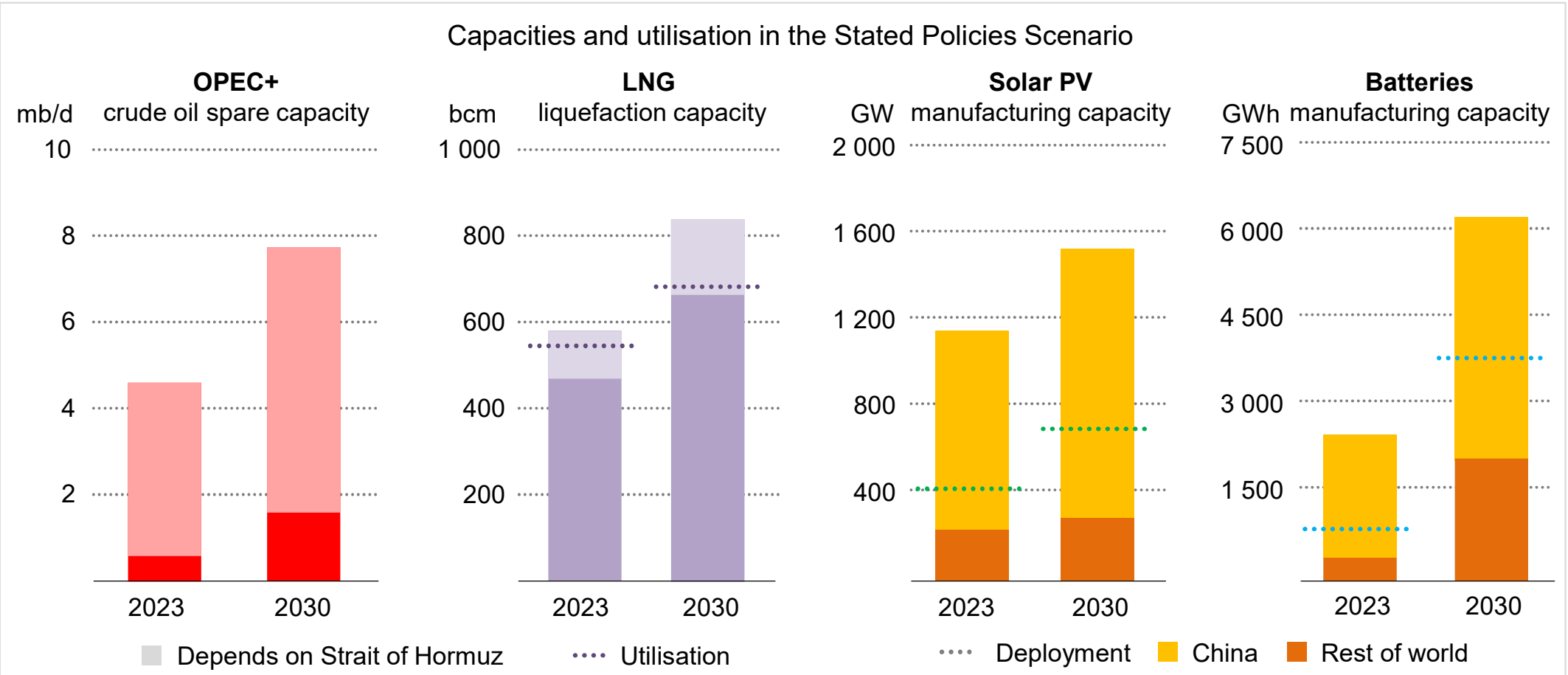
The IEA operates a technology-rich, bottom-up model

Schematic representation of the **Global Energy and Climate Model** (GEC-M)



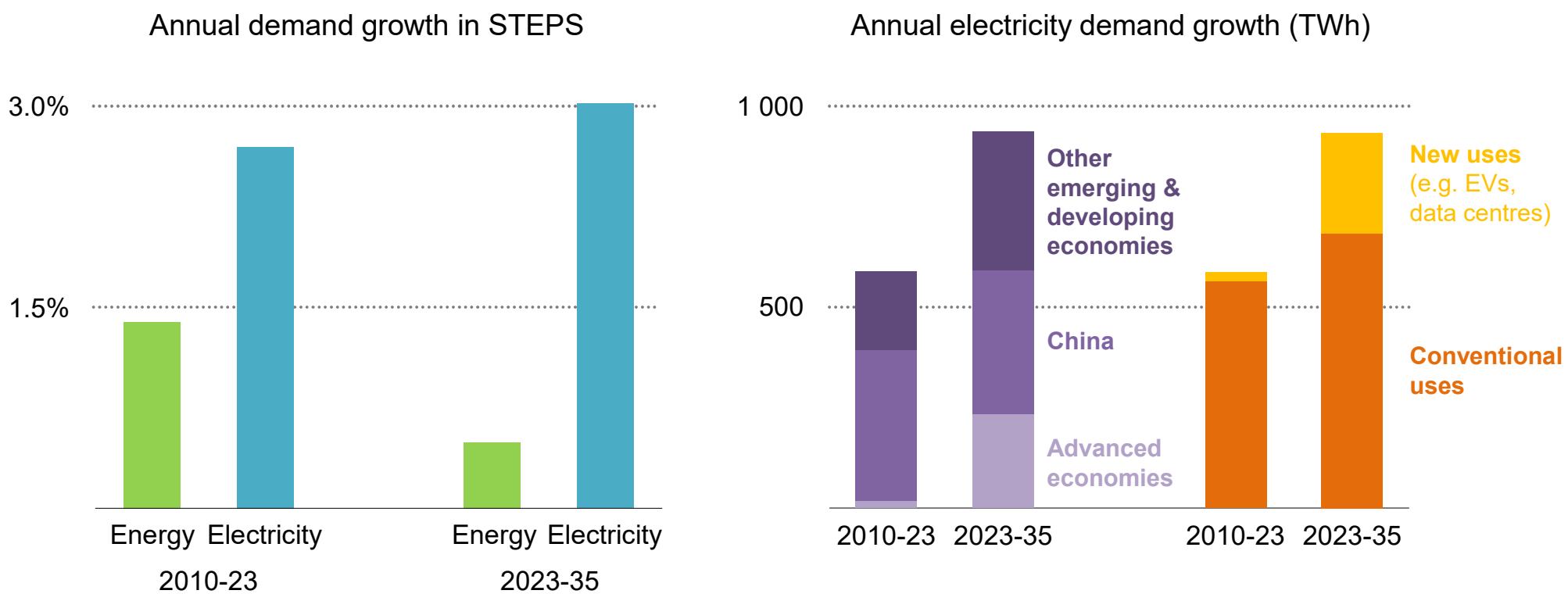
The Global Energy and Climate Model (GEC-M) is a technology-rich, bottom-up simulation model, which captures all sectors, all fuels, and all technologies and the interactions between them

Energy security risks remain high even as market balances ease



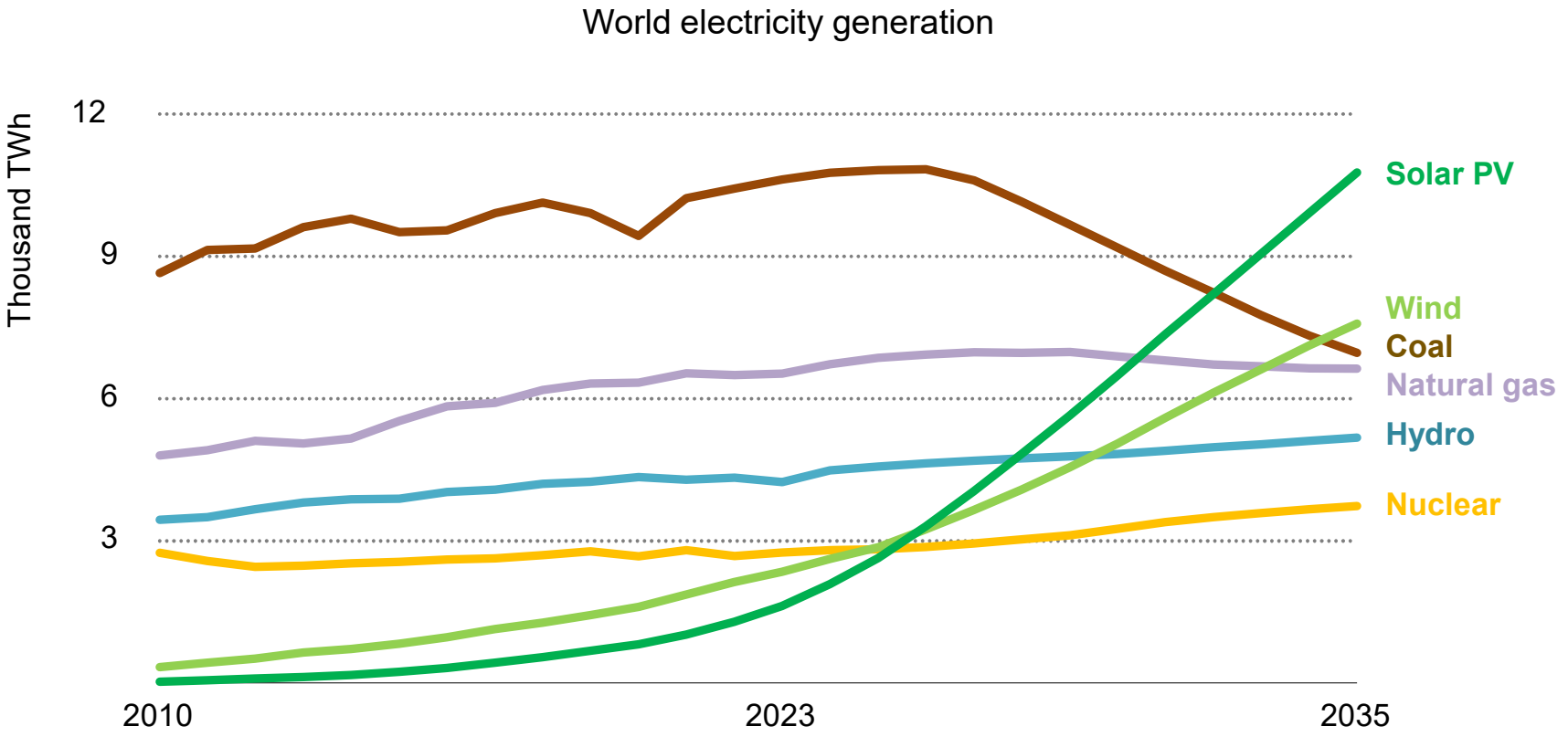
The world is set to enter a new energy market context in the second half of this decade, marked by continued geopolitical hazards but also by relatively abundant supply of multiple fuels and technologies

Moving at speed into the Age of Electricity



Electricity is growing faster than all other energy sources and it's growing across a wide range of economies, as conventional drivers of growth are supplemented by new ones like EVs, data centres and heat pumps

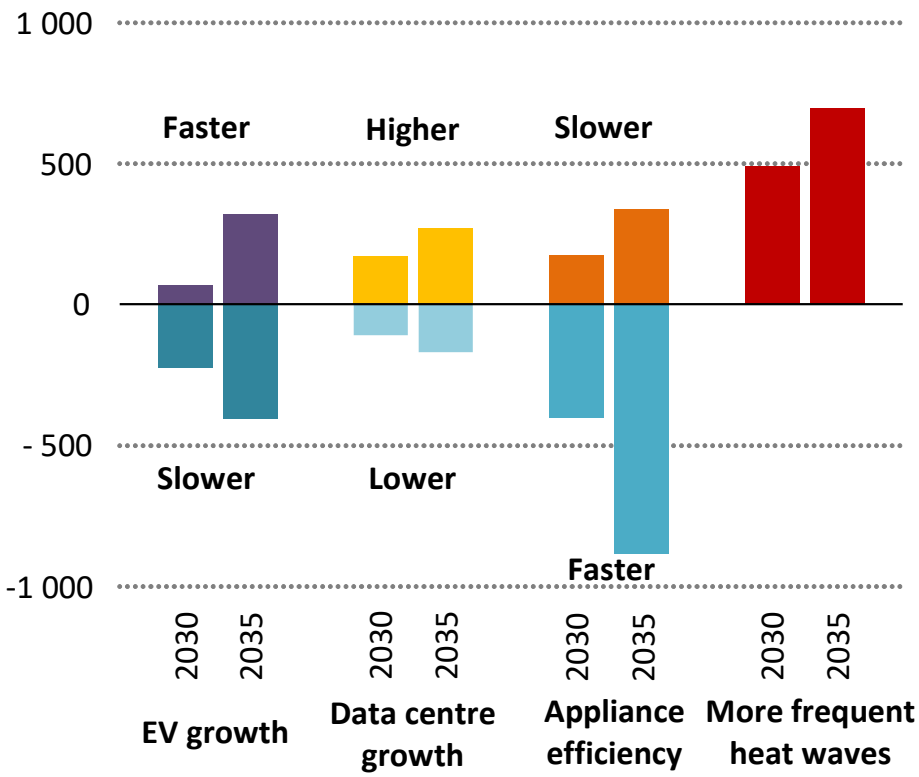
Electricity use is growing fast, clean power is rising even faster

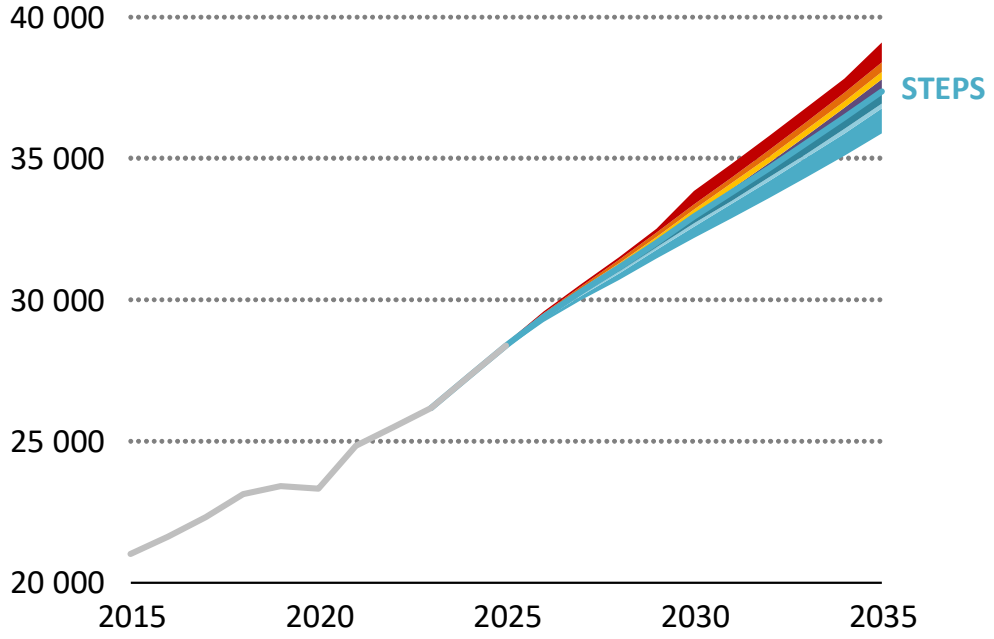


Solar PV and wind hit their stride and become the largest sources of electricity before 2035 in STEPS, complementing other clean sources like hydro and nuclear, and pushing coal into decline

Exploring uncertainties in the Outlook

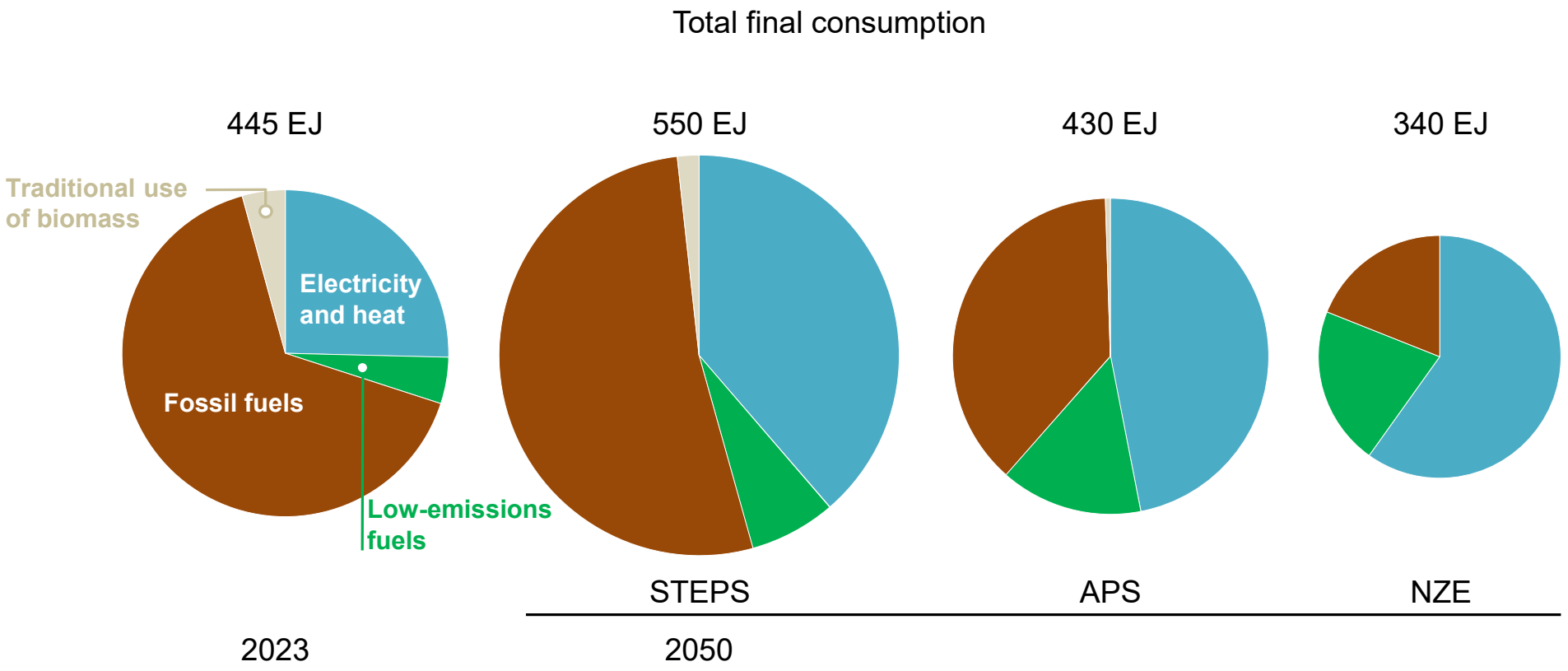
Global electricity demand in the STEPS and key sensitivities (TWh)





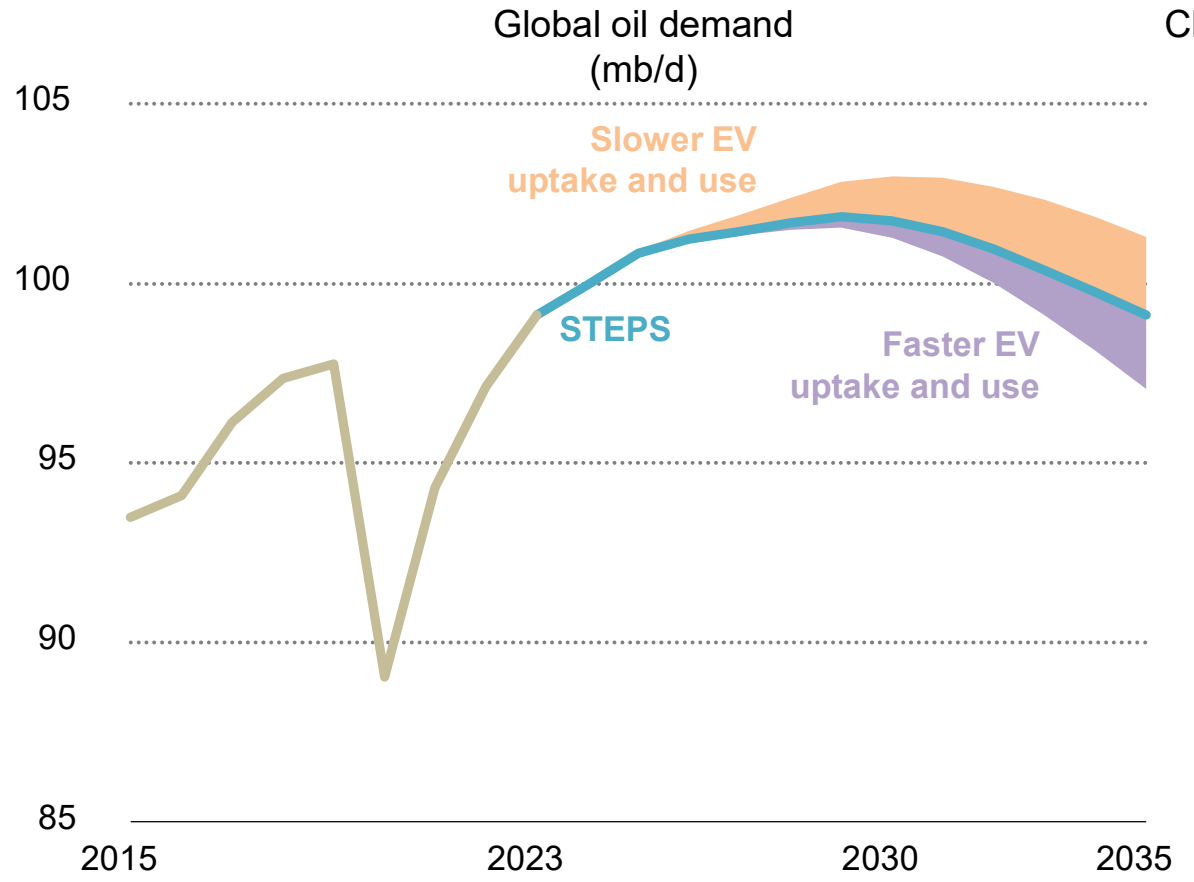
Uncertainties on key electricity drivers could push demand growth close to 15% above that of the STEPS level, without deflecting the continuing and rapid rise of electricity demand

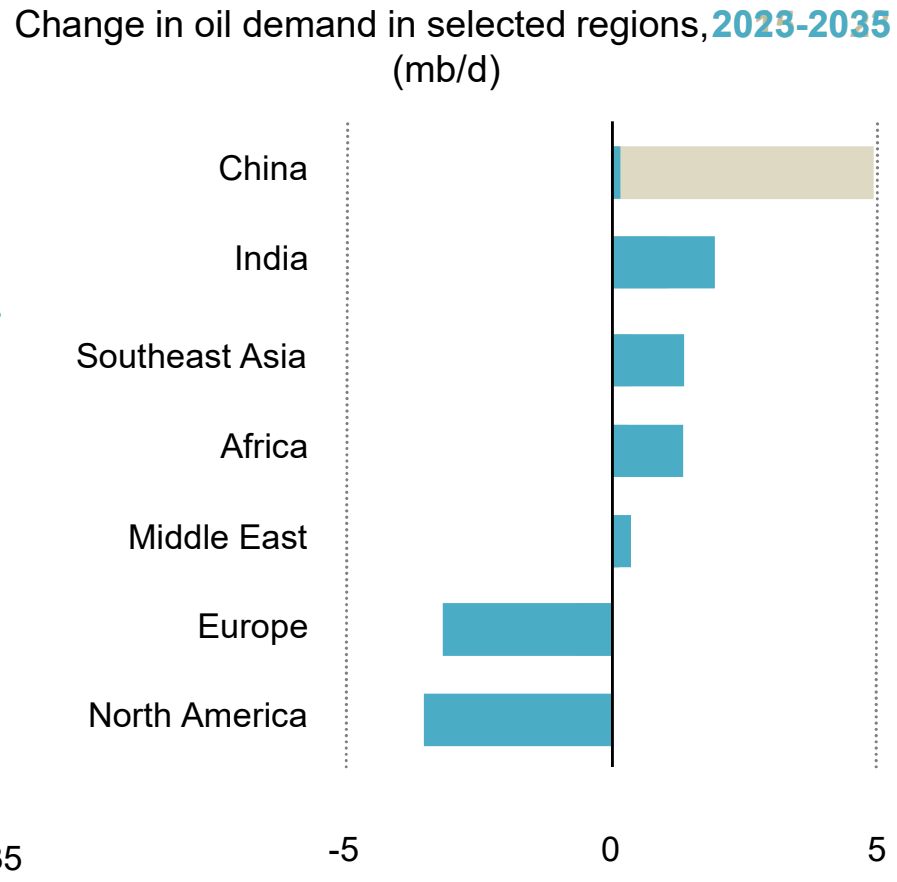
Fuels maintain a key role in the Age of Electricity



Three quarters of the final energy consumed today come from fuels. While electrification is set to accelerate, fuels remain an essential part of the energy system and clean fuels are crucial to energy transitions.

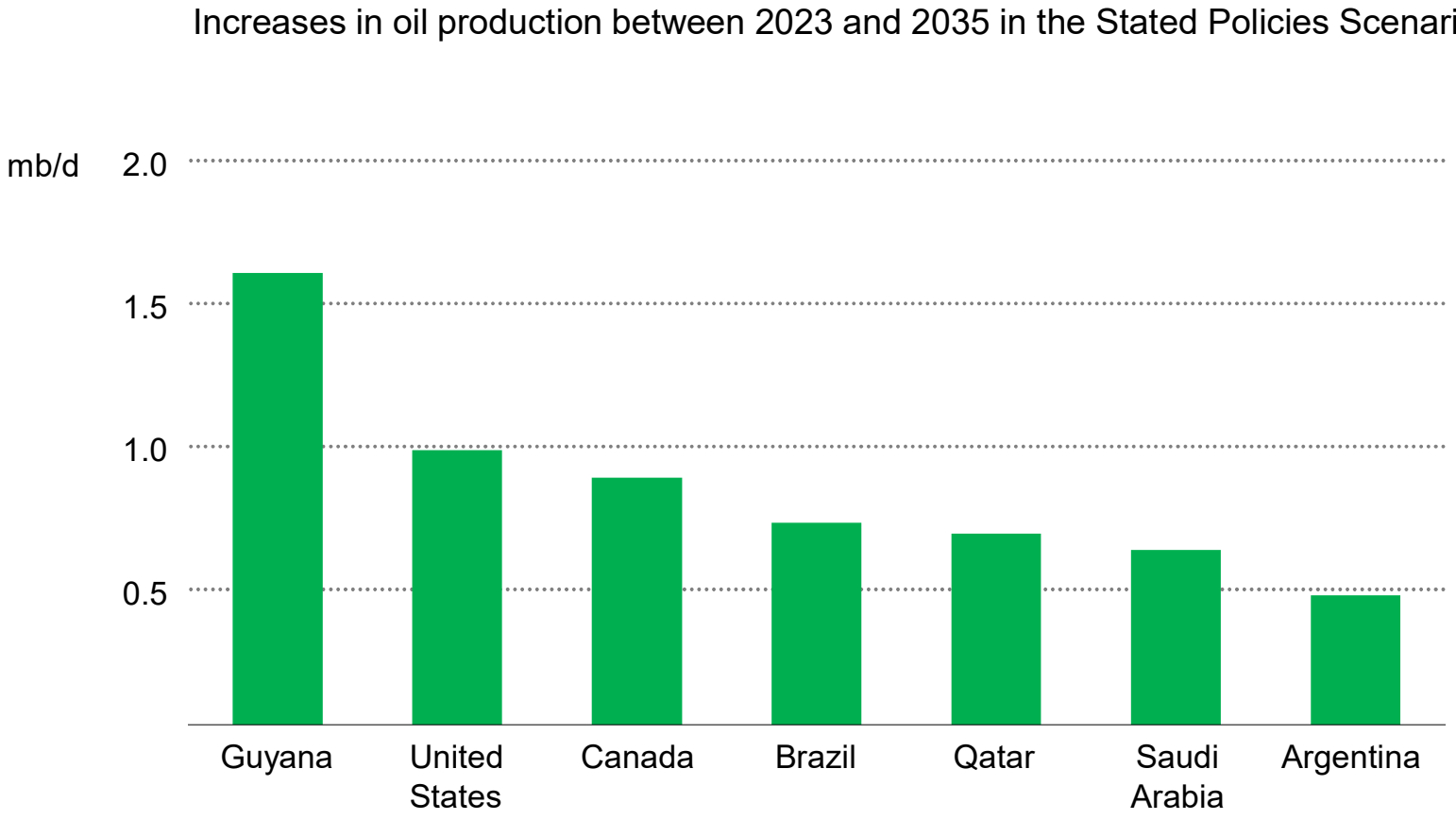
Oil demand's engine is switching to electricity





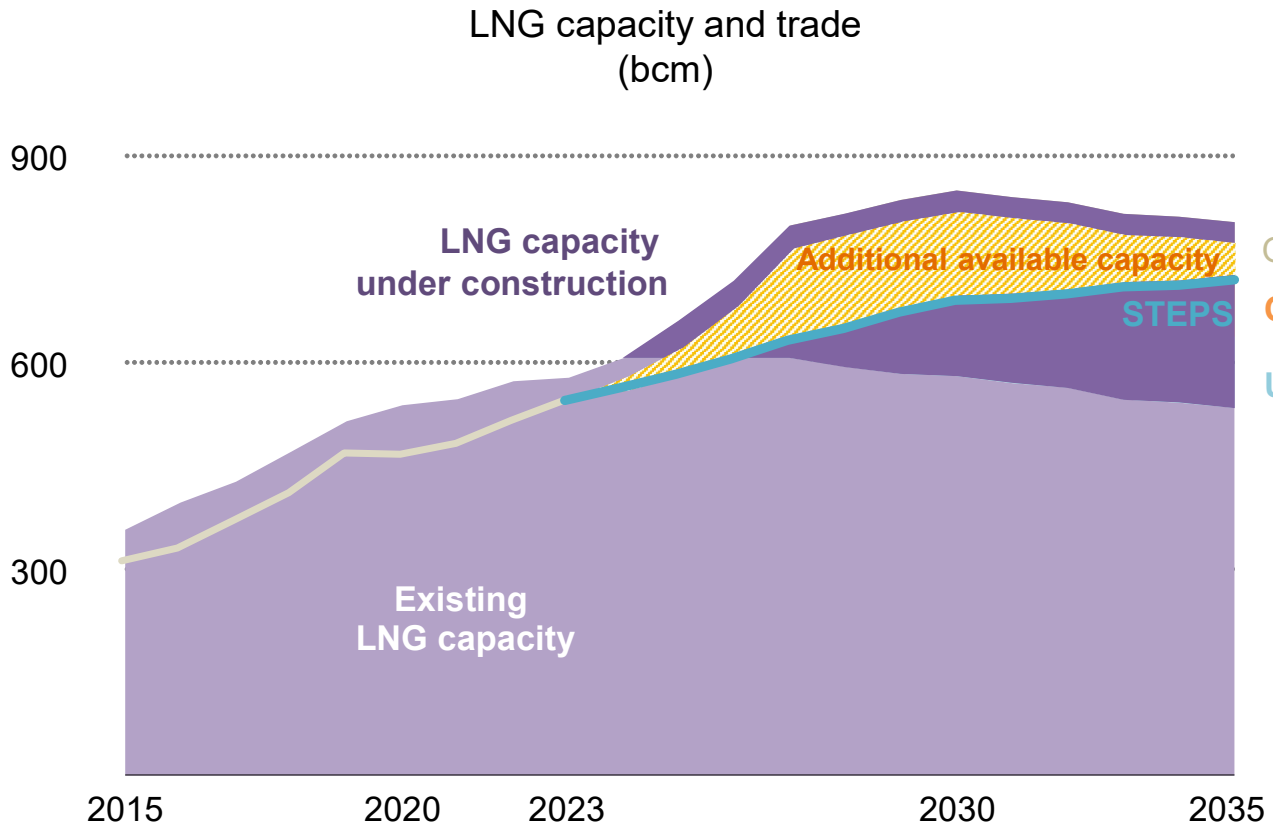
As China scales up electric mobility, India, Southeast Asia and Africa are the main sources of growth in oil use to 2035. Even if projected uptake of electric vehicles slows in key markets, a peak in oil demand remains on the horizon

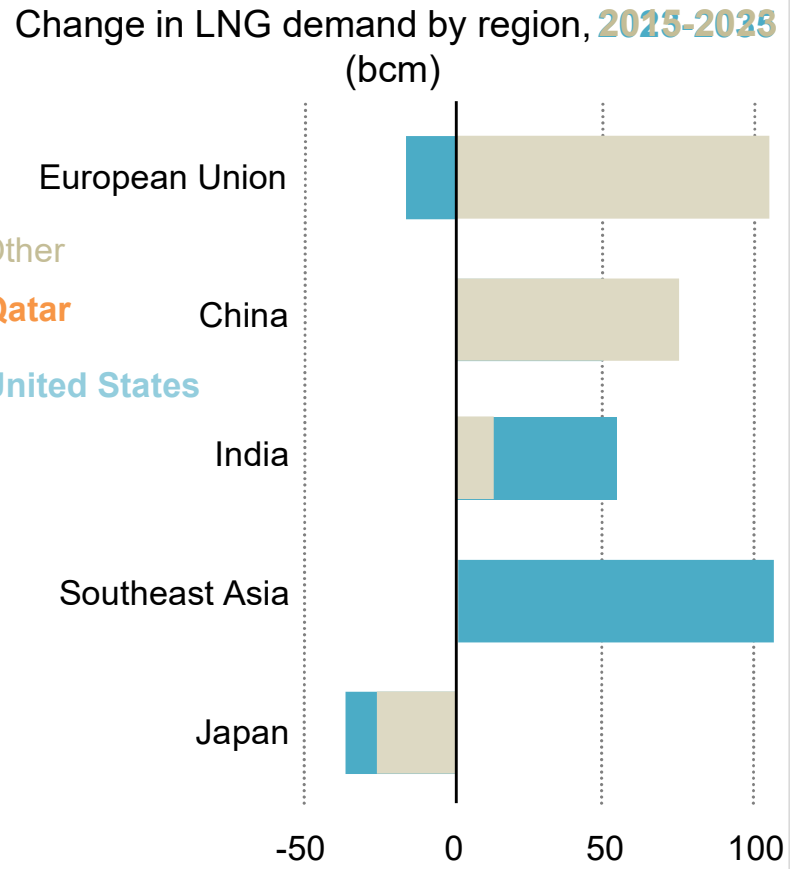
The American quartet leads oil supply growth



More than half of global oil supply growth to 2035 comes from Guyana, the United States, Canada, and Brazil.

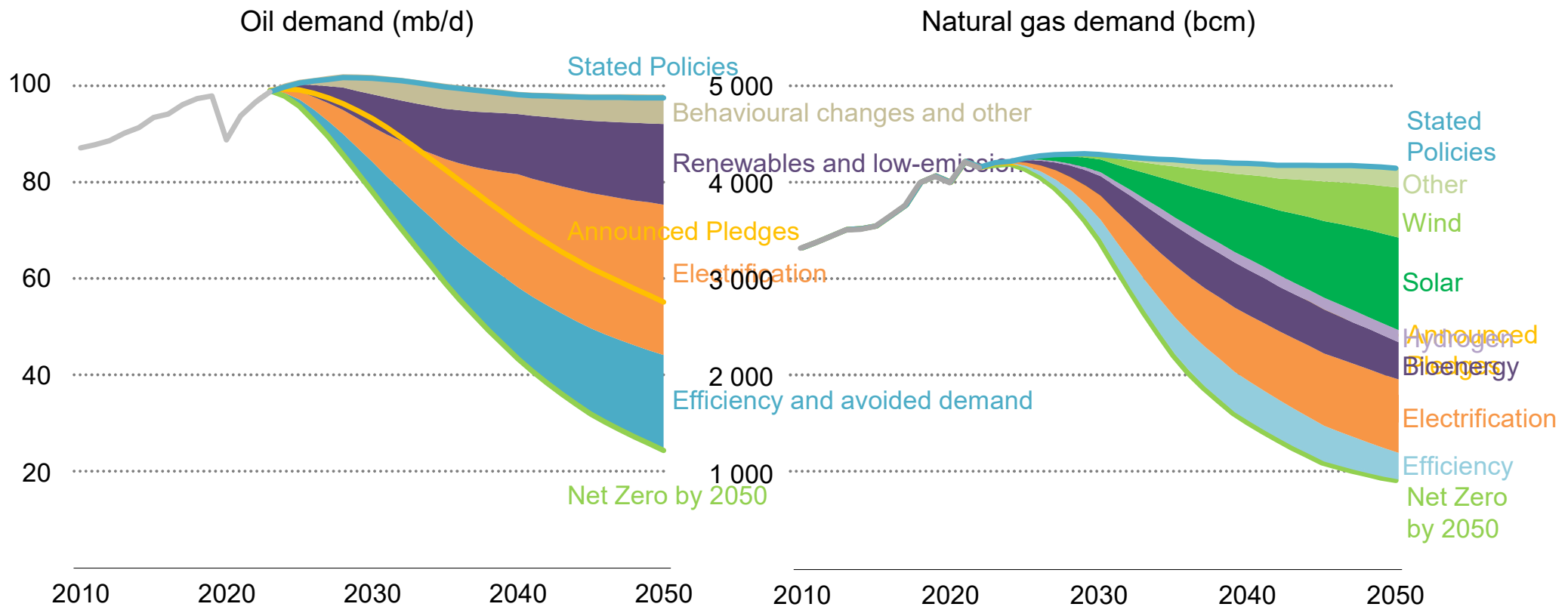
Where will the new wave of LNG go?





An increase of nearly 50% in global LNG export capacity to 2030 brings lower natural gas prices, but imported gas still faces stiff competition from renewables and coal in price-sensitive developing economies

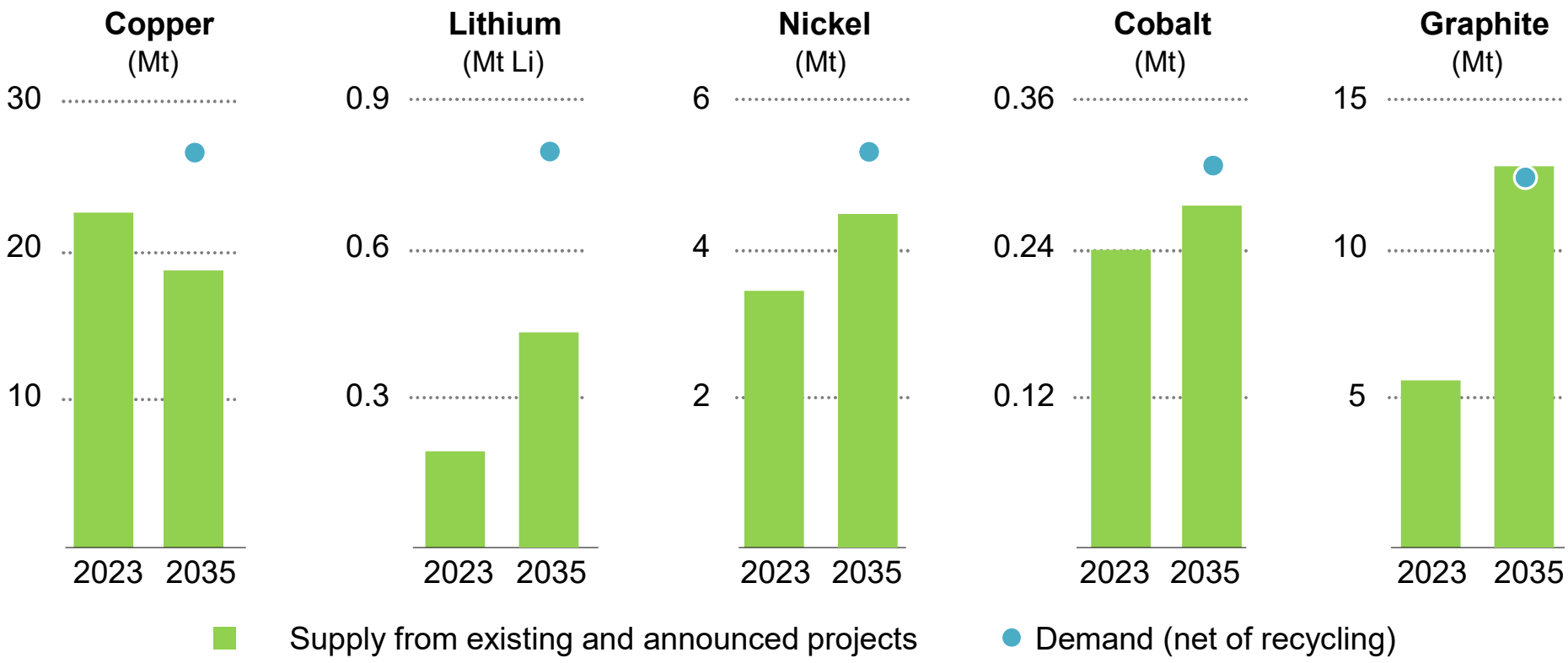
Twin peaks, but what lies beyond?



Today's momentum behind clean energy transitions is sufficient to generate peaks in oil and gas demand by 2030, but much more needs to be done to bring demand down in ways that meet national & global climate goals

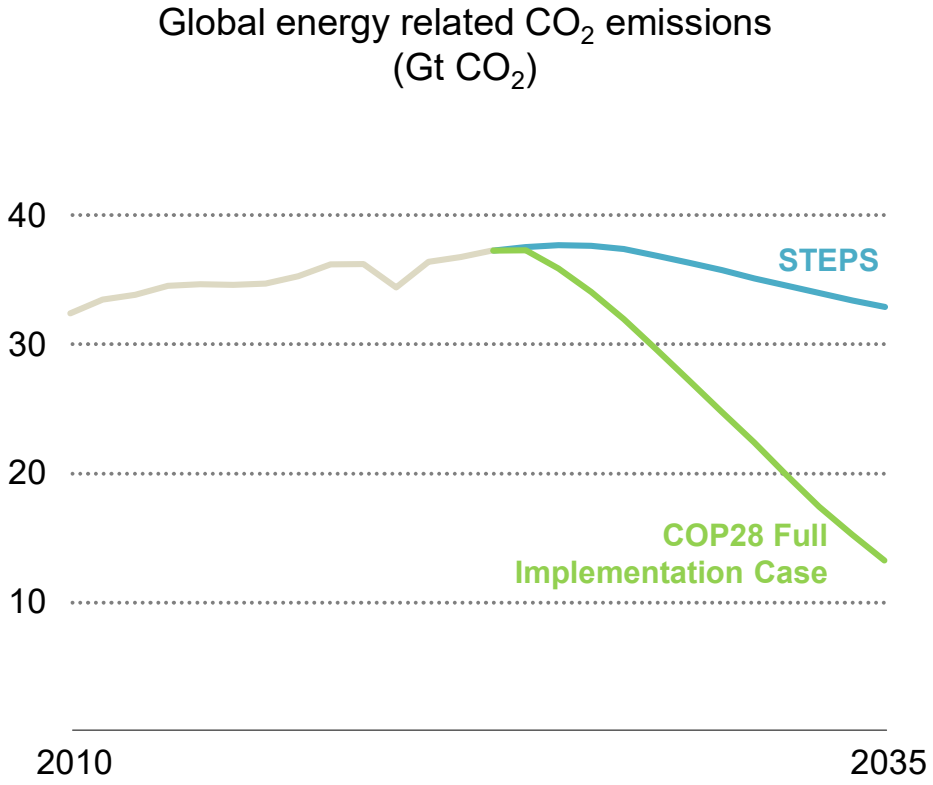
Not all projected supplies are abundant

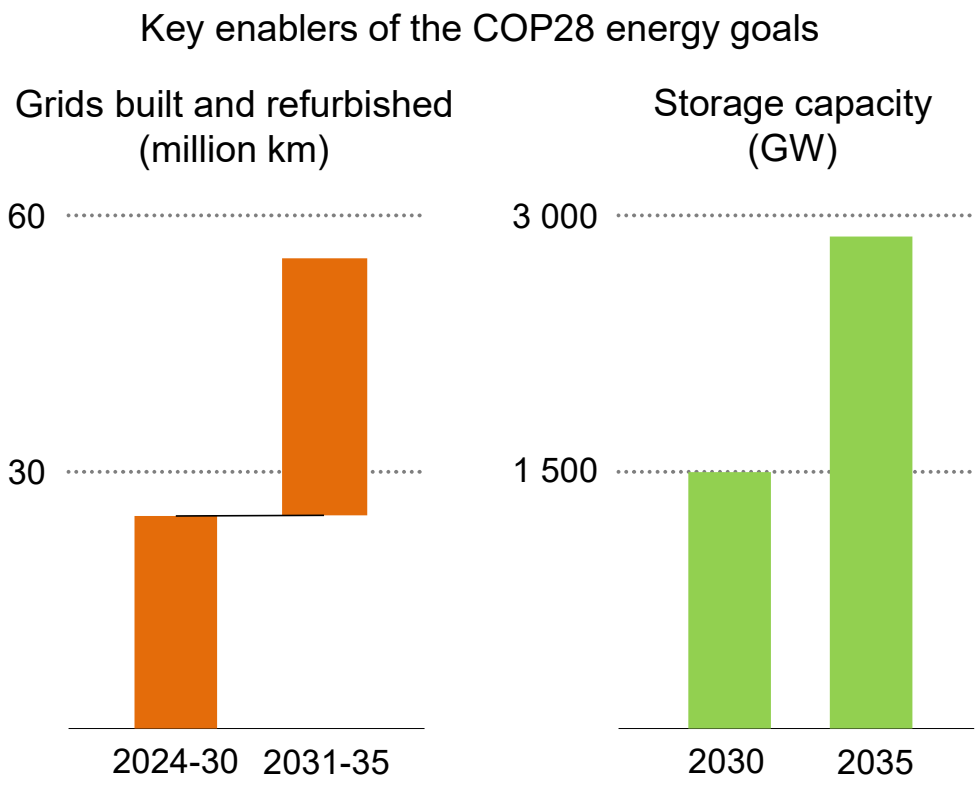
Mineral supply requirements and expected supply from existing and announced projects



Supply from existing and announced projects falls short of 2035 requirements for some key minerals, notably copper and lithium: additional efforts on recycling and new project development are needed to close the gap

An imminent peak in emissions, but not yet a rapid decline





Policies and market trends are strong enough to deliver an imminent peak in global emissions, but full implementation of the COP28 energy goals is needed to accelerate their decline towards net zero emissions by 2050