International Energy Agency

エネルギー転換速度の不確実性

国際エネルギー機関　エネルギー市場・安全保障局長　貞森恵祐

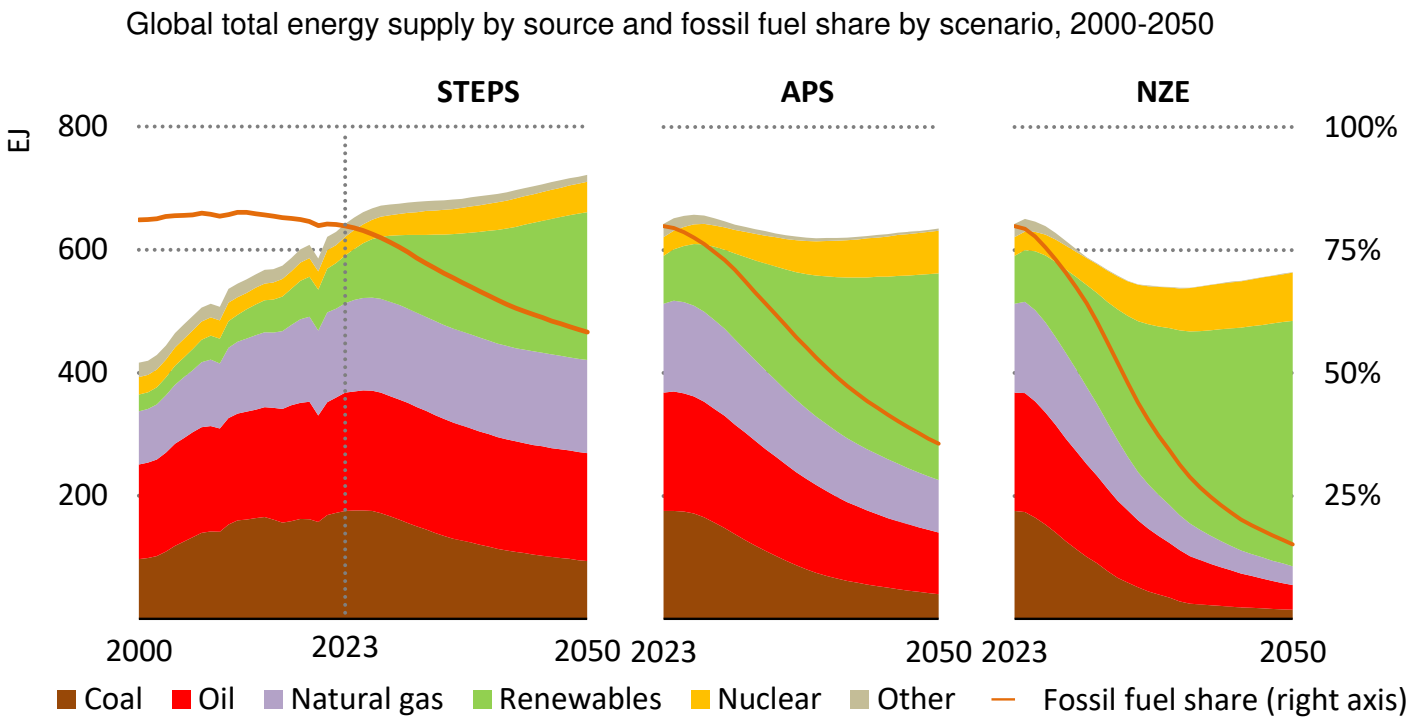
JARIシンポジウム2024 –GXへの取り組み-　2024年12月23日

A bit of history

- **Created in 1974 after the first oil shock to:**
  - help ensure reliable energy supplies
  - promote energy efficiency
  - and encourage technological research and innovation
- **Members of the IEA must:**
  - belong to the OECD
  - hold 90 days of oil imports as emergency stocks

IEA 2024. CC BY 4.0.

Future energy mix depends on policies



Each fossil fuel peaks by 2030 in all scenarios and then declines over time as low-emissions sources increase.

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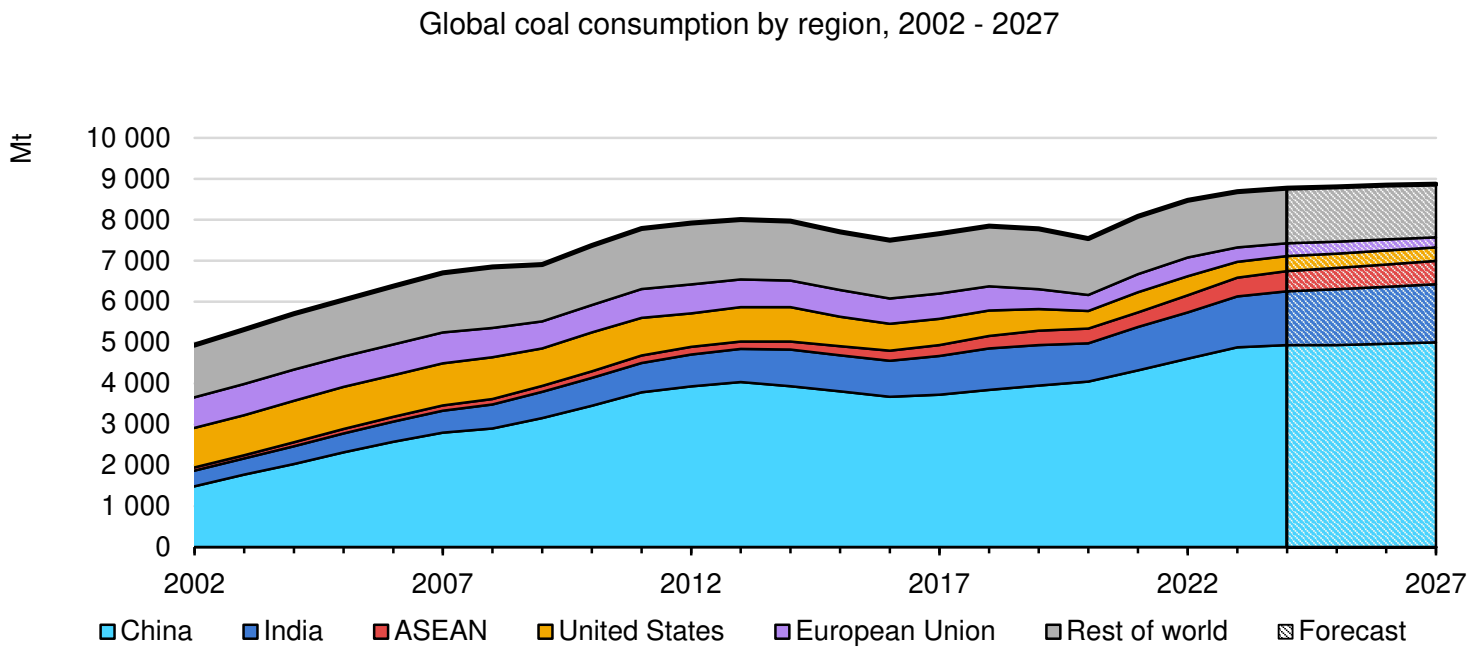
A structural plateau of global coal demand ahead



Global coal demand sees another all-time high in 2024, and will plateau. China, India and ASEAN account for 77% of global coal demand.

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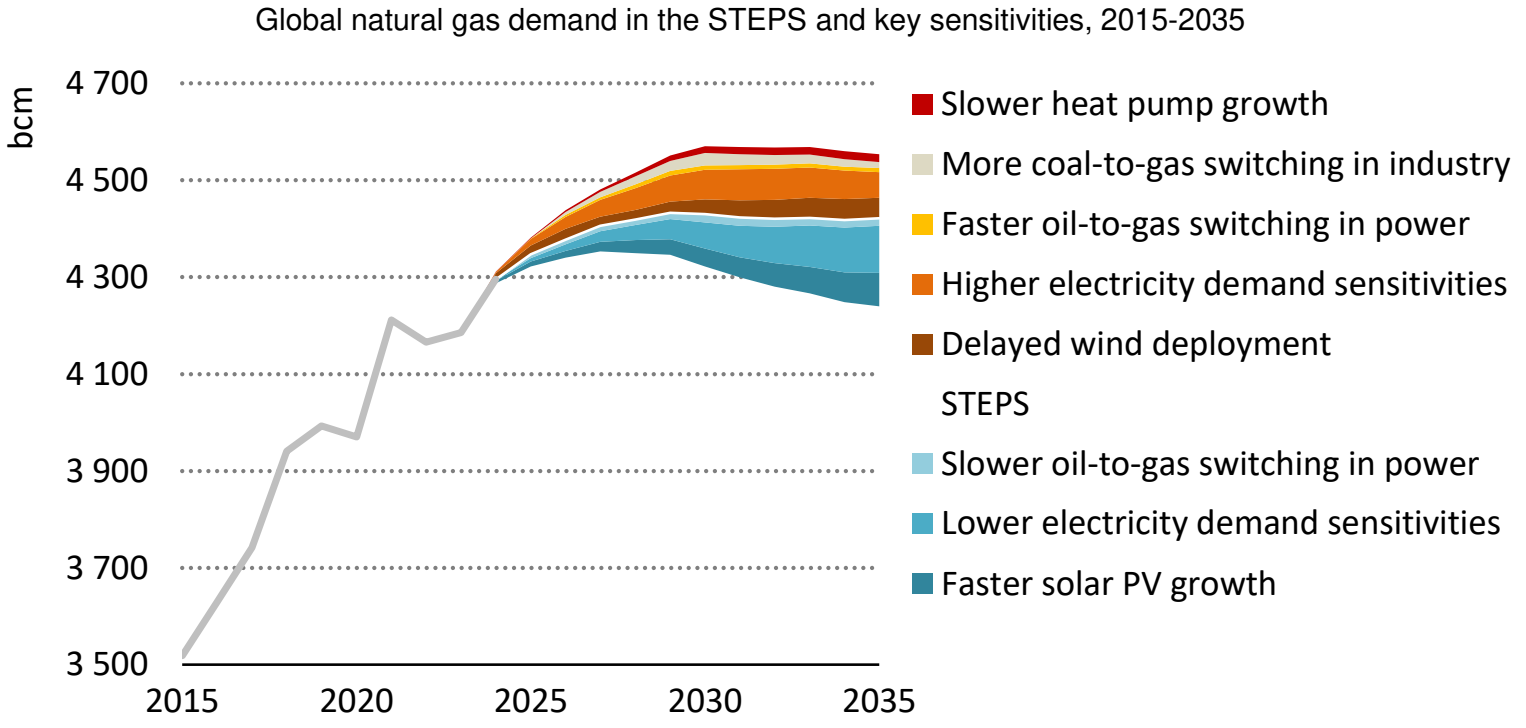
Speed of fuel switching affects natural gas demand



Surplus LNG absorbed by increased gas use could add 3% to gas demand by 2030

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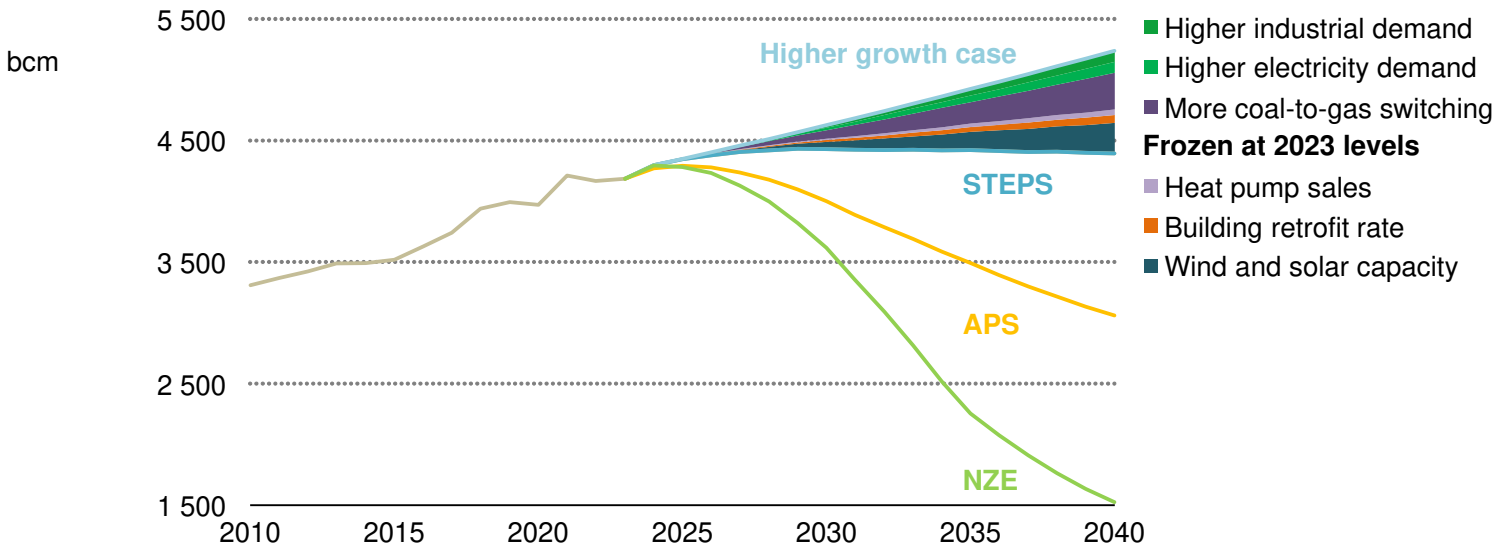
Natural gas use is sensitive to policy, technology and market forces

Global natural gas demand in WEO scenarios, and factors that could lead to continued growth above STEPS to 2040



Natural gas faces an uncertain outlook, especially in emerging economies.

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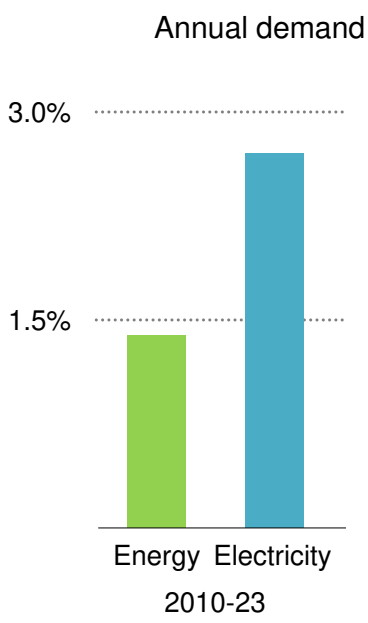
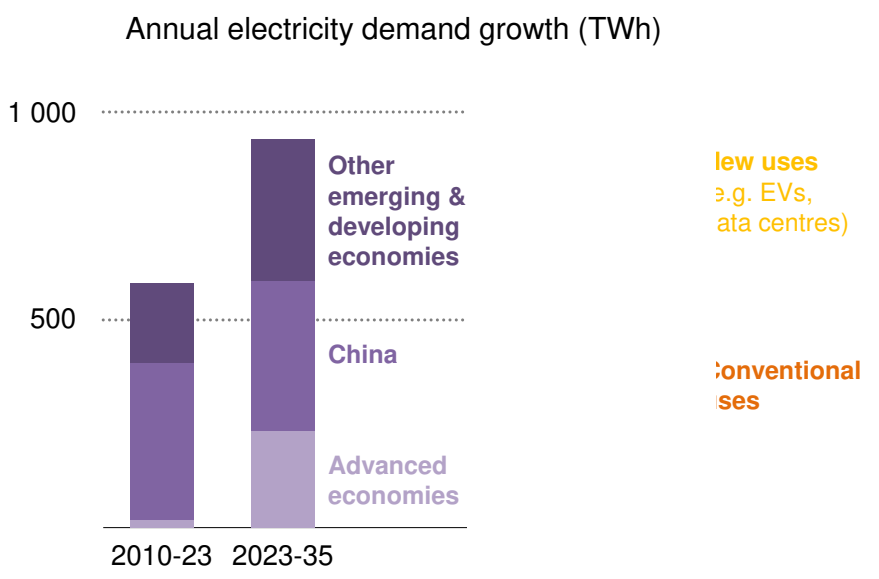
Moving at speed into the Age of Electricity





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

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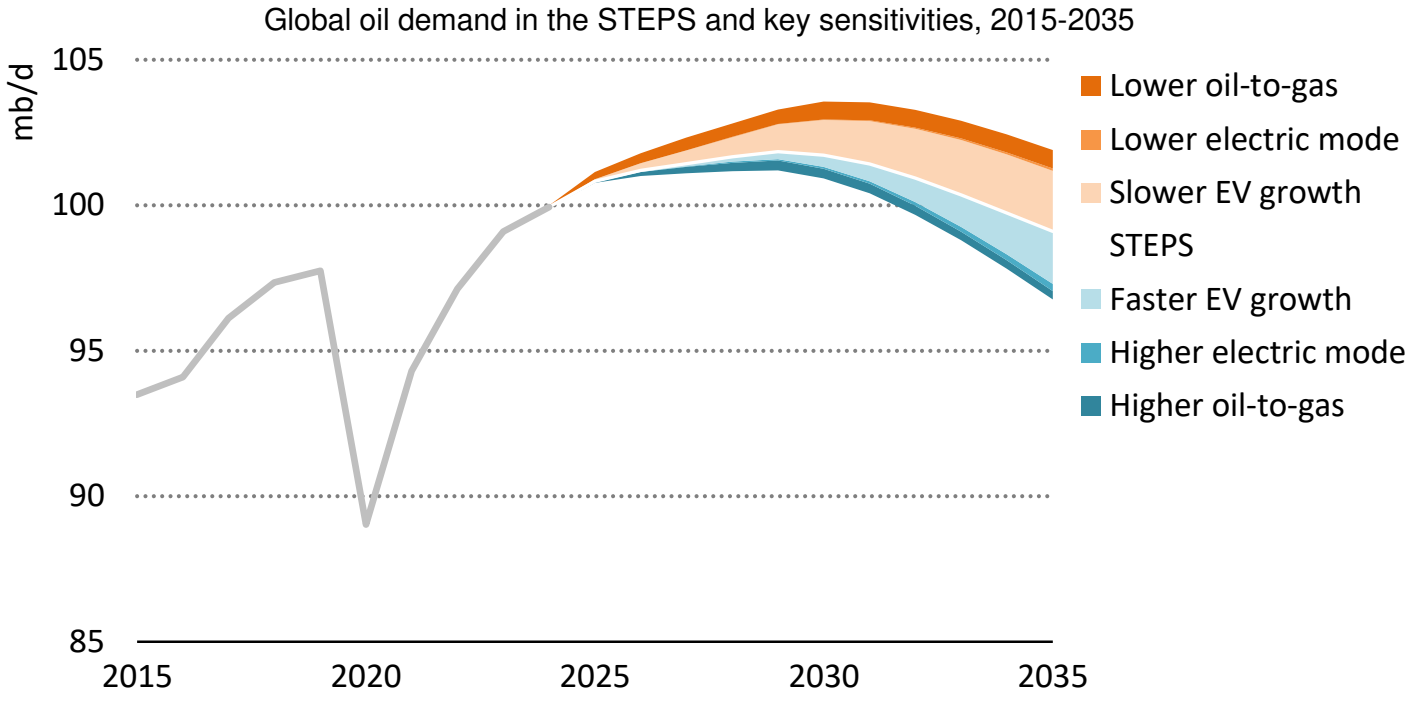
Oil demand's engine is switching to electricity



Slower/Faster EV uptake and other factors could lead to changes in oil demand of up to 2.8 mb/d by 2035.

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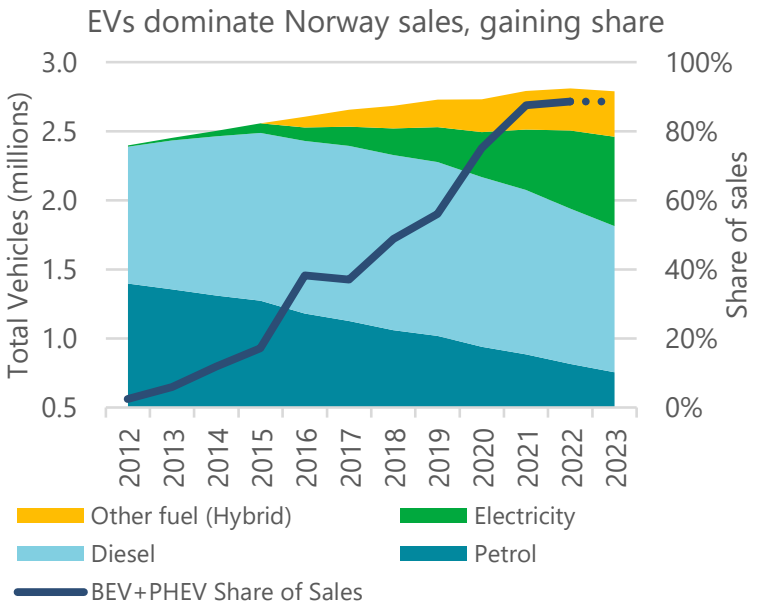
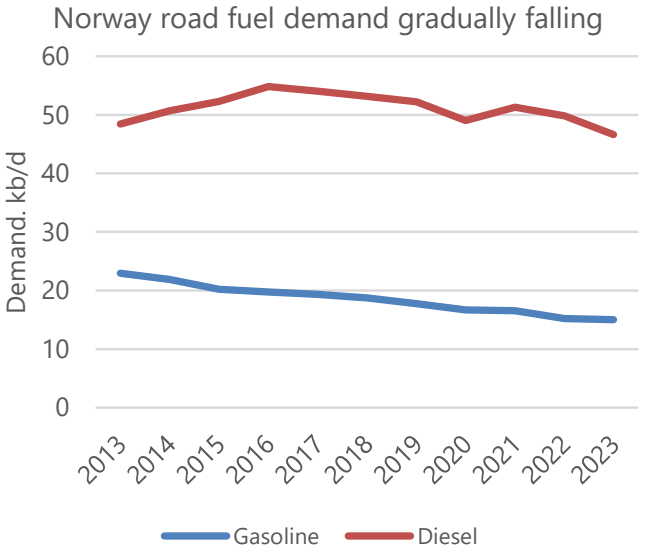
EVs are growing rapidly, and are eroding oil use





Norwegian EV and hybrid sales have grown rapidly in recent years, to about 90% of total registrations. These accounted for 35% of personal cars in 2023, with gasoline and diesel demand 17% below the 2016 peak.

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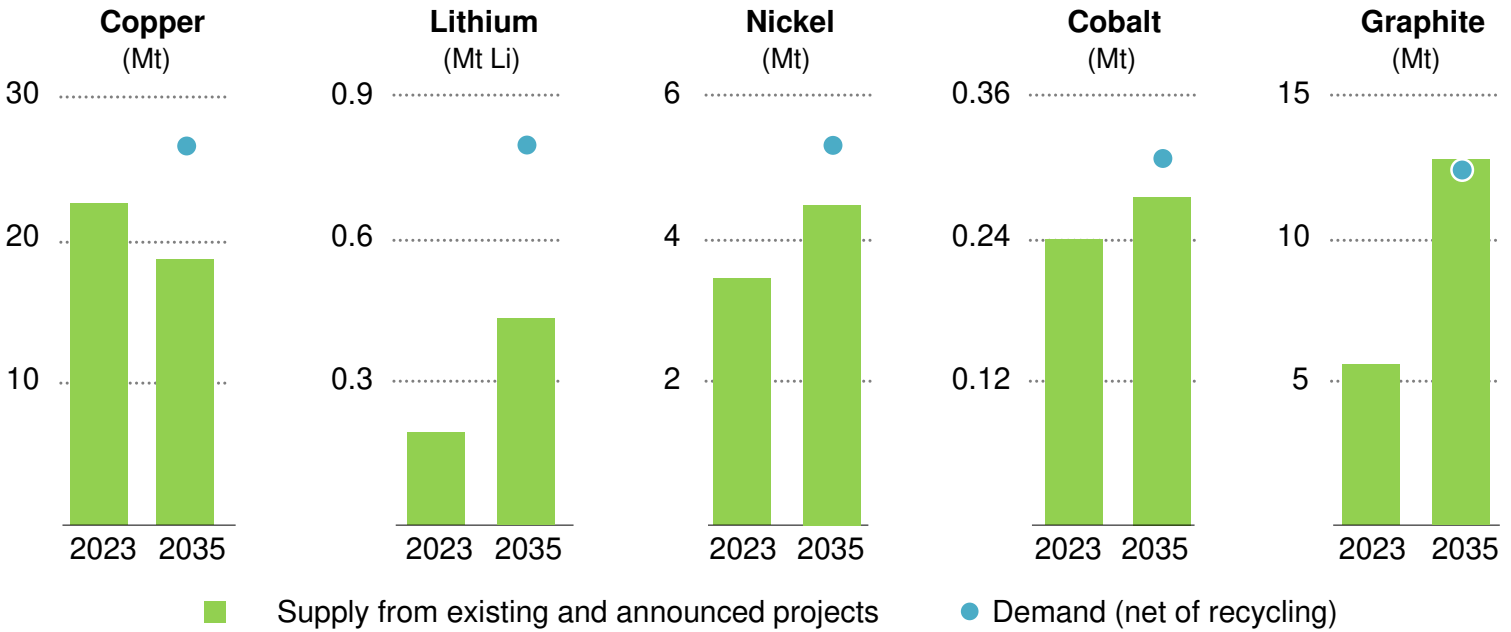
Not all projected supplies are abundant

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

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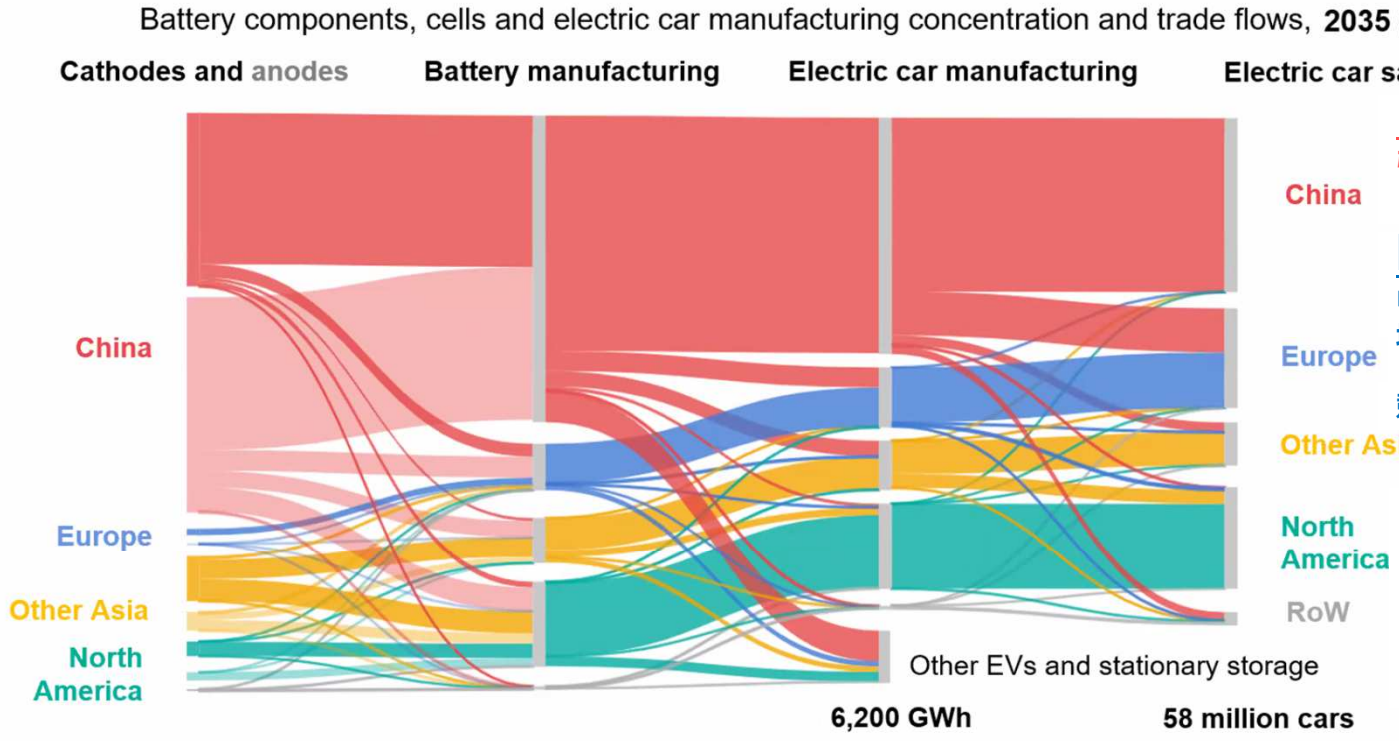
Manufacturing and trade within the battery supply-chain



中国
引続き存在感大。
（特に上流側）

欧州
中国からの輸入増。
域内生産比率低下し、
（80%⇒60%）
競争力低下。

米国（北米）
既存貿易網の北米、アジアとの関係を活かしながら生産を拡大。

China holds most of the upstream segment of the battery supply chain, battery cells and components production.

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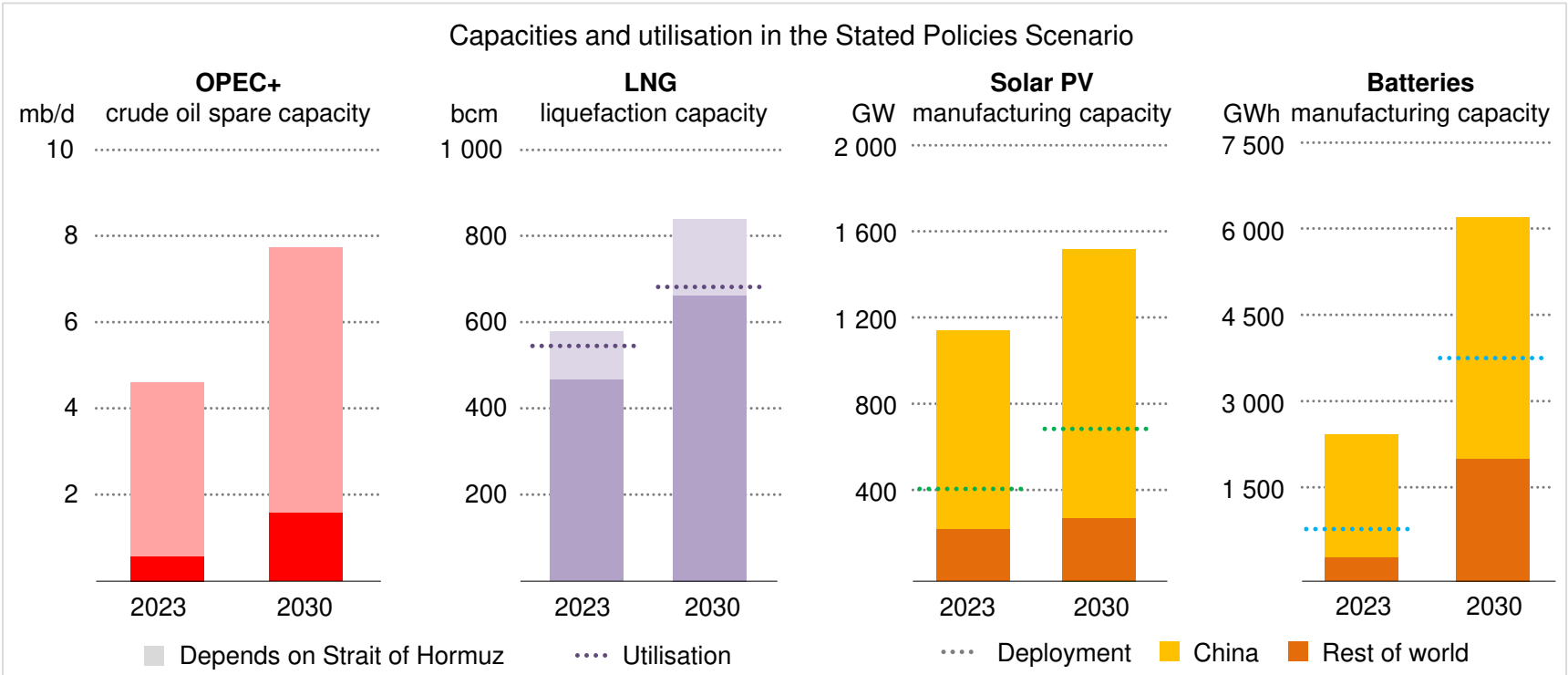
Energy security risks remain high even as market balances ease



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

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Energy Security in Energy Transitions

(1) Vigilant on traditional risks to energy security
(2) Well-sequenced/co-ordinated actions across energy demand and supply
(3) Prioritise energy efficiency across end-use sectors
(4) Scale up clean energy investment to reduce fossil fuel use
(5) Put electricity security at the heart of transitions
(6) Deploy a broad range of low-emissions technologies
(7) Ensure diverse and resilient clean energy supply chains

Energy trilemma report tasked by G7 Japan to IEA: Countries should remain vigilant on traditional energy supply security risk and become prepared against new types of risk with energy transitions.

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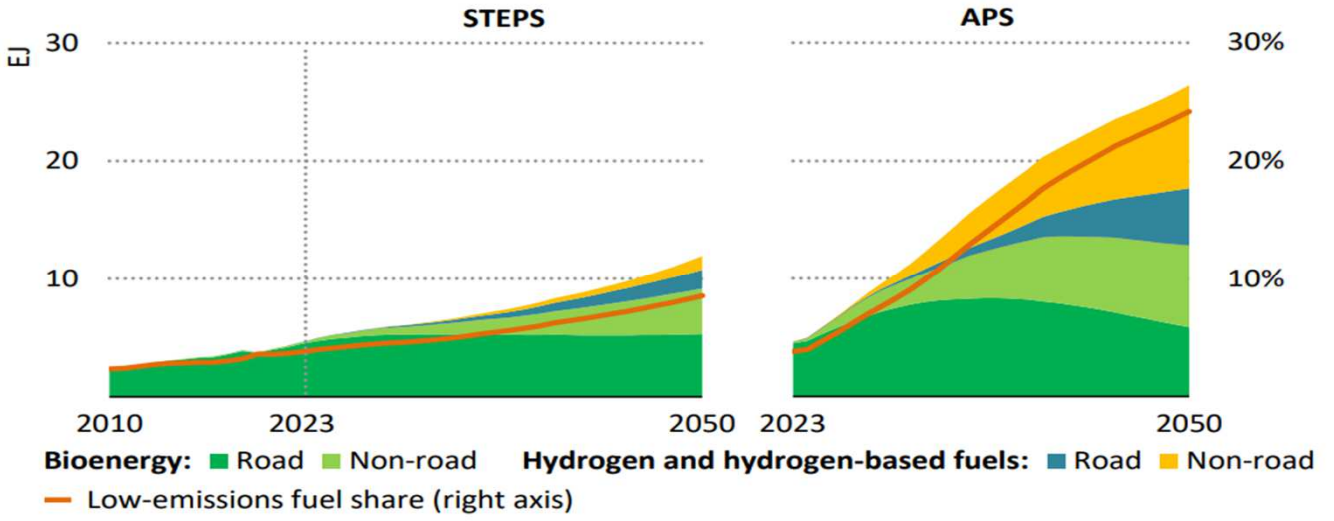
Low emission fuels also contribute to decarbonization

Figure 3.10 ▻ Low-emissions fuels in transport by type in the Stated Policies and Announced Pledges scenarios, 2010-2050



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Hydrogen and hydrogen-based fuels overtake bioenergy in aviation and shipping by the early 2040s in the APS

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