

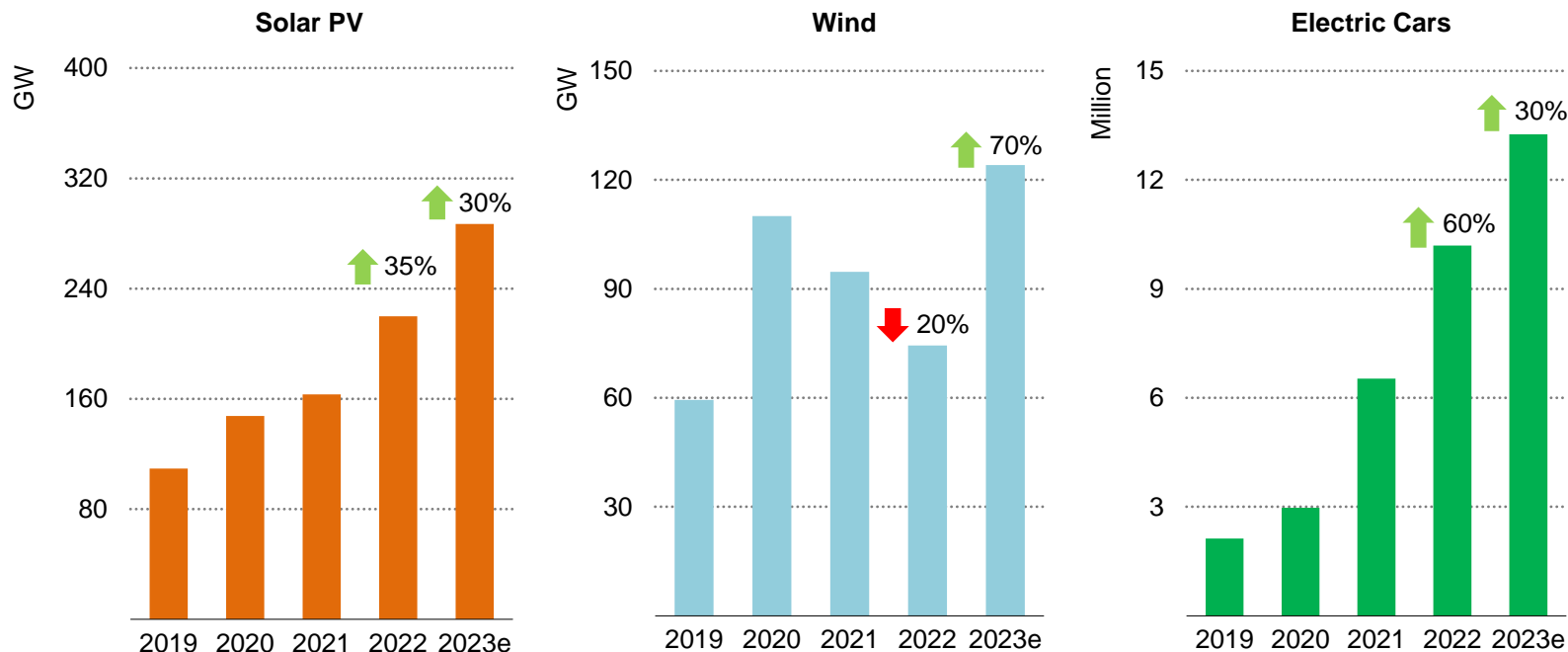


GLOBAL SECURITY AND ENERGY TRANSITION

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10 November 2023

Clean energy transitions happening at a faster pace than expected

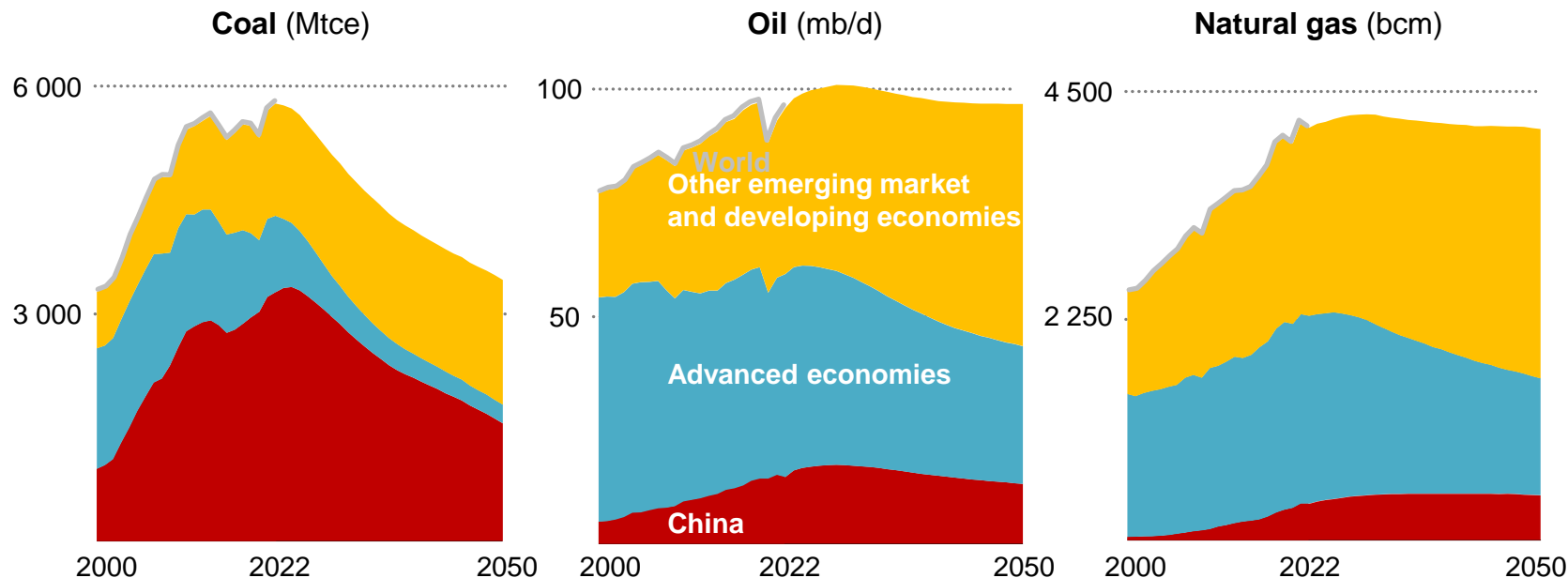
Annual capacity additions for solar PV and wind and electric car sales



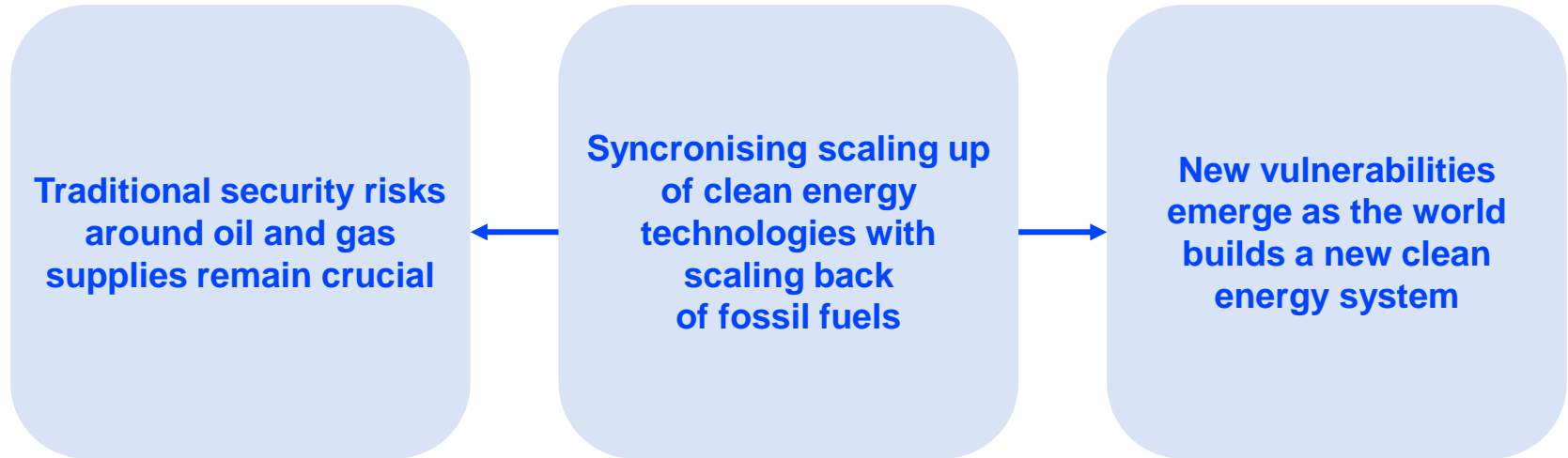
Clean energy technology deployment continued its upward march in 2022, with momentum expected to continue through 2023 and beyond

On track for a peak in all fossil fuels before 2030

Fossil fuel demand in the Stated Policies Scenario (STEPS)

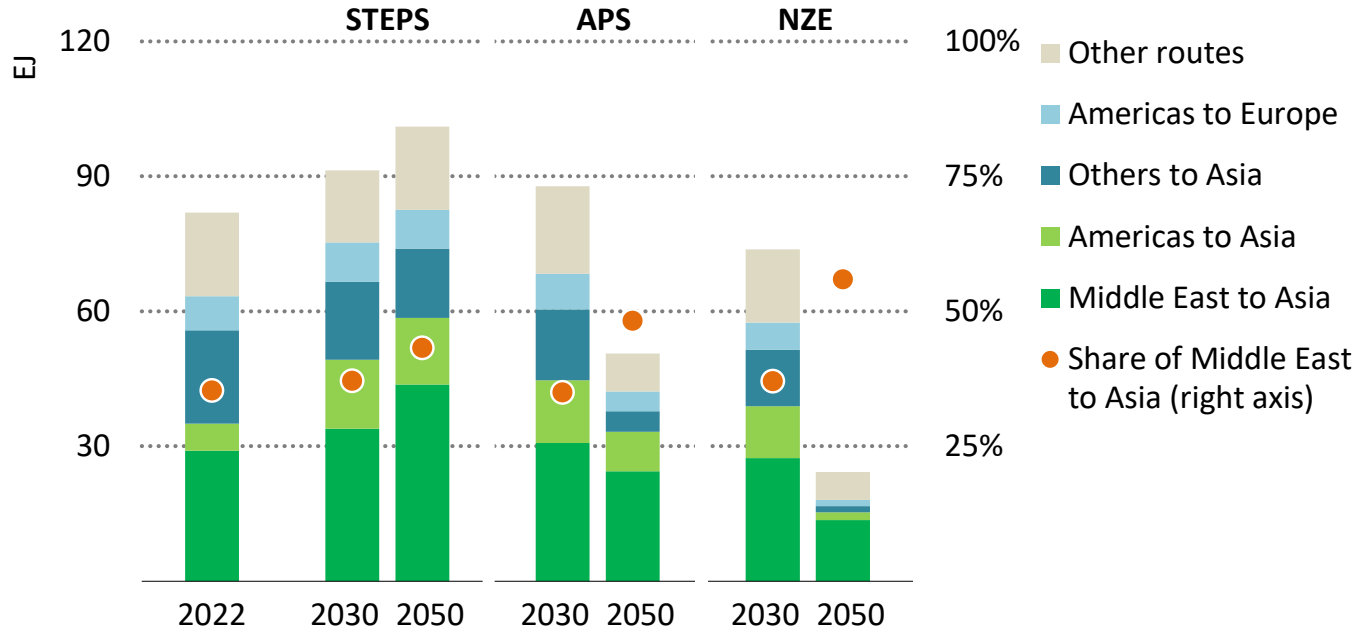


For the first time, today's policy settings are strong enough to generate peaks for coal, oil and natural gas this decade; the share of fossil fuels starts to edge downwards from 80% today to 73% in 2030



Traditional security risks around oil and gas supplies remain crucial

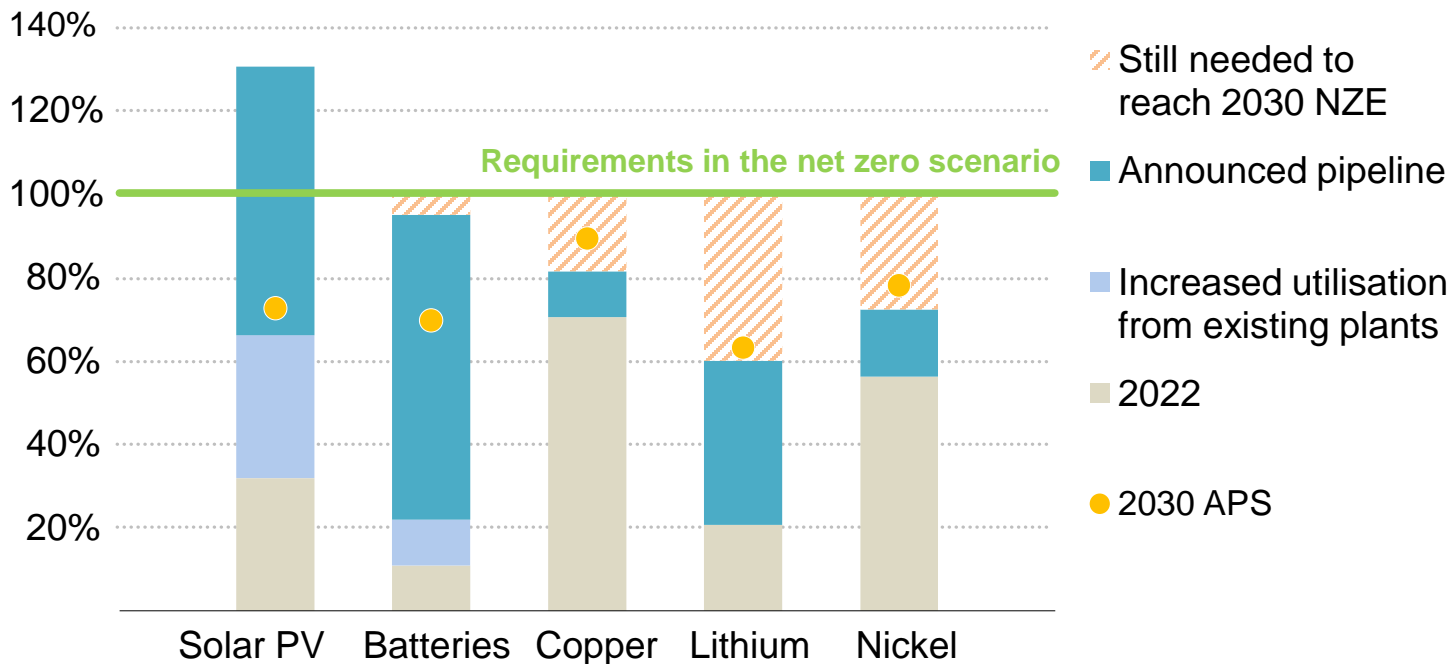
Seaborne crude oil and LNG trade by route and scenario



Global crude oil and LNG trade flows are increasingly concentrated on the routes between the Middle East and Asia in all scenarios

Uneven progress for clean energy supply chain developments

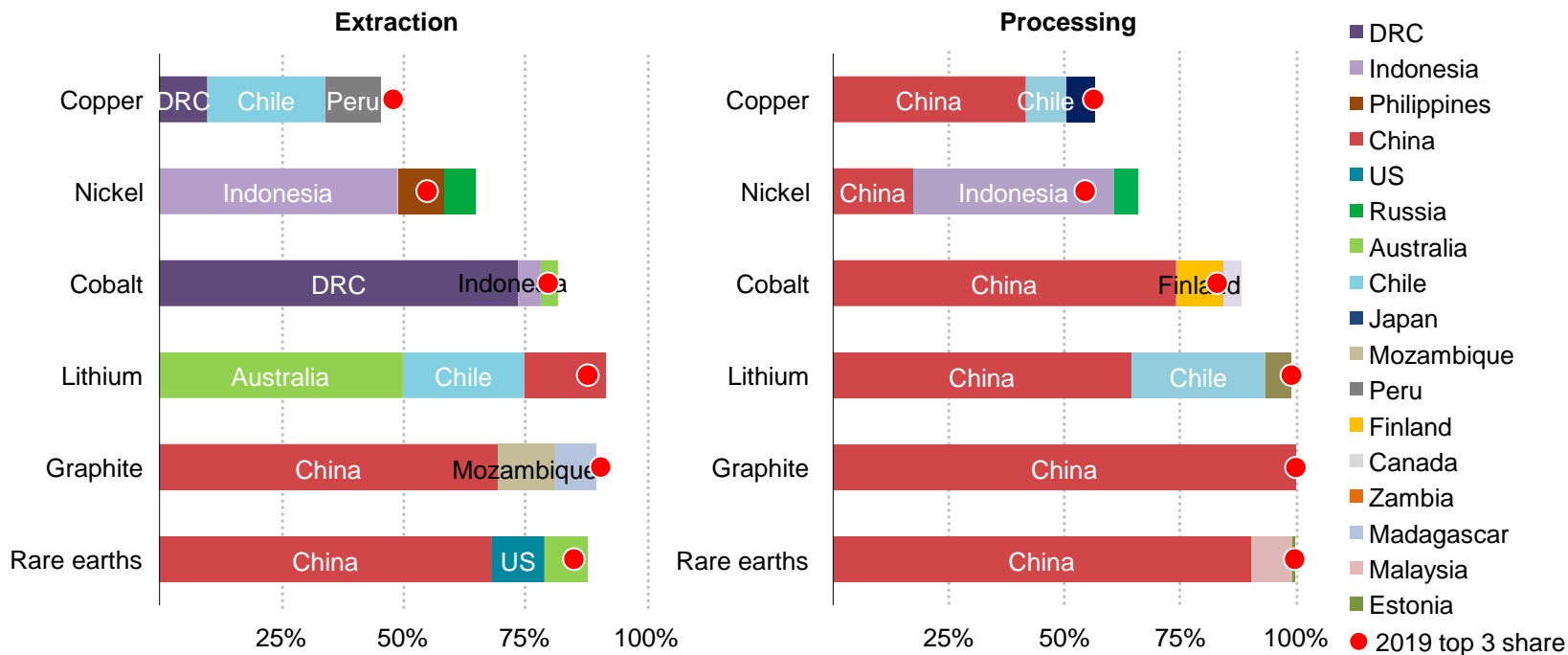
Announced project throughput and deployment and supply needs for key clean energy technologies and minerals in 2030



Announced plans to scale up clean energy manufacturing capacity help to put the world on track with a 1.5 °C pathway, but not all parts of the value chain are moving at a similar pace

But concentration of supply remains high

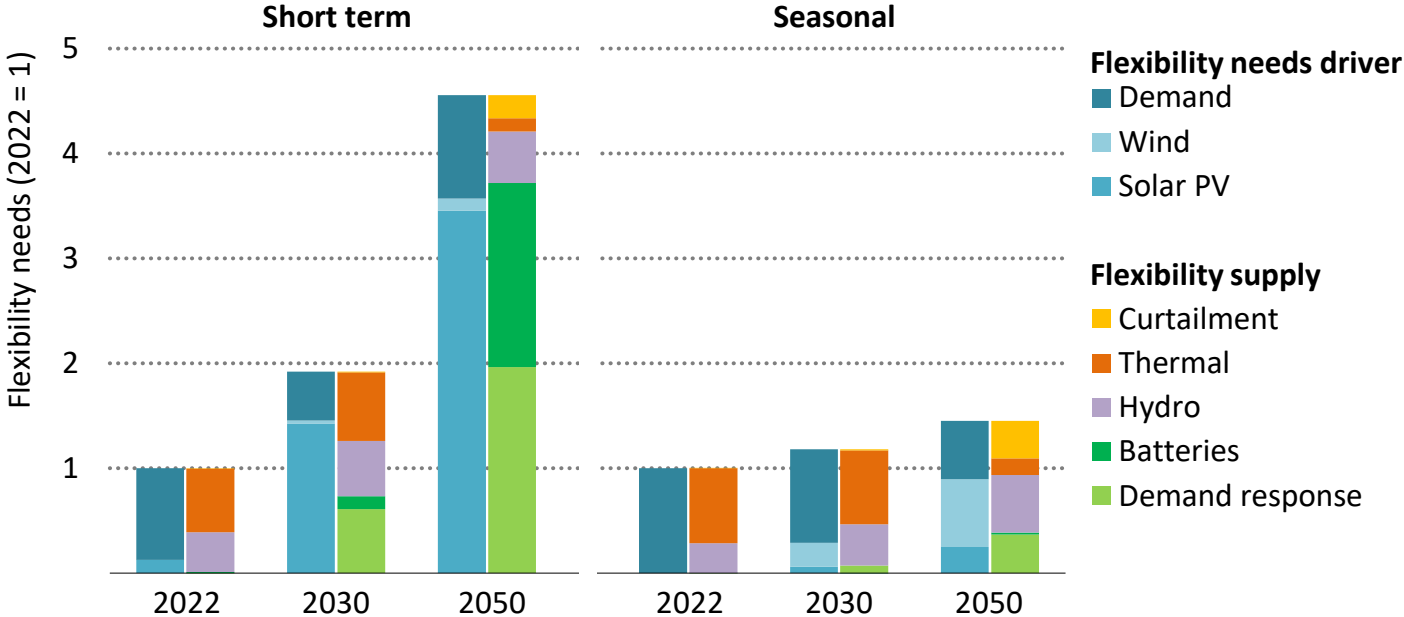
Share of top 3 producing countries in total production for selected resources and minerals, 2022



Limited progress has been made to diversify supply sources in recent years and, in some cases, the level of concentration has risen – announced projects would not change this picture dramatically

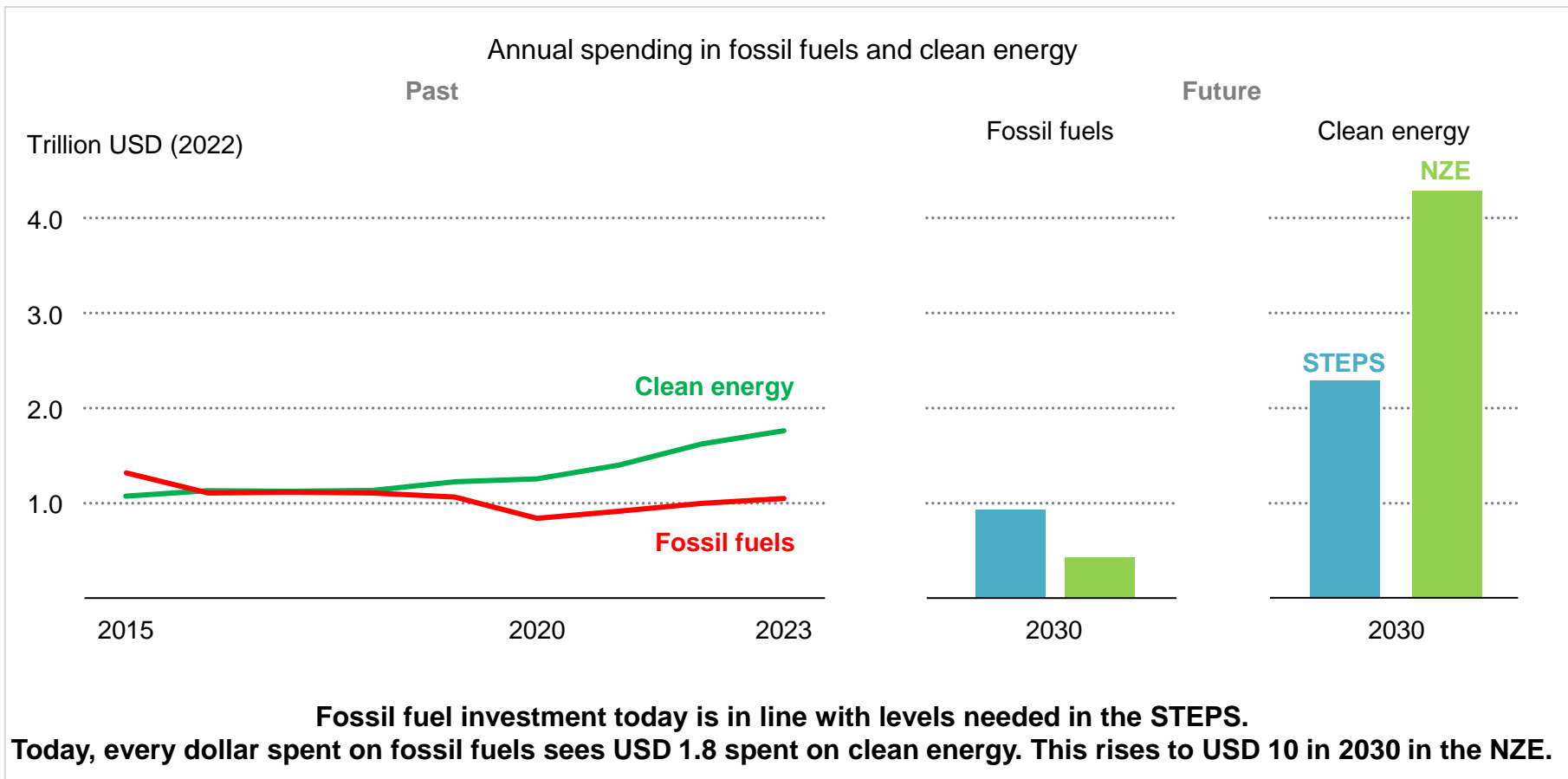
Power system flexibility coming to the fore

Global power system flexibility needs and supply in the APS



Short-term needs increase significantly, mainly due to solar PV, with batteries and demand response emerging as crucial suppliers of flexibility; seasonal needs rise less sharply

New dynamics for energy investment



Clean energy investment and energy efficiency are key to a secure exit from today's crisis

- 1 Synchronise scaling up a range of clean energy technologies with scaling back of fossil fuels
- 2 Tackle the demand side and prioritise energy efficiency

Global energy security cannot be achieved without everyone on board

- 3 Reverse the slide into energy poverty and give poor communities a lift into the new energy economy
- 4 Collaborate to bring down the cost of capital in emerging market and developing economies

The transition away from oil and gas needs to be handled with care

- 5 Manage the retirement and re use of existing infrastructure carefully, some of it will be essential for a secure journey to net zero
- 6 Tackle the specific risks facing producer economies

New vulnerabilities emerge as the world builds a new clean energy system

- 7 Invest in flexibility, a new watchword for electricity security
- 8 Ensure diverse and resilient clean energy supply chains
- 9 Foster the climate resilience of energy infrastructure

Governments have to take the lead, but cost-effective transitions also need well-functioning markets

- 10 Provide strategic direction and address market failures, but do not dismantle markets

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