



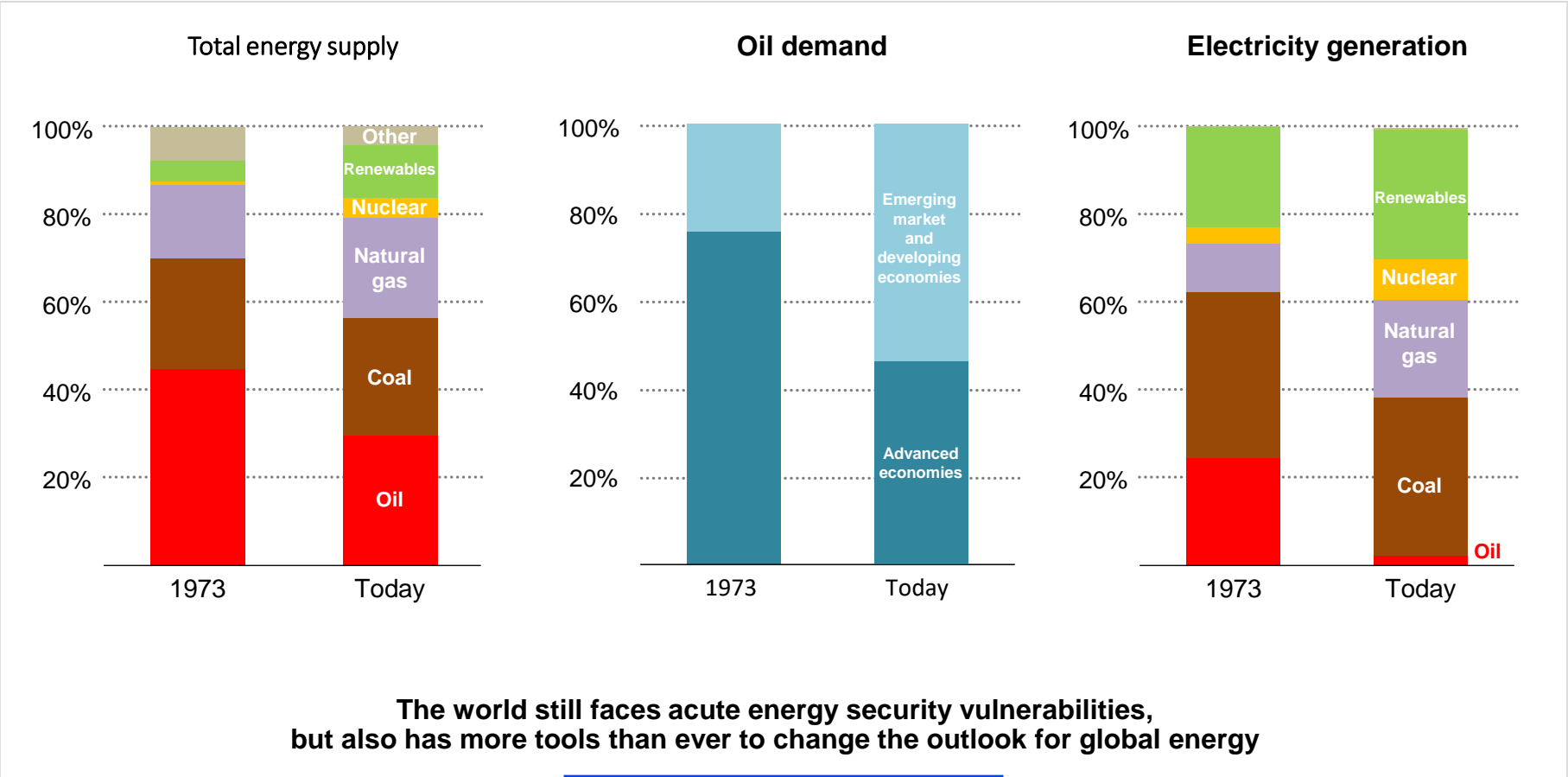
Energy security in clean energy transitions: Insights from the World Energy Outlook 2023

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ALPS Symposium

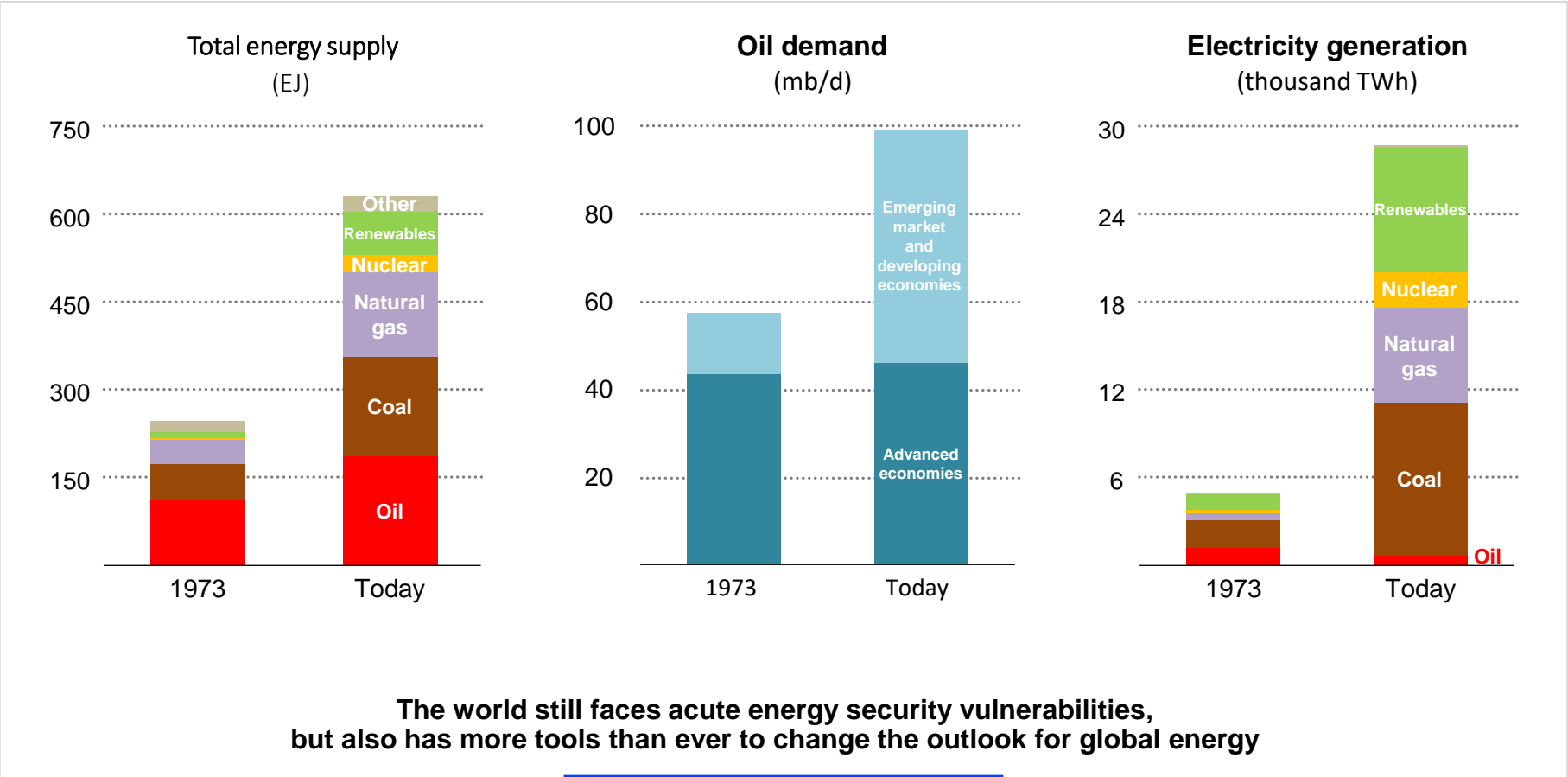
8 March 2024, Tokyo

Fifty years on from the first oil shock



The world still faces acute energy security vulnerabilities, but also has more tools than ever to change the outlook for global energy

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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?



Stated Policies Scenario

What is the impact of announced net zero and other pledges if they are met in full?

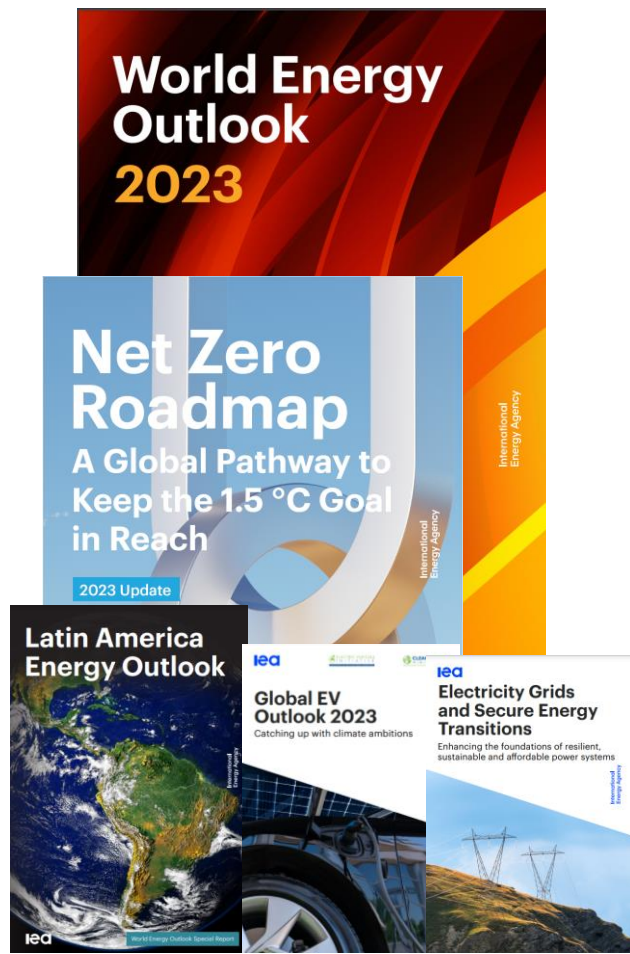


Announced Pledges Scenario

What is required for the energy sector to reach net zero CO₂ emissions by 2050?

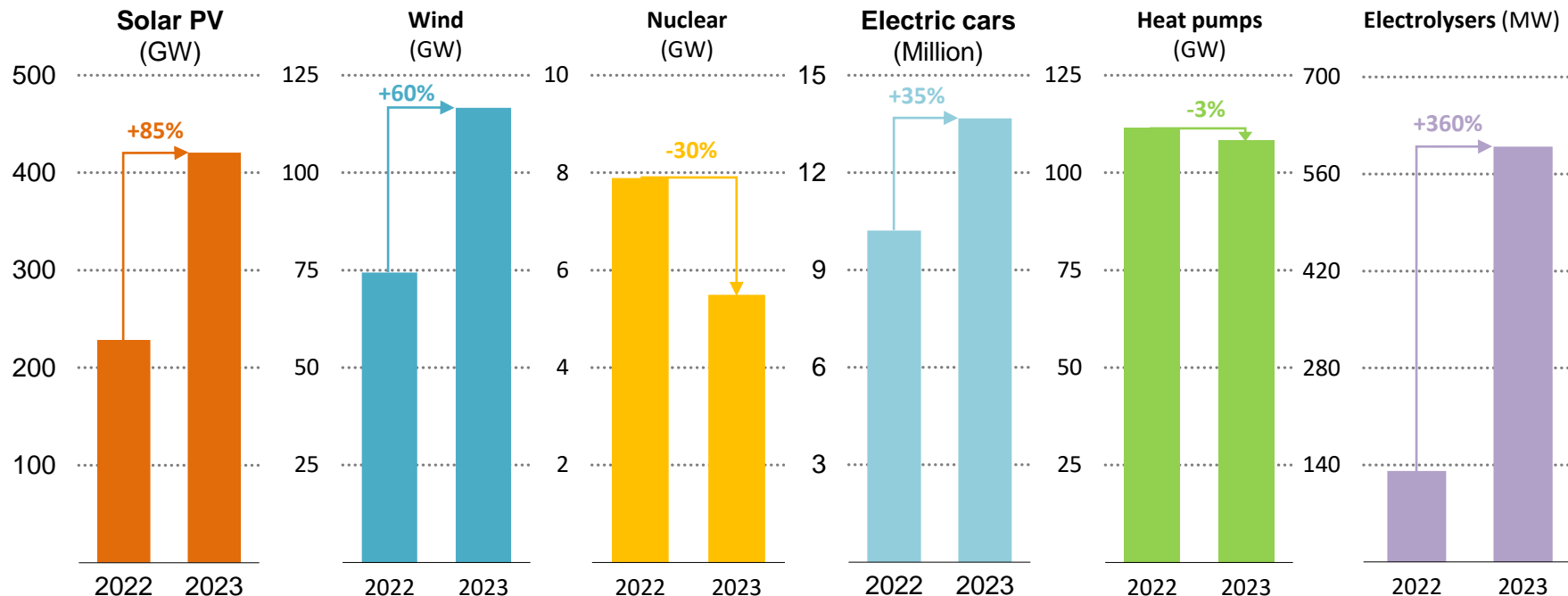


Net Zero Emissions by 2050 Scenario



Clean energy deployment climbed new heights for key technologies

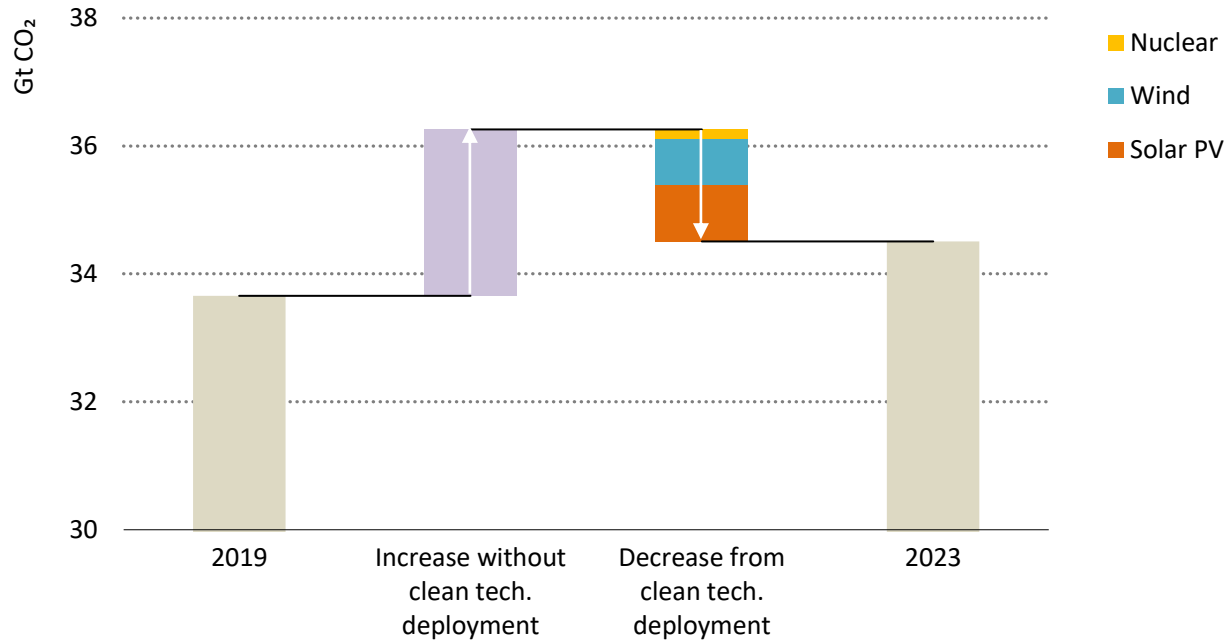
Annual deployment of selected clean energy technologies, 2022 and 2023



Globally, additions of solar grew by 85%, wind by 60% & electric cars by 35% in 2023, but heat pumps fell, highlighting the importance of continued policy support for the transition

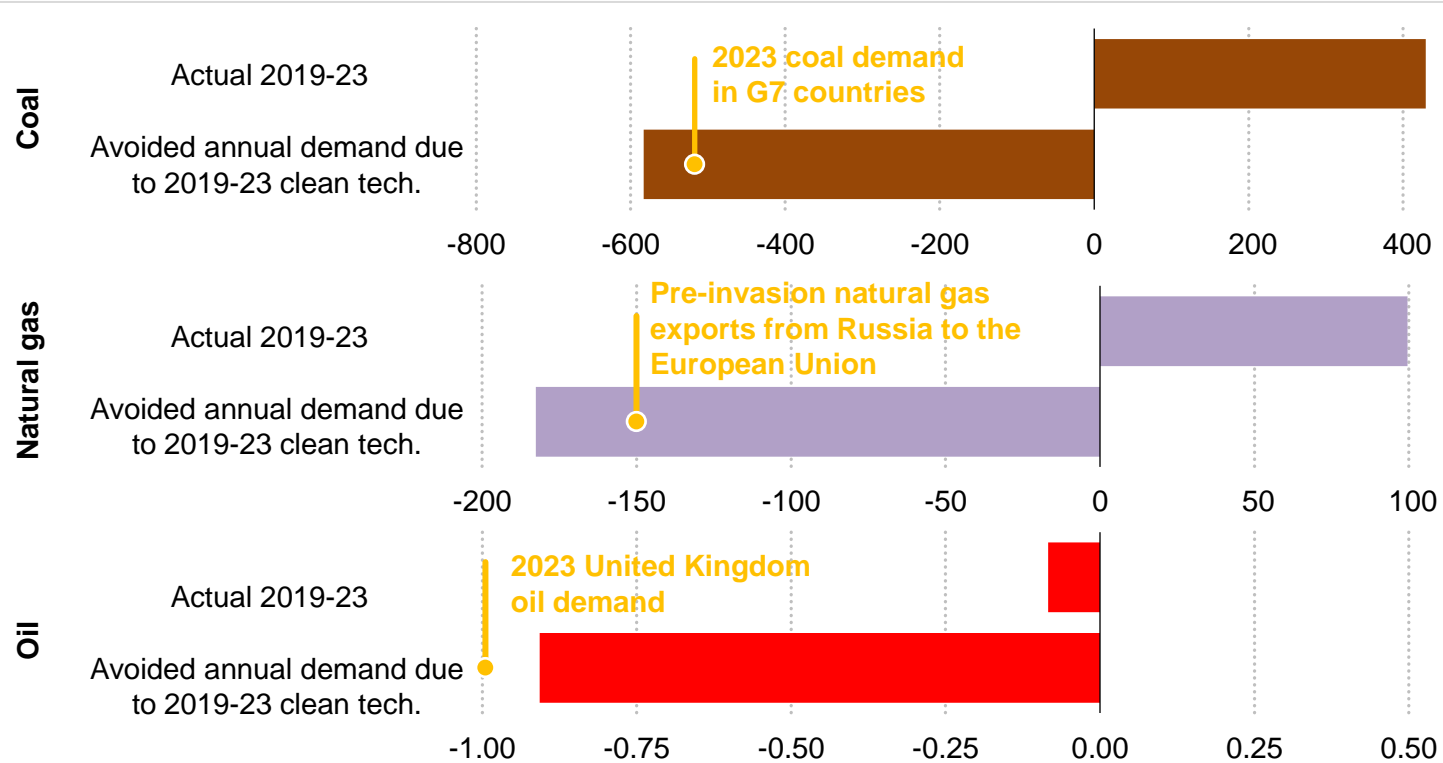
Clean energy is making a difference on emissions

Change in CO₂ emissions and avoided emissions from deployment of major clean technologies



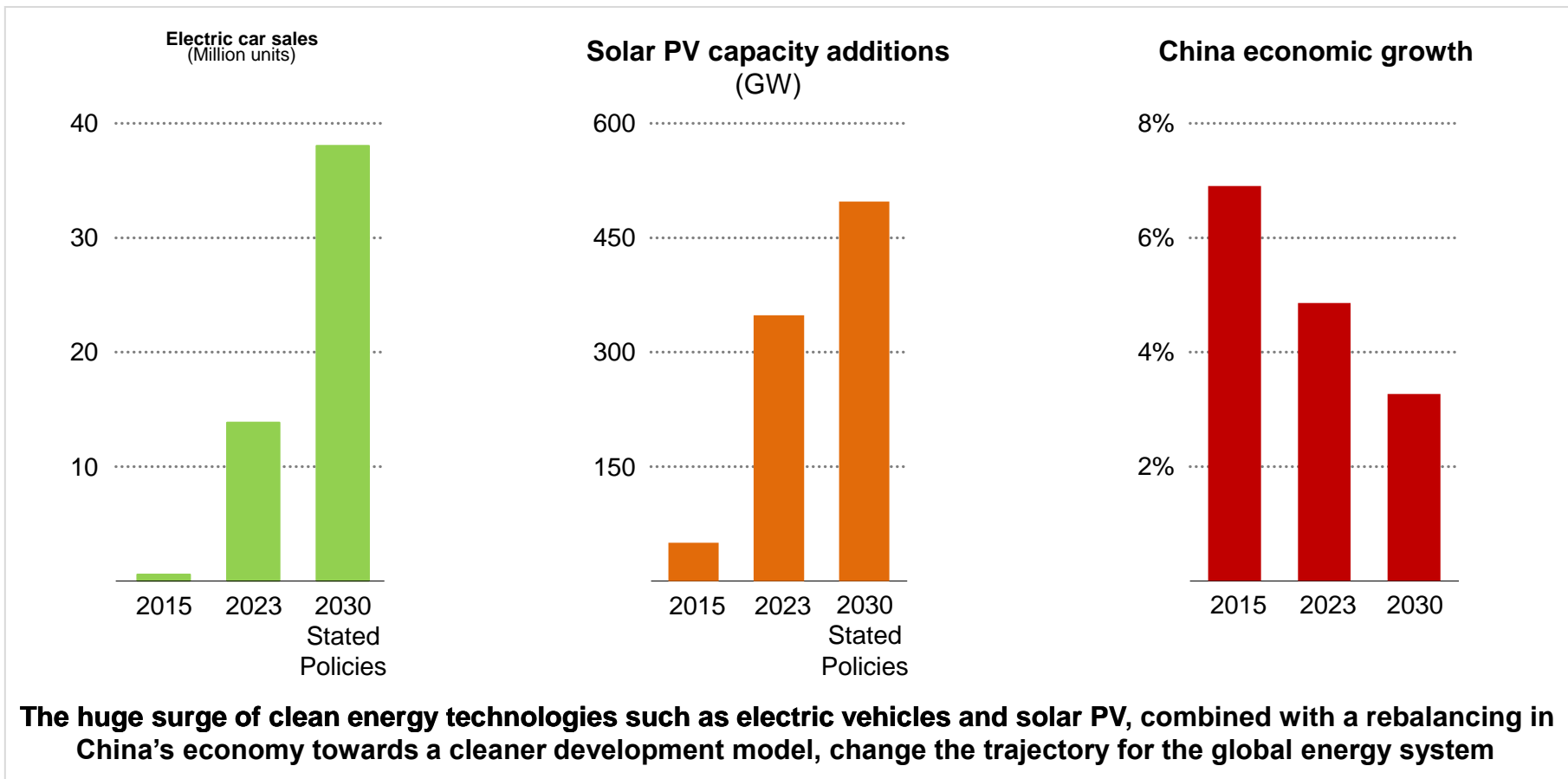
Without the surging deployment of clean energy technologies, the increase in global emissions since 2019 would have been three times higher

Clean energy is making a difference on fossil fuel demand



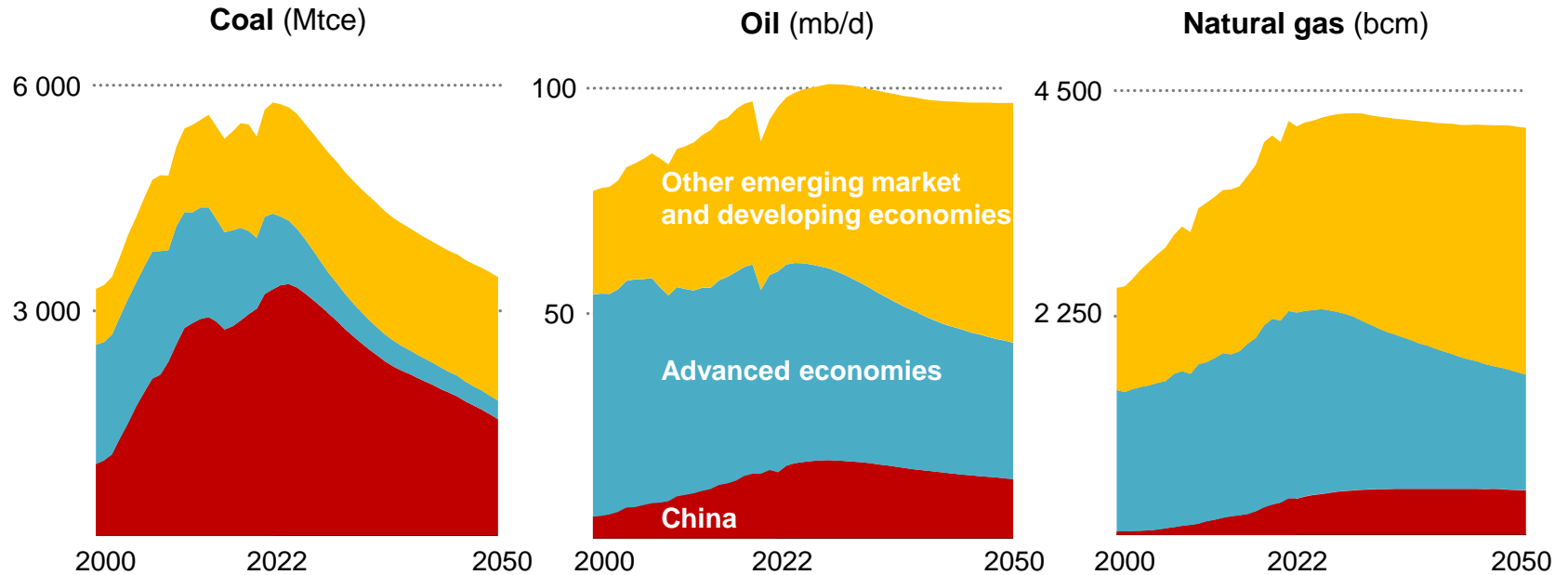
Cumulative deployment of major clean energy technologies over the last five years avoids annual fossil fuel demand of around 25 EJ, equivalent to 5% of global fossil fuel demand in 2023

Major structural shifts reshape the new *Outlook*



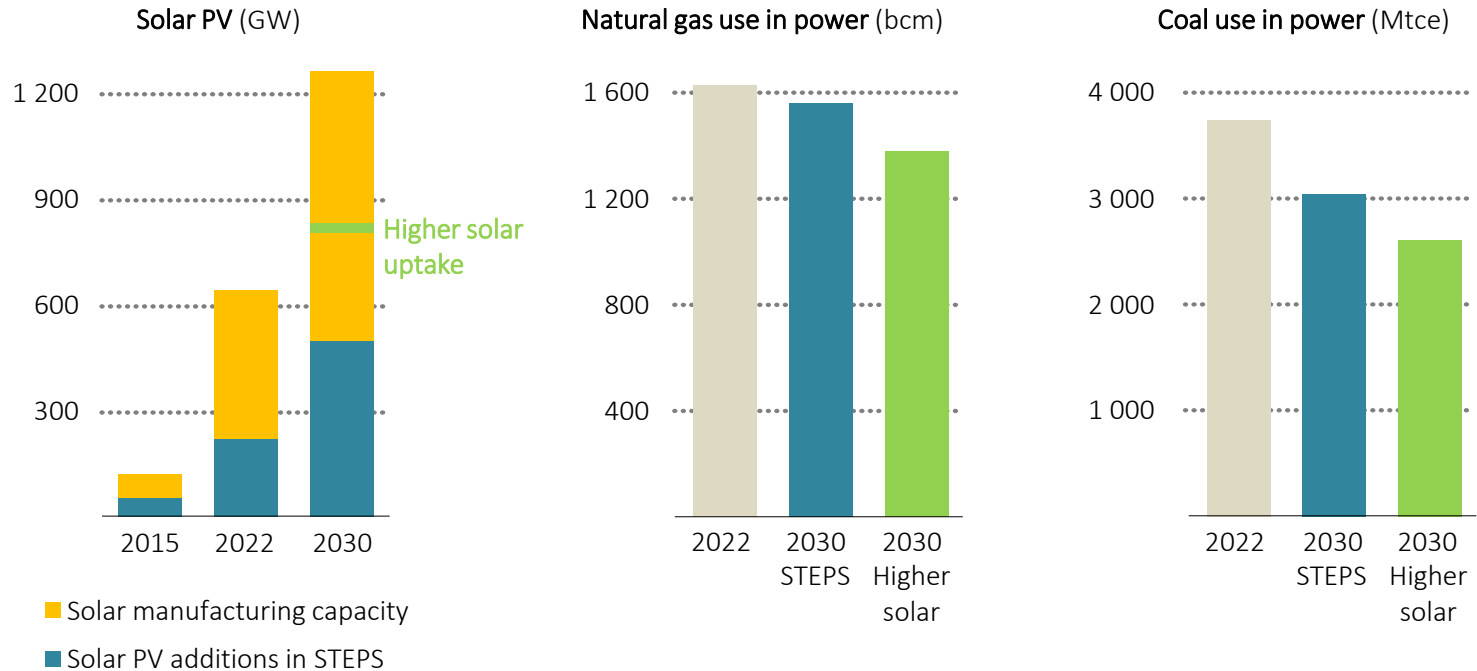
On track for a peak in all fossil fuels before 2030

Fossil fuel demand in the Stated Policies Scenario (STEPS)



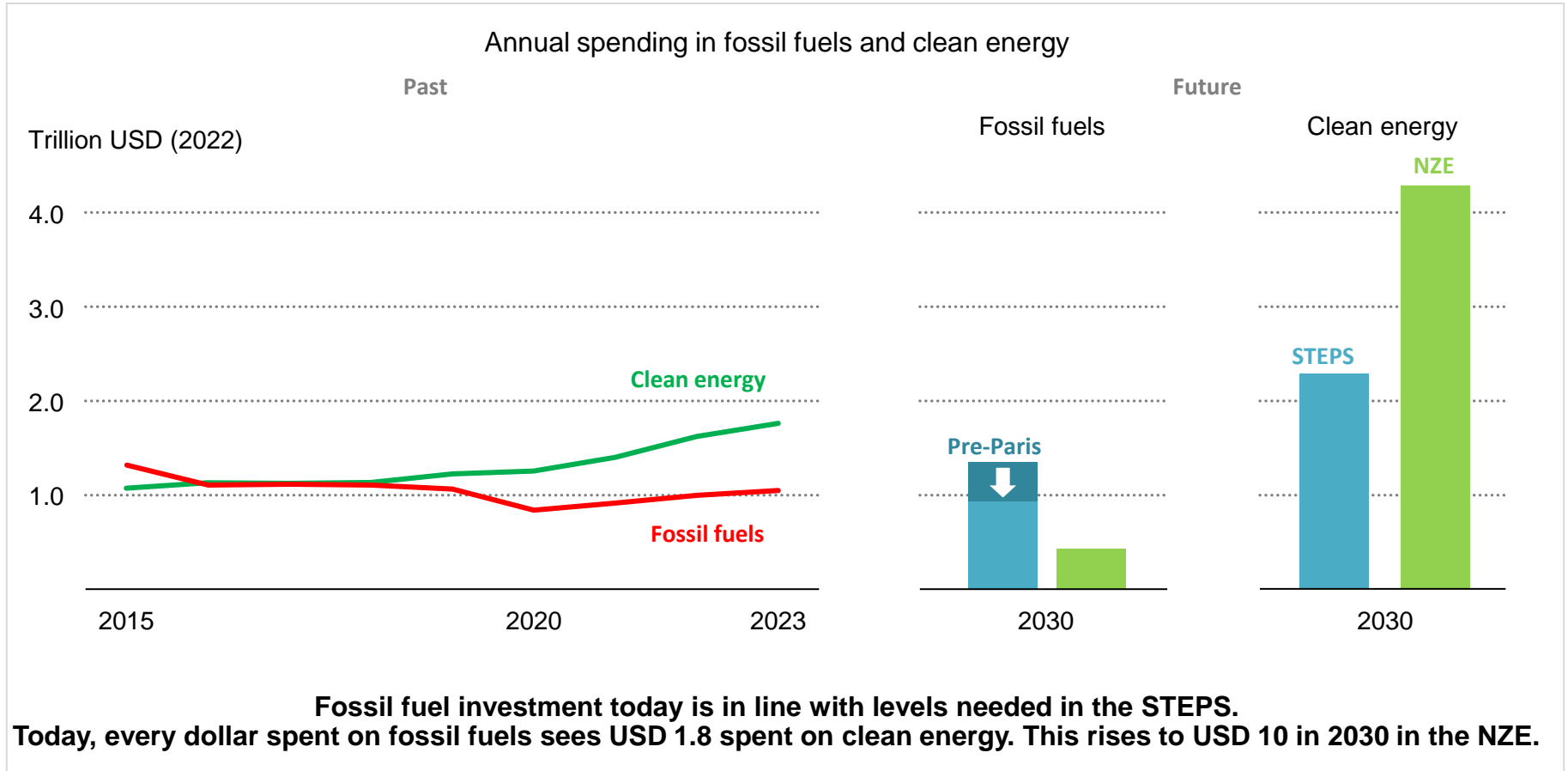
For the first time, today's policy settings are strong enough to generate peaks for coal, oil and natural gas this decade; the share of fossil fuels starts to edge downwards from 80% today to 73% in 2030

A solar boom could accelerate the shift away from fossil fuels



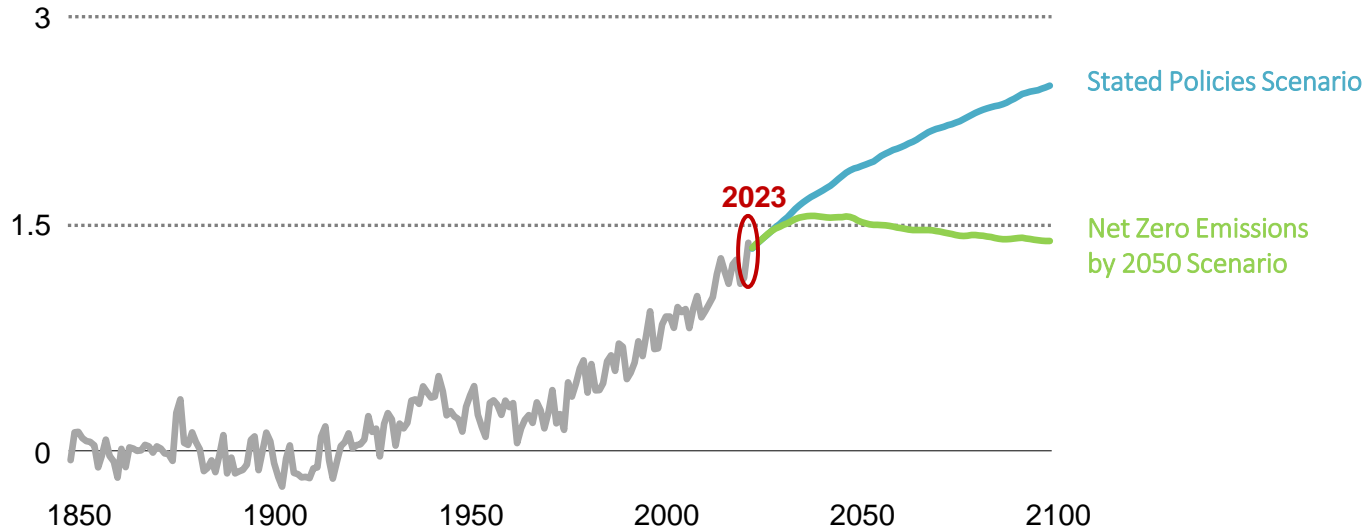
Ample global manufacturing offers considerable upside for solar. Effectively integrated, this would further cut natural gas and coal use, making the declines steeper.

New dynamics for energy investment



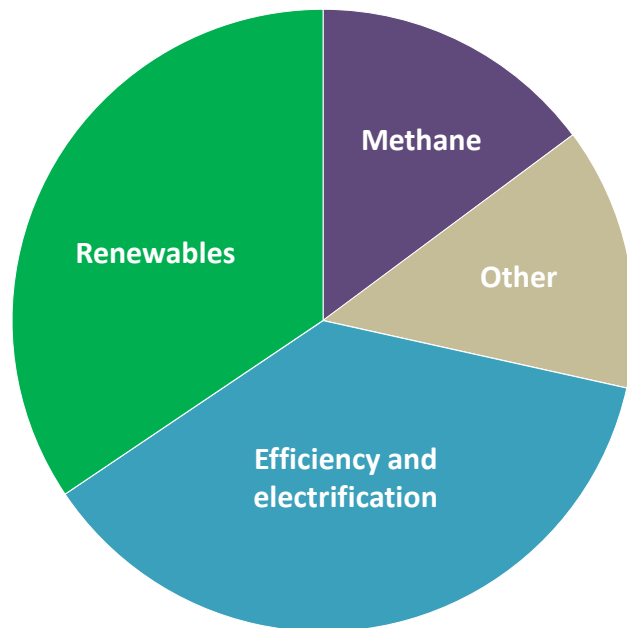
Today's choices will determine future warming

Change in global average surface temperature from pre-industrial levels (°C)



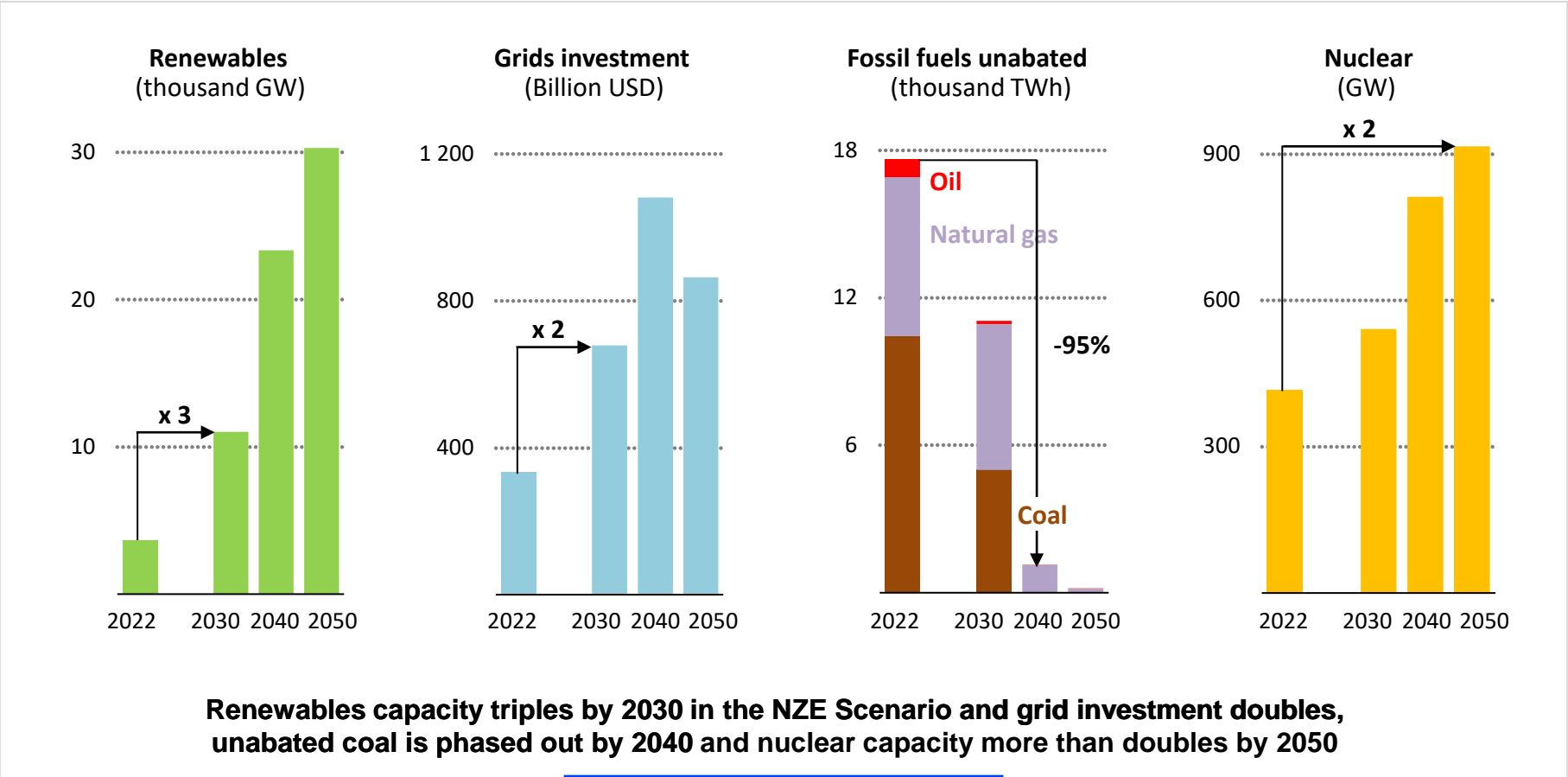
Emissions are set to peak by 2025 under today's policy settings, but temperatures would continue to rise; proven policies and technologies are available to keep the door to 1.5 °C open

Emissions reductions by measure by 2030 in the NZE Scenario

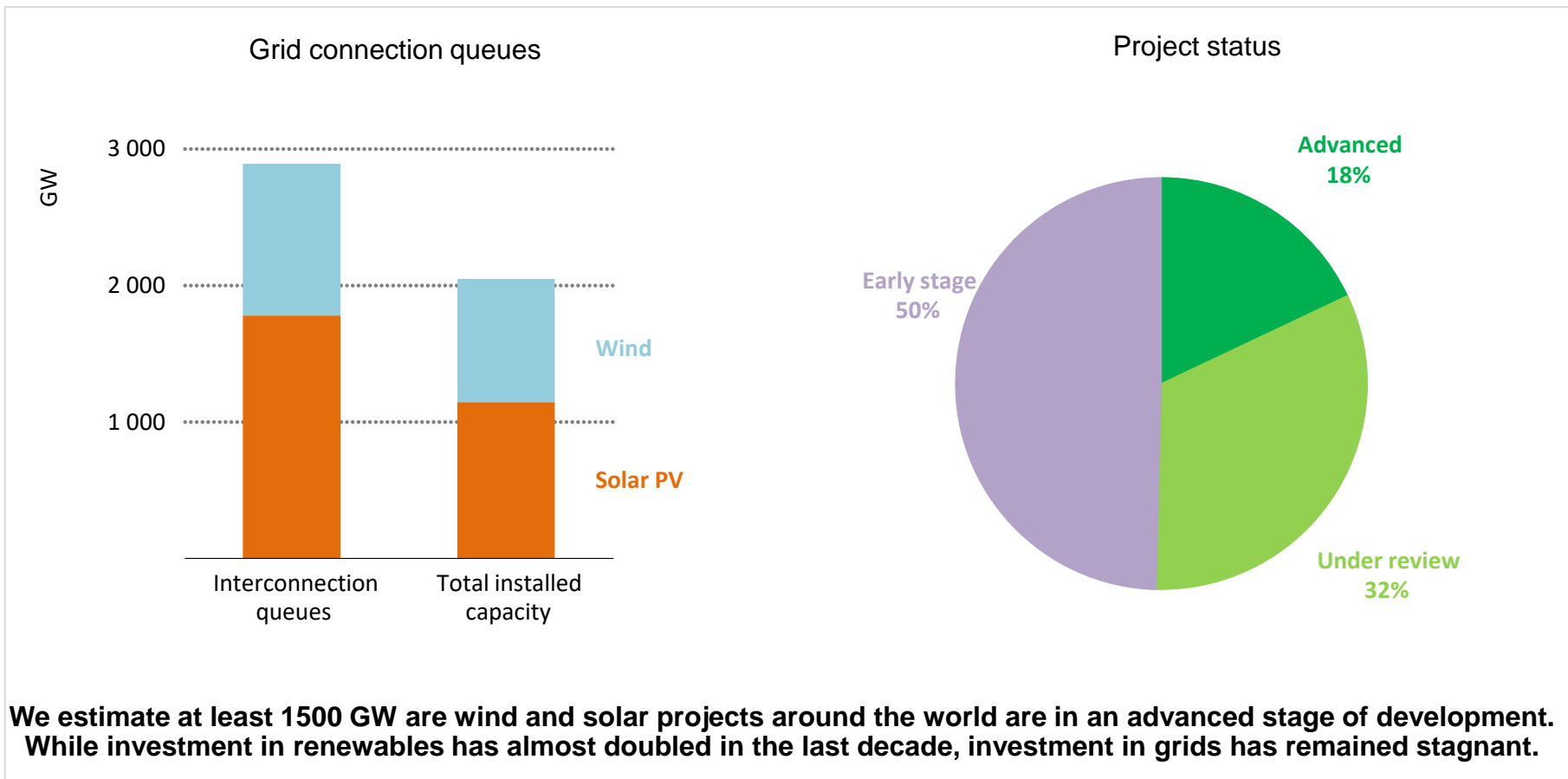


Energy-related greenhouse gas emissions peak by 2025 and decline by nearly 40% from today to 2030. Proven solutions available today deliver over 80% of what is needed this decade.

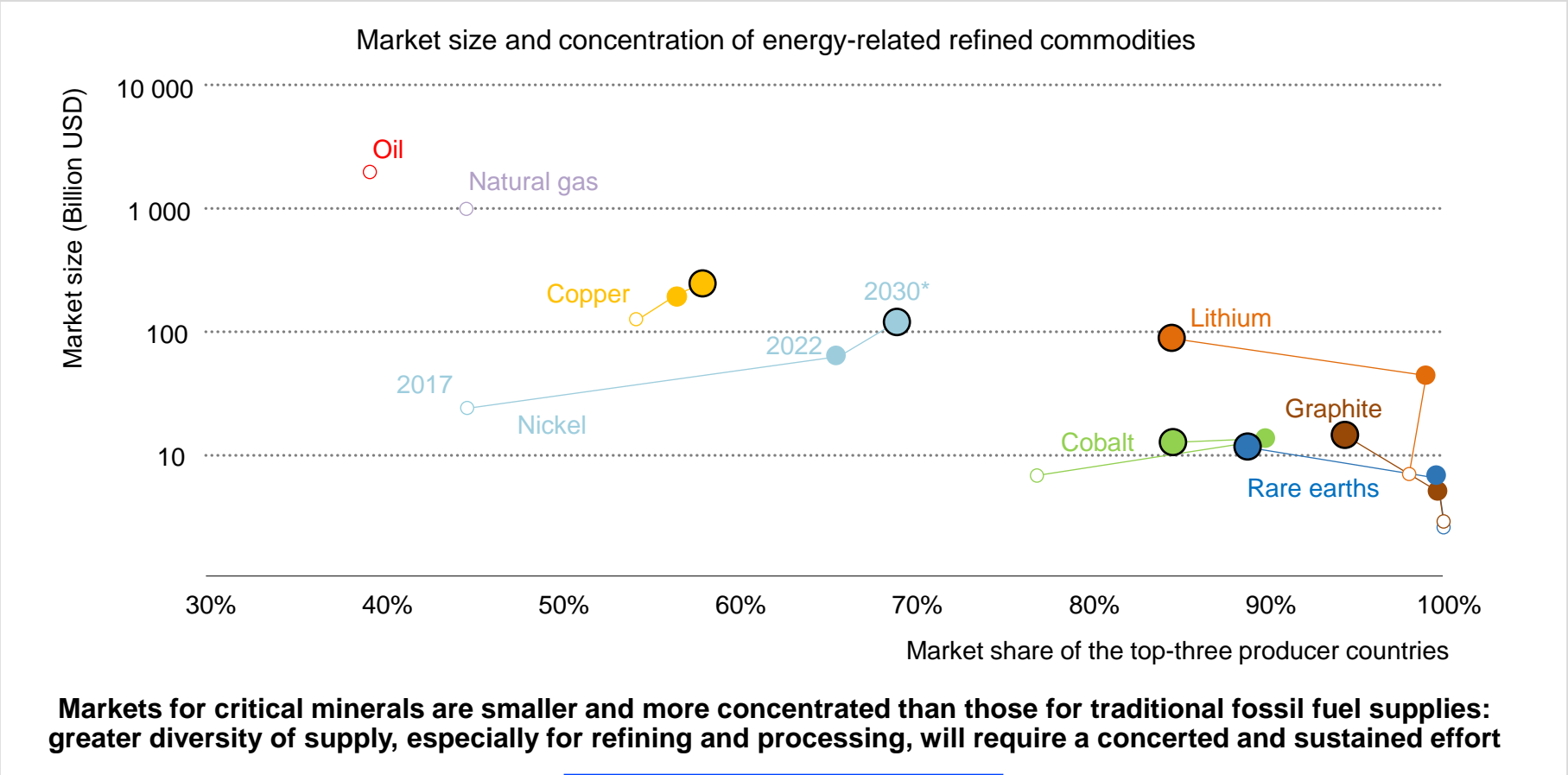
Electricity systems are re-imagined for net zero electricity



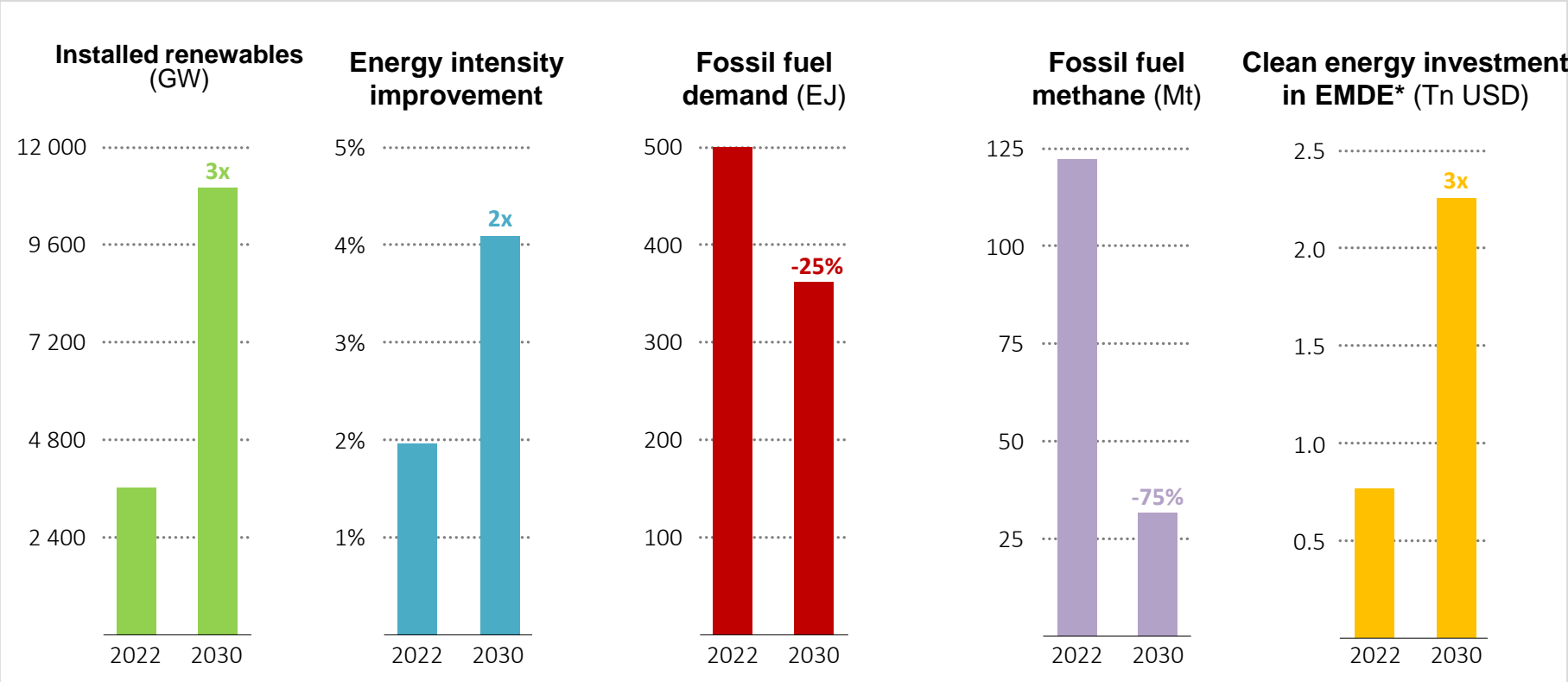
Grids are becoming a bottleneck for energy transitions



Resilience in transitions requires greater diversity



Five pillars to keep 1.5 °C alive



A comprehensive energy package for COP28 needs to drive the growth in clean energy, support emerging and developing economies in the transition, and recognise the need to reduce fossil fuel demand

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