



World Energy Outlook 2022

Laura Cozzi, Chief Energy Modeller

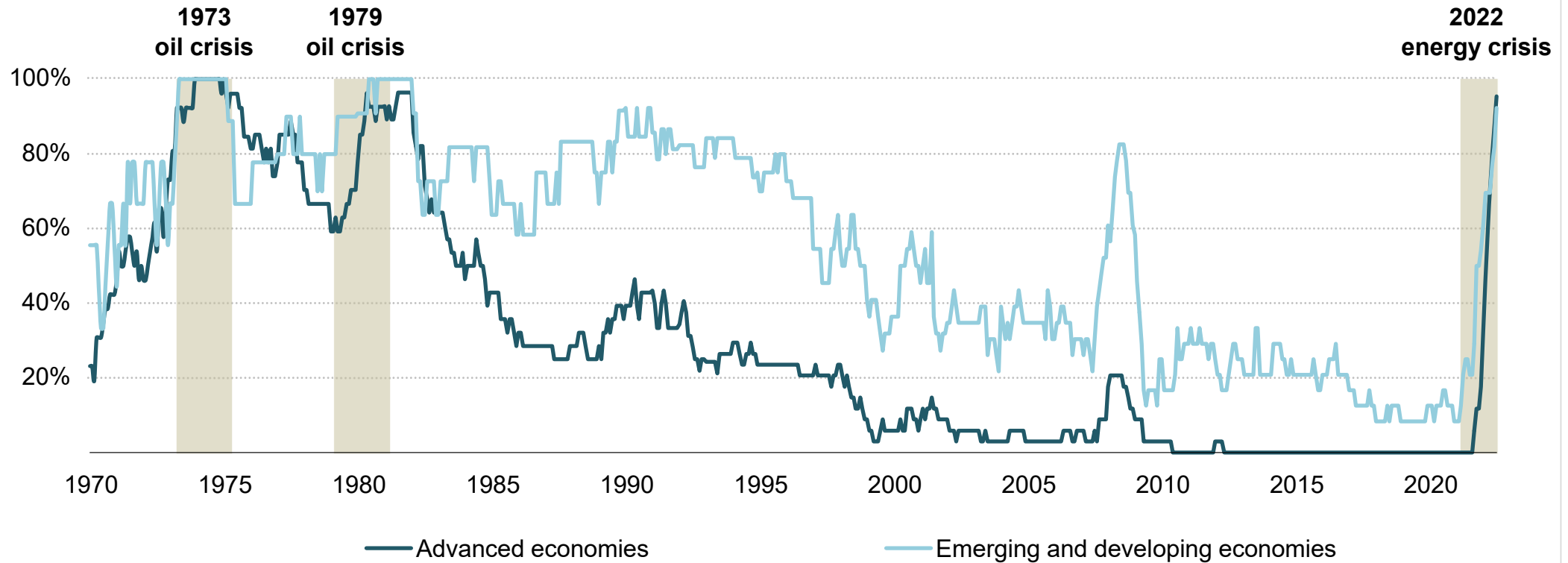
Tim Gould, Chief Energy Economist

IEEJ International Energy Symposium, 11 November 2022

International
Energy Agency

An energy shock of unprecedented breadth and complexity

Percentage of countries with annual inflation greater than 6%

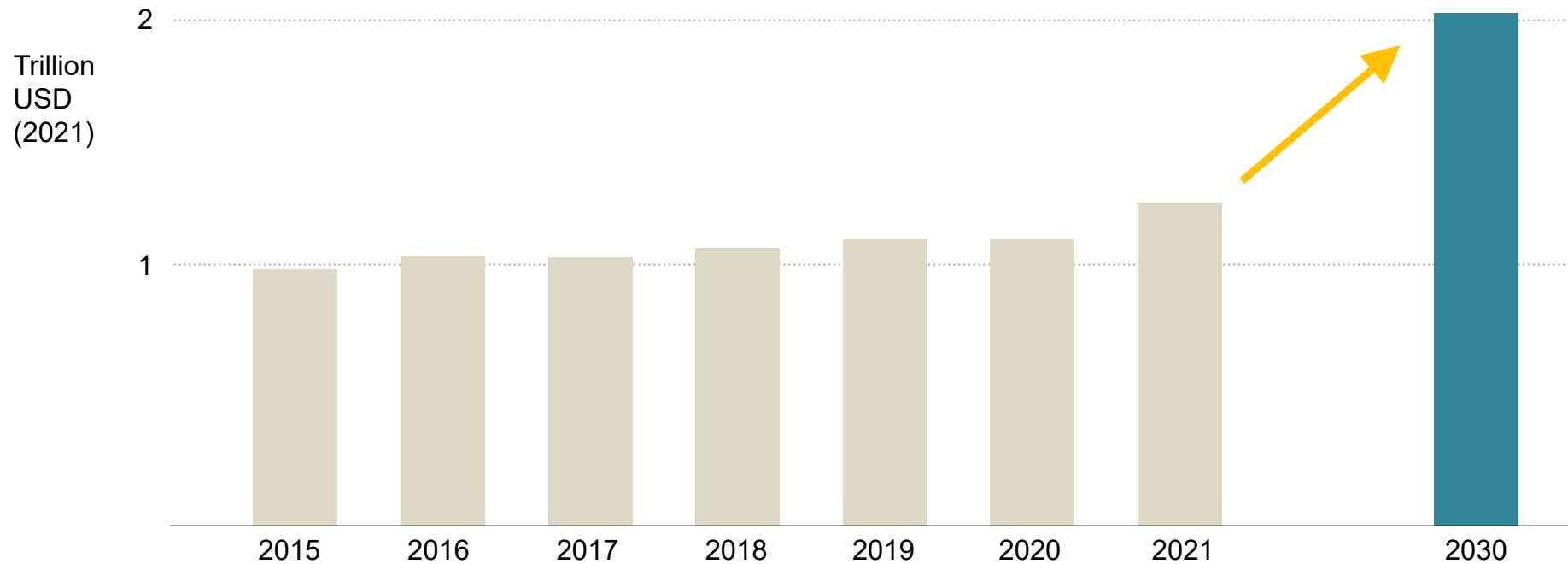


Exacerbating already tight energy markets, the Russian invasion of Ukraine has tipped the world into a global energy crisis of unprecedented breadth and complexity, affecting all countries and the vulnerable in particular

Government responses are fast-tracking the clean energy economy



Clean energy investment in the Stated Policies Scenario

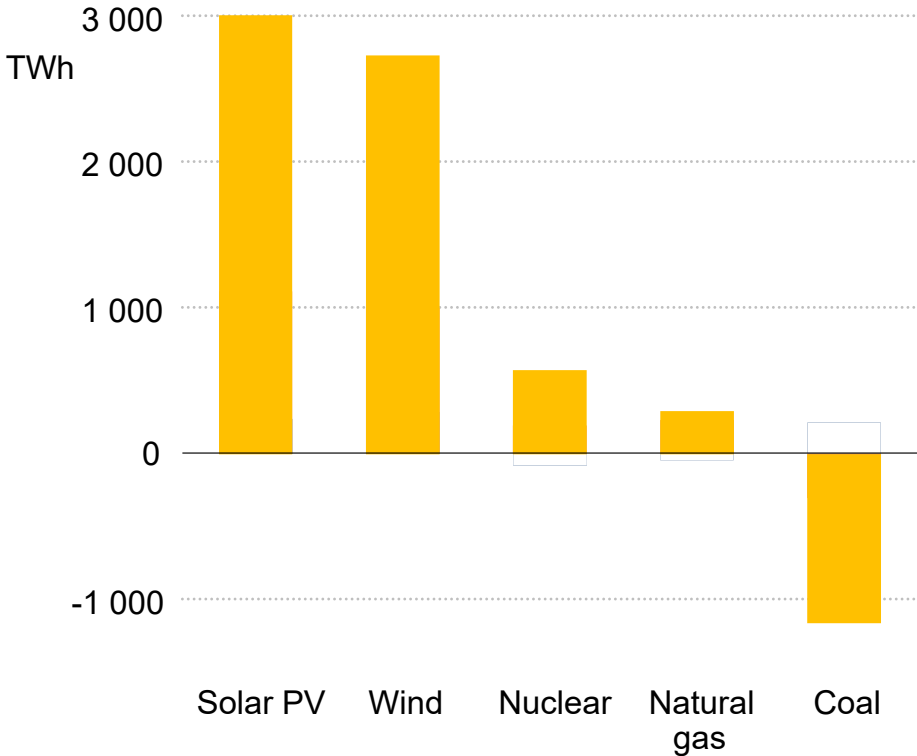


The US Inflation Reduction Act, the EU's Fit for 55 package, Japan's GX, China's new clean energy targets and India's solar revolution propel clean energy investment to new highs, but \$4 trillion is needed by 2030 to be on track for 1.5 °C

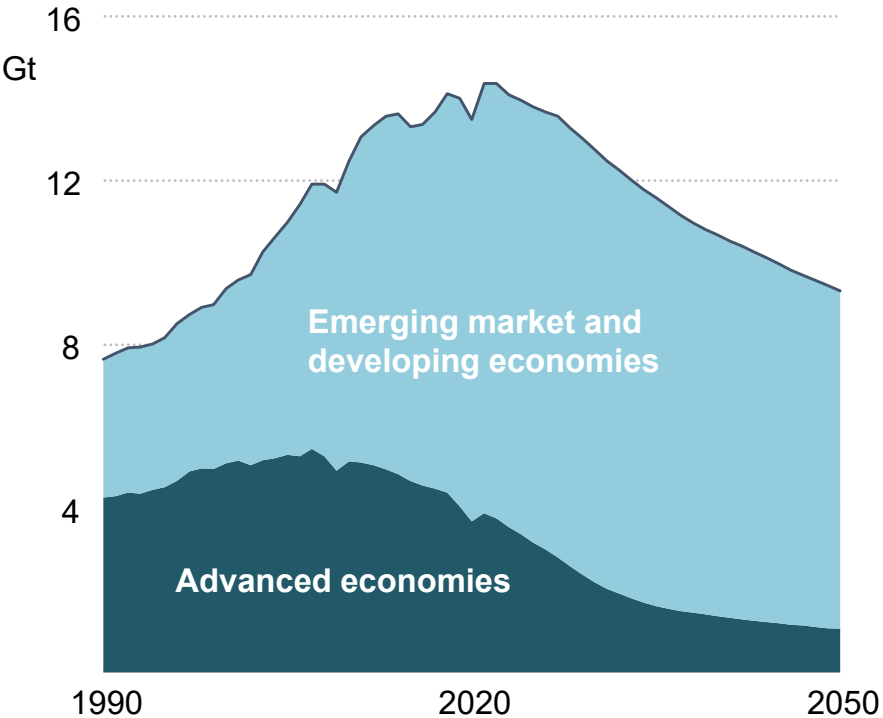
Electricity is turning the corner



Change in generation in the STEPS, 2021-2030



Power sector CO₂ emissions

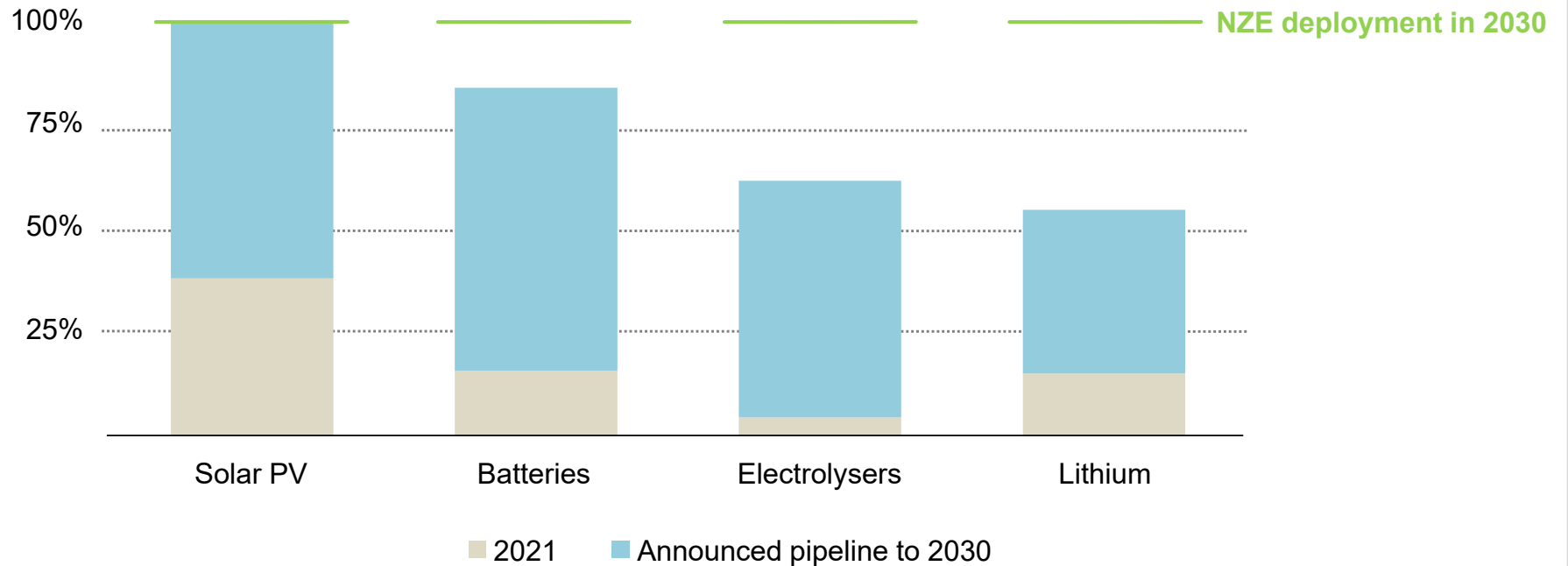


As markets rebalance, the upside for coal is temporary as renewable generation rises by 90% to 2030; the peak in power sector emissions needs to be followed by a much steeper decline to be consistent with global climate goals

Clean energy manufacturers prepare the ground for faster transitions

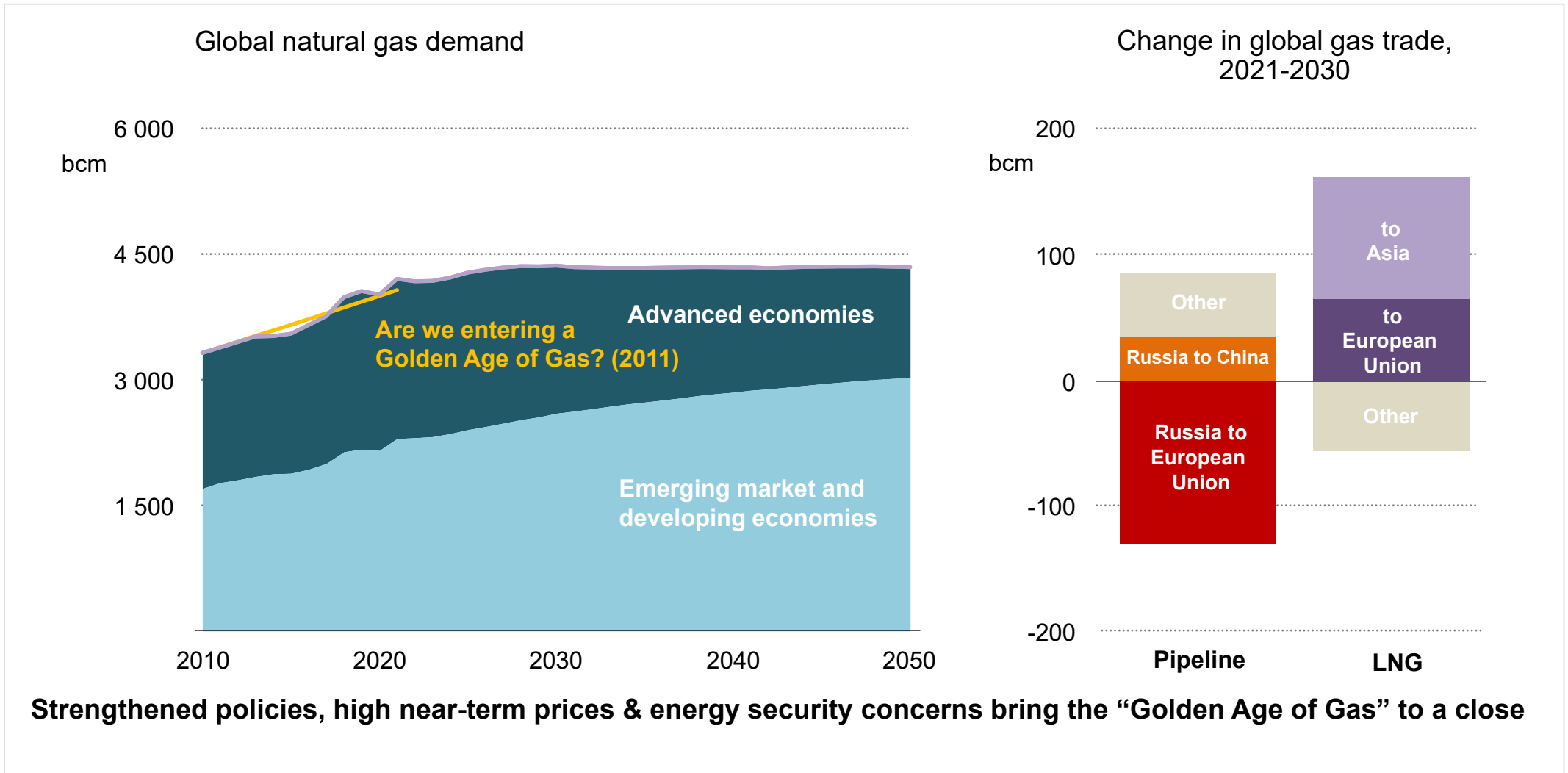


Announced manufacturing capacity pipeline compared with NZE Scenario deployment in 2030



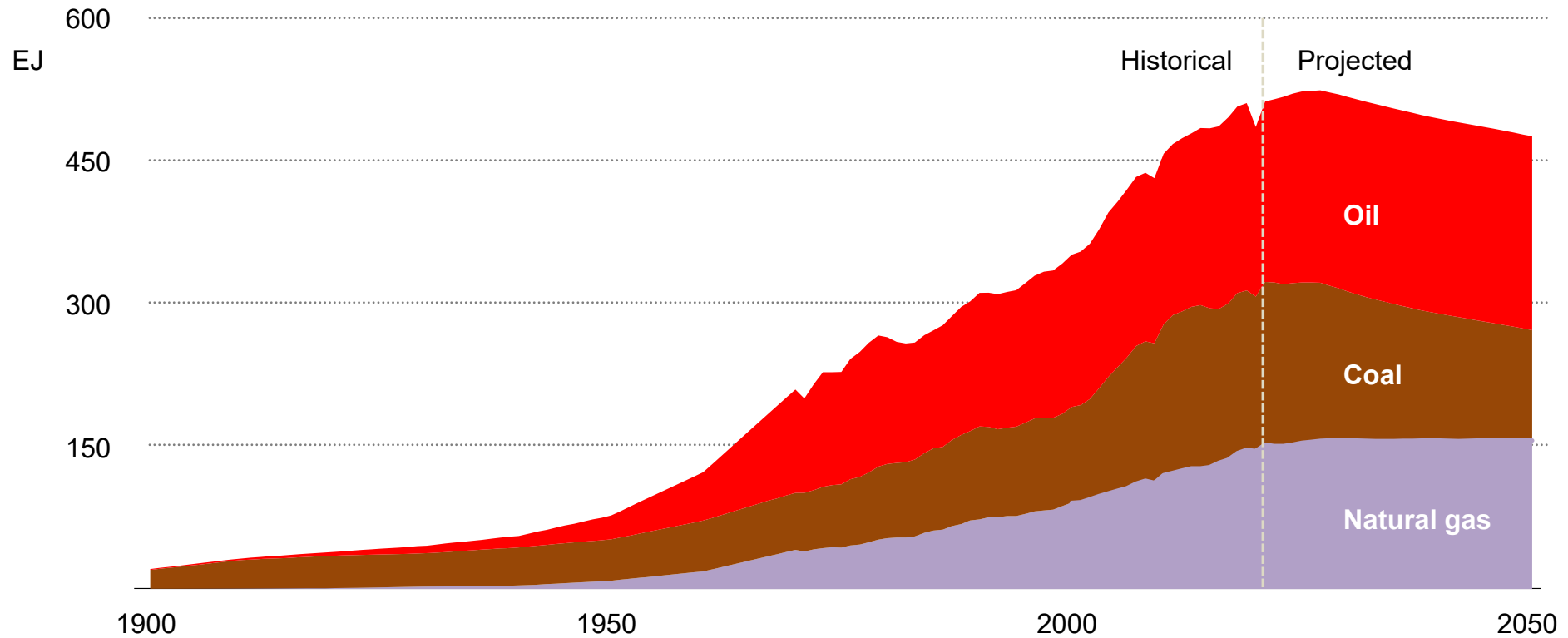
Announced plans to scale up clean energy manufacturing capacity help to accelerate cost reductions and would, in some cases, approach the levels needed to put the world on track with a 1.5 °C pathway

The era of natural gas demand growth is coming to an end



Peak fossil fuel demand is coming this decade

Fossil fuel demand in the Stated Policies Scenario, 1900-2050

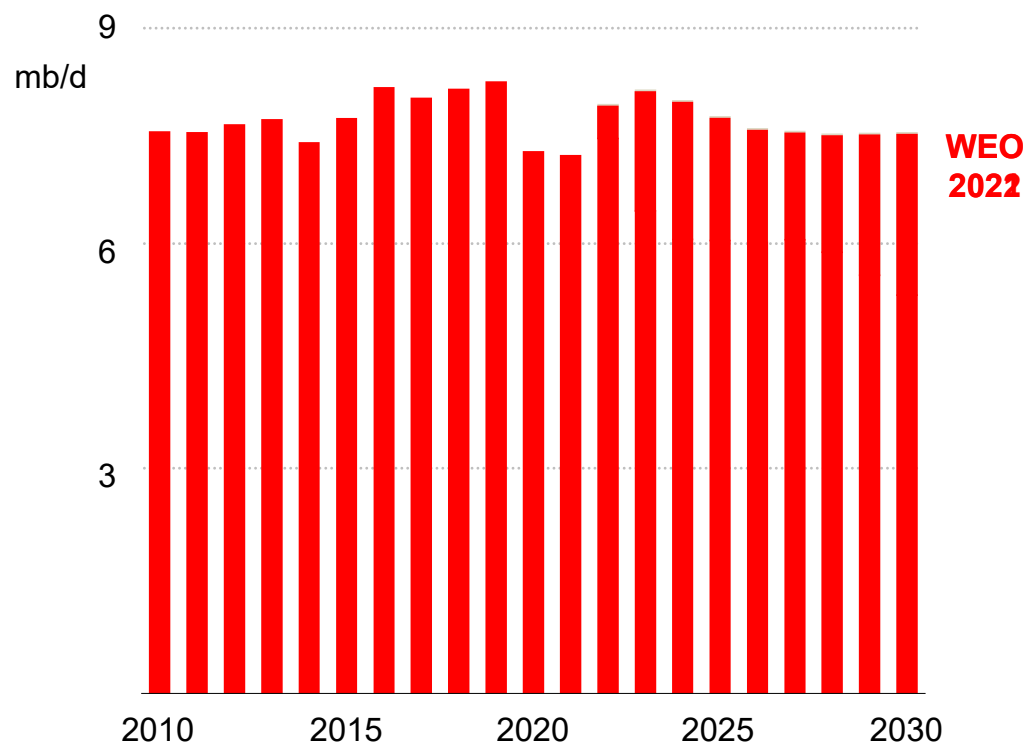


Today's policy settings are now sufficiently strong that they produce a distinct peak in fossil fuel use before 2030

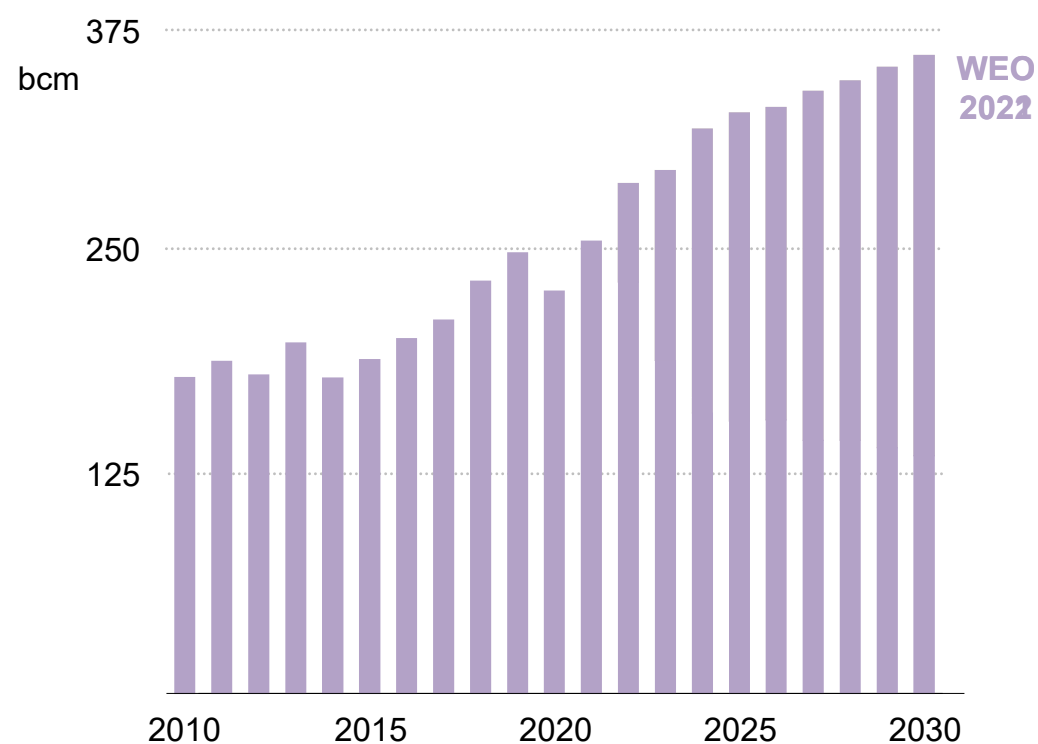
Russia faces a much-diminished role in international energy

Russian oil and gas exports in the Stated Policies Scenario

Oil exports



Gas exports



Russia's share of global oil and gas trade halves by 2030, with exports from the United States, Middle East, South America and East Africa – and enhanced efforts to reduce demand – filling the gap

A new energy security paradigm is needed for secure transitions

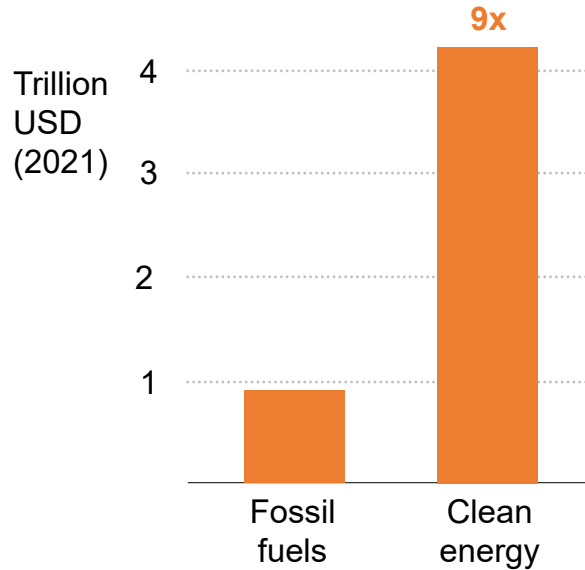


Scale up clean energy
to scale back fossil fuels

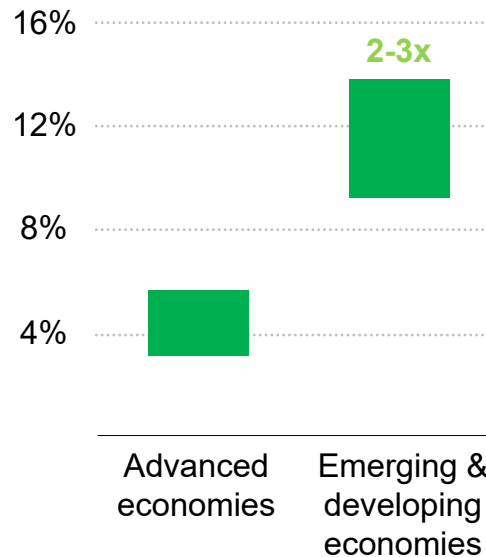
Lift emerging economies into the
new energy economy

Manage new vulnerabilities

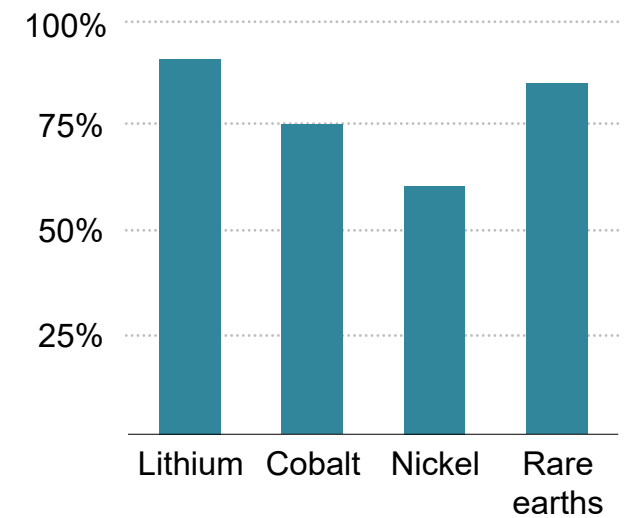
Investment in NZE Scenario, 2030



Cost of capital for solar PV, 2021

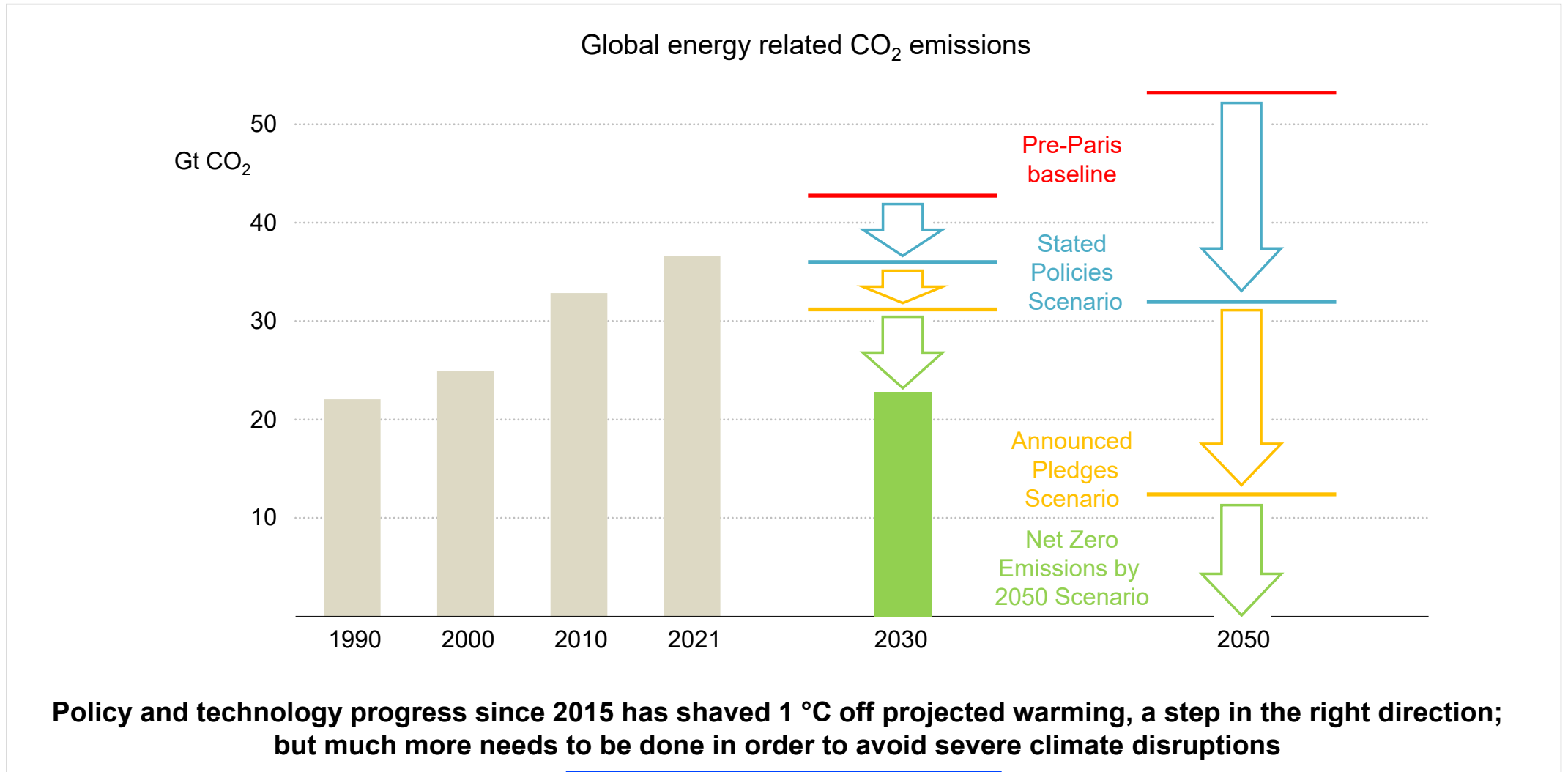


Share of top 3 countries in mineral production



For the duration of energy transitions, the clean energy and fossil fuel systems are *both* required to deliver energy services; assessing & managing the evolving co-existence of both systems is crucial

Keeping the door to 1.5 °C open



Conclusions



- Government responses to today's energy crisis are marking this out as a major turning point towards a cleaner and more secure energy system
 - Russia's invasion of Ukraine is prompting a wholesale reorientation of energy trade & investment flows, leaving Russia with a much-diminished position in global energy
 - Global fossil fuel use has grown alongside GDP since the Industrial Revolution: putting fossil fuel demand into reverse will be a pivotal moment in energy history
 - A massive surge in clean energy investment is vital to keep the door to 1.5 °C open; without this, avoiding renewed price volatility would require higher oil & gas investment, putting climate goals in jeopardy
 - Today's energy crisis provides a stark reminder of why we have to press ahead with energy transitions, & the importance of making change inclusive, affordable & secure
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