

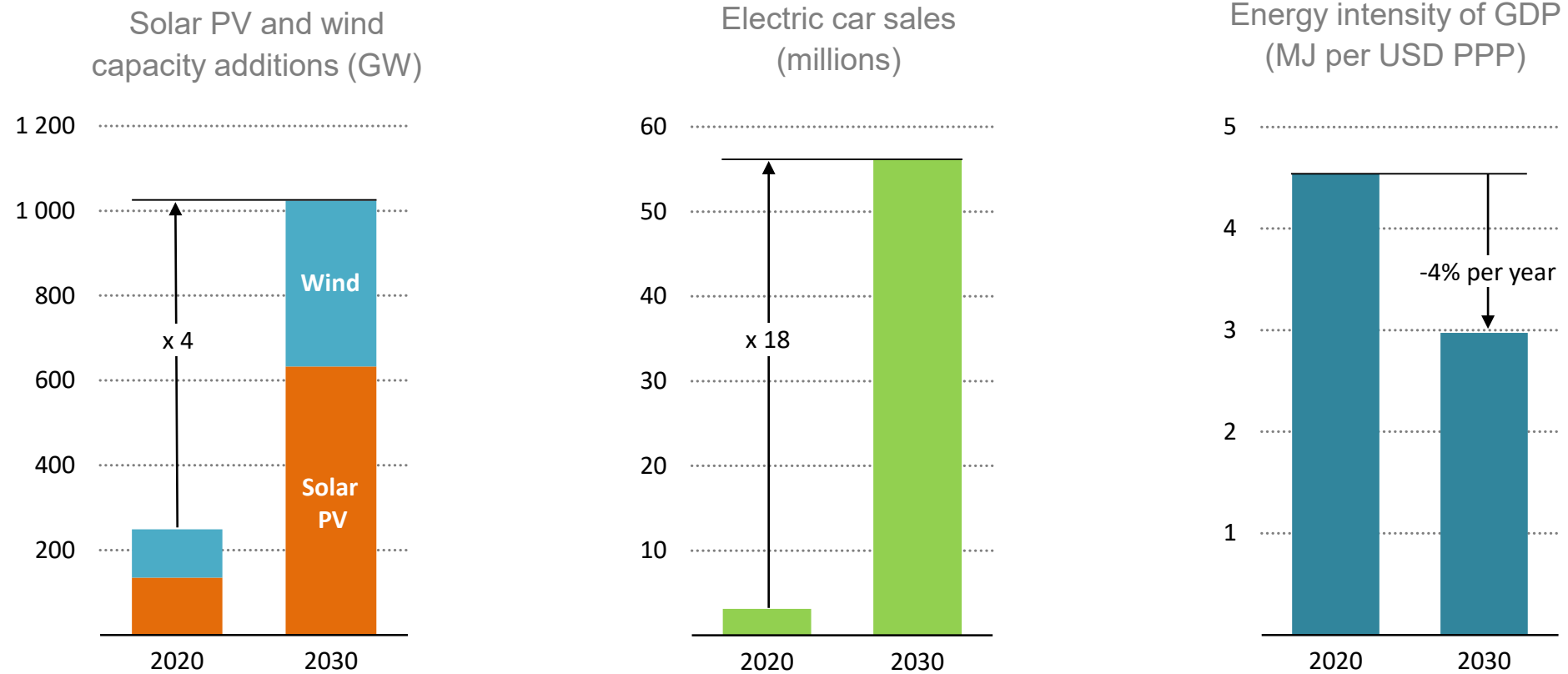


# Clean Energy Transitions and the role of nuclear

CIGS, 28 May 2021

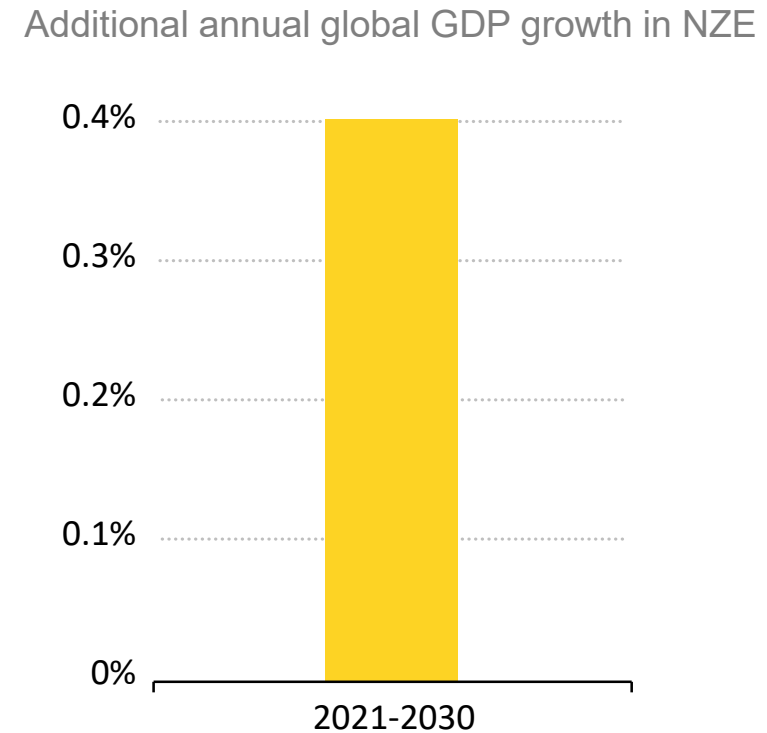
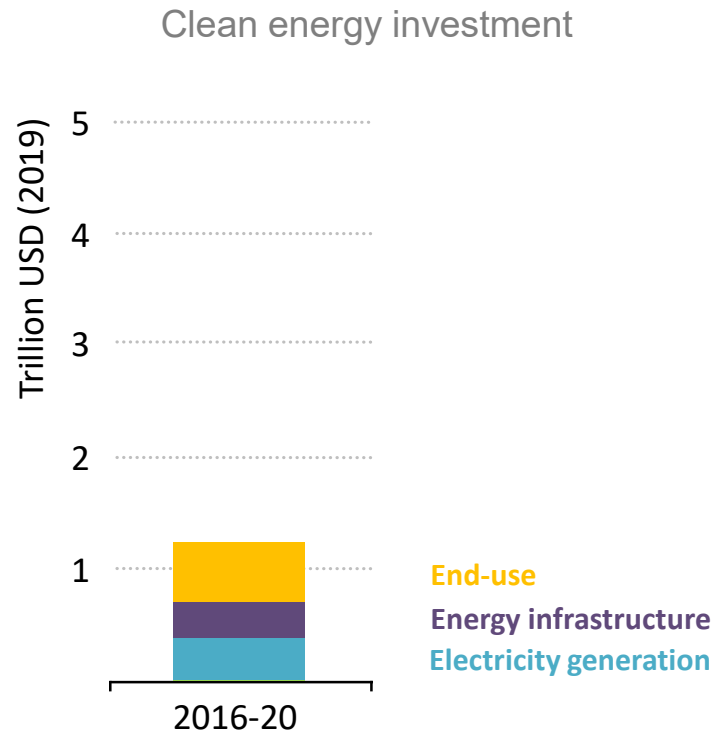
Keisuke SADAMORI

# Make the 2020s the decade of massive clean energy expansion



**Technologies for achieving the necessary deep cuts in global emissions by 2030 exist, but staying on the narrow path to net-zero requires their immediate and massive deployment.**

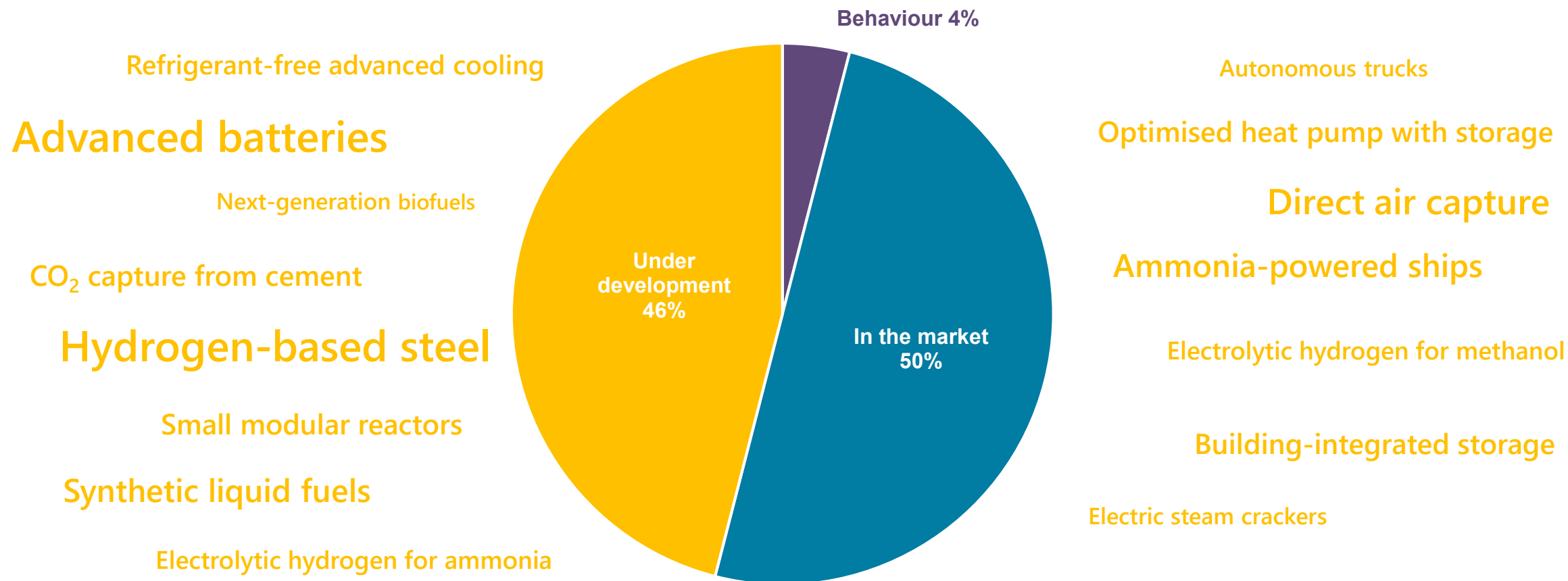
# Drive a historic surge in clean energy investment



**Annual clean energy investment more than triples by 2030 in the NZE scenario, driving an average 0.4% per year increase in global GDP to 2030 & speeding the recovery from the COVID-19 shock**

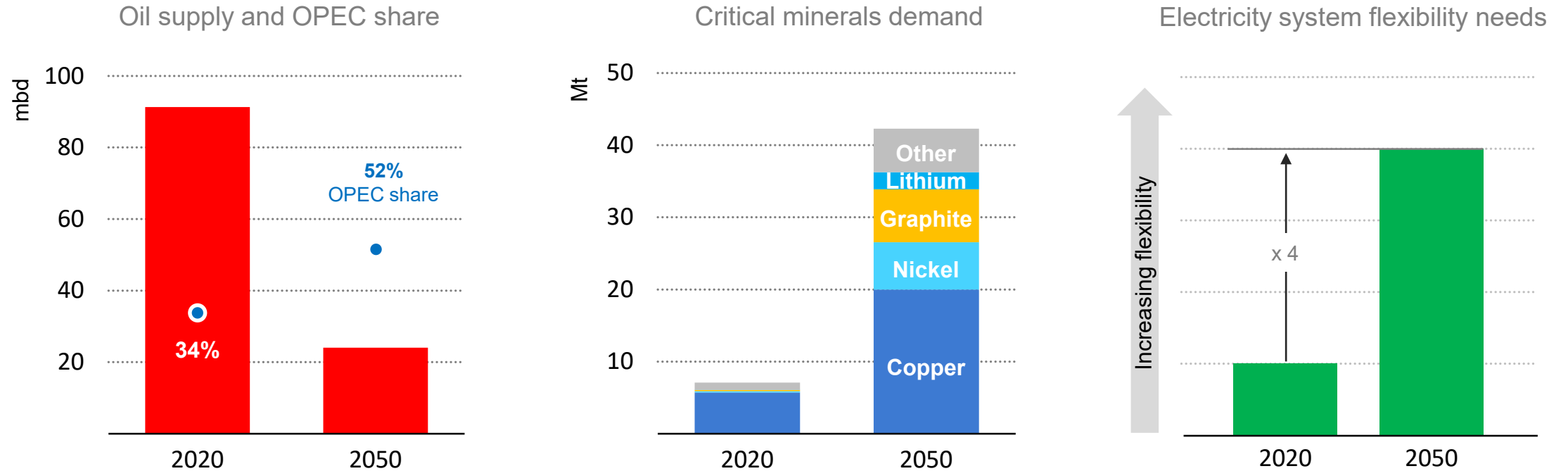
# Prepare for the next phase of the transition by boosting innovation

CO<sub>2</sub> savings by technology maturity in 2050, NZE scenario



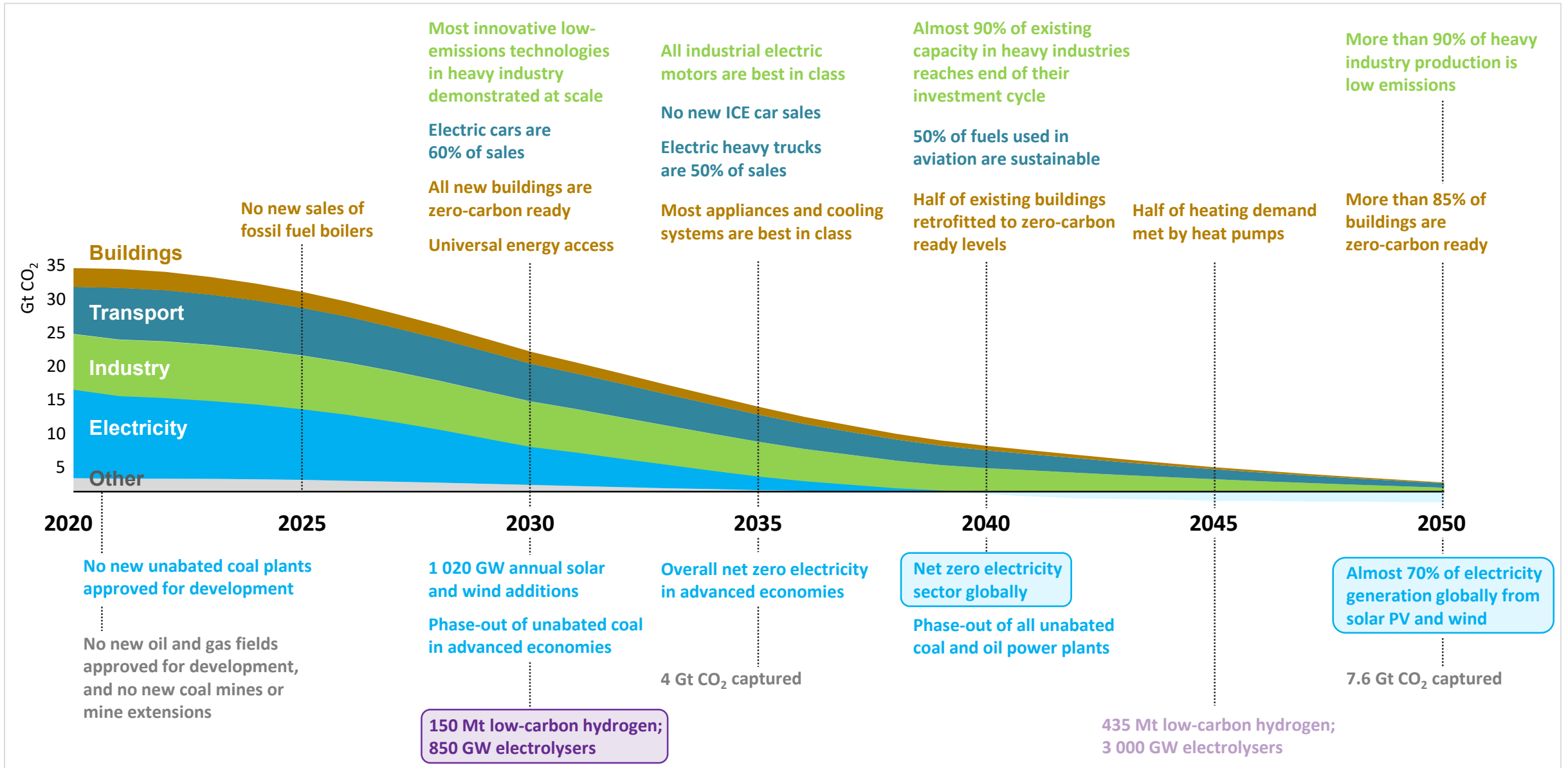
**Unlocking the next generation of low-carbon technologies requires more clean energy R&D and \$90 billion in demonstrations by 2030; without greater international co-operation, global CO<sub>2</sub> will not fall to net-zero by 2050.**

# Address emerging energy security risks now



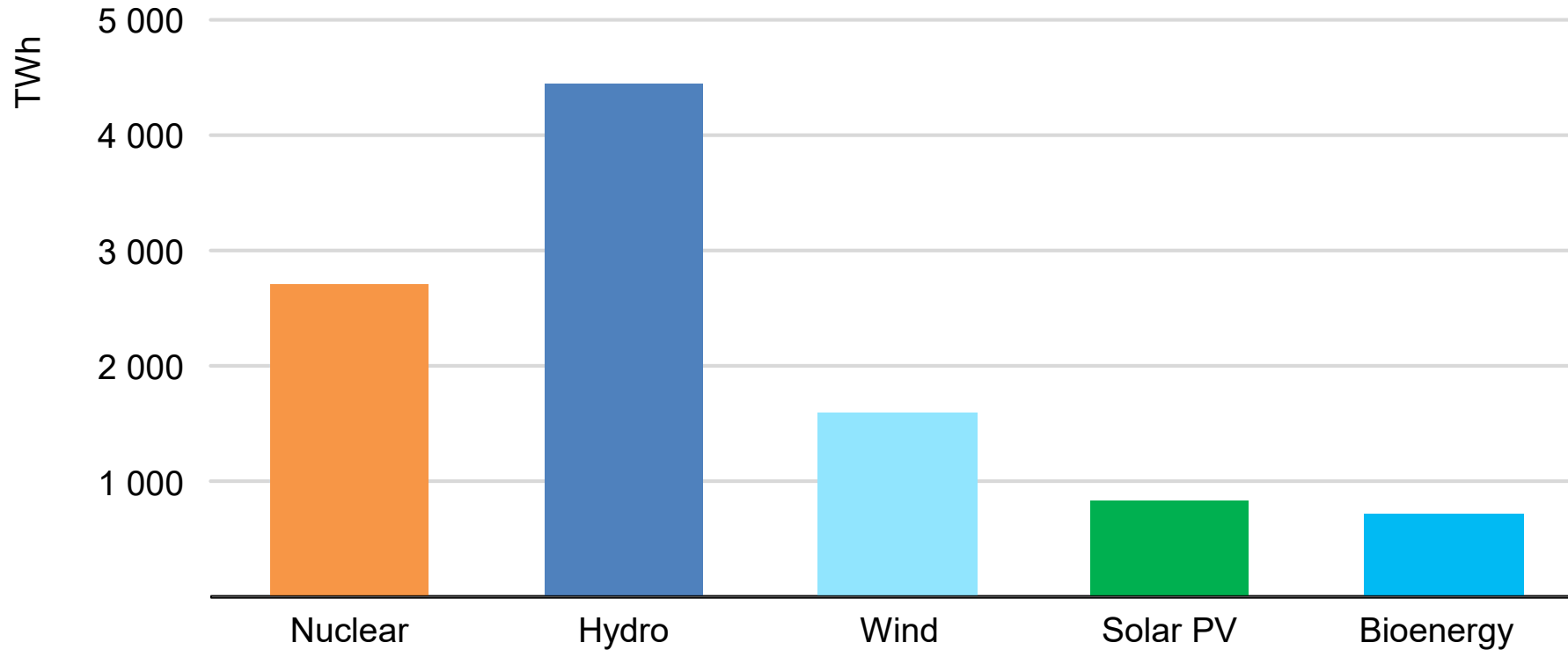
**New energy security concerns emerge, and old ones remain; governments need to proactively plan for energy security risks related to market concentration, critical minerals and electricity systems.**

# Set near-term milestones to get on track for long-term targets



# Nuclear is a leading source of clean electricity today

Low-carbon electricity generation in advanced economies by source, 2020

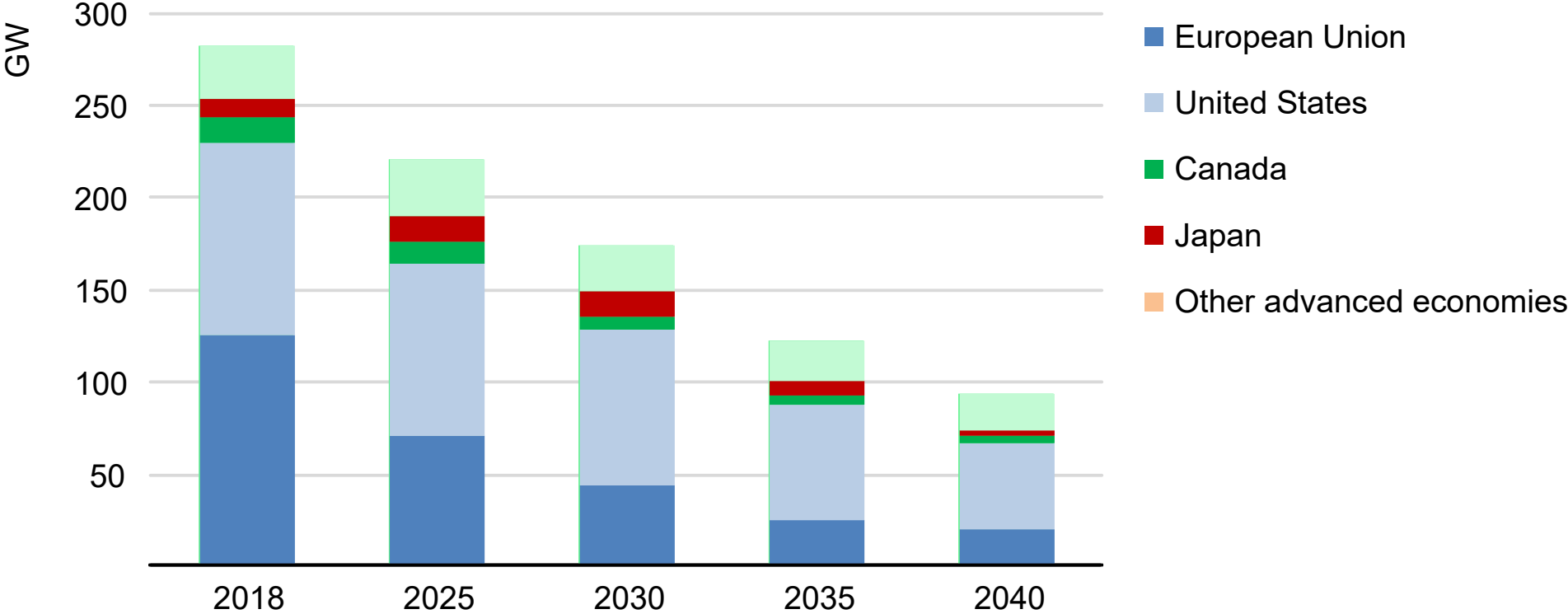


**Nuclear power provided 10% of electricity supply worldwide in 2020. In advanced economies, it has been the largest clean source of electricity for over 30 years.**

# Nuclear could face a steep decline in advanced economies



Nuclear power capacity (operational) in advanced economies in the *Nuclear Fade Case*, 2018-2040



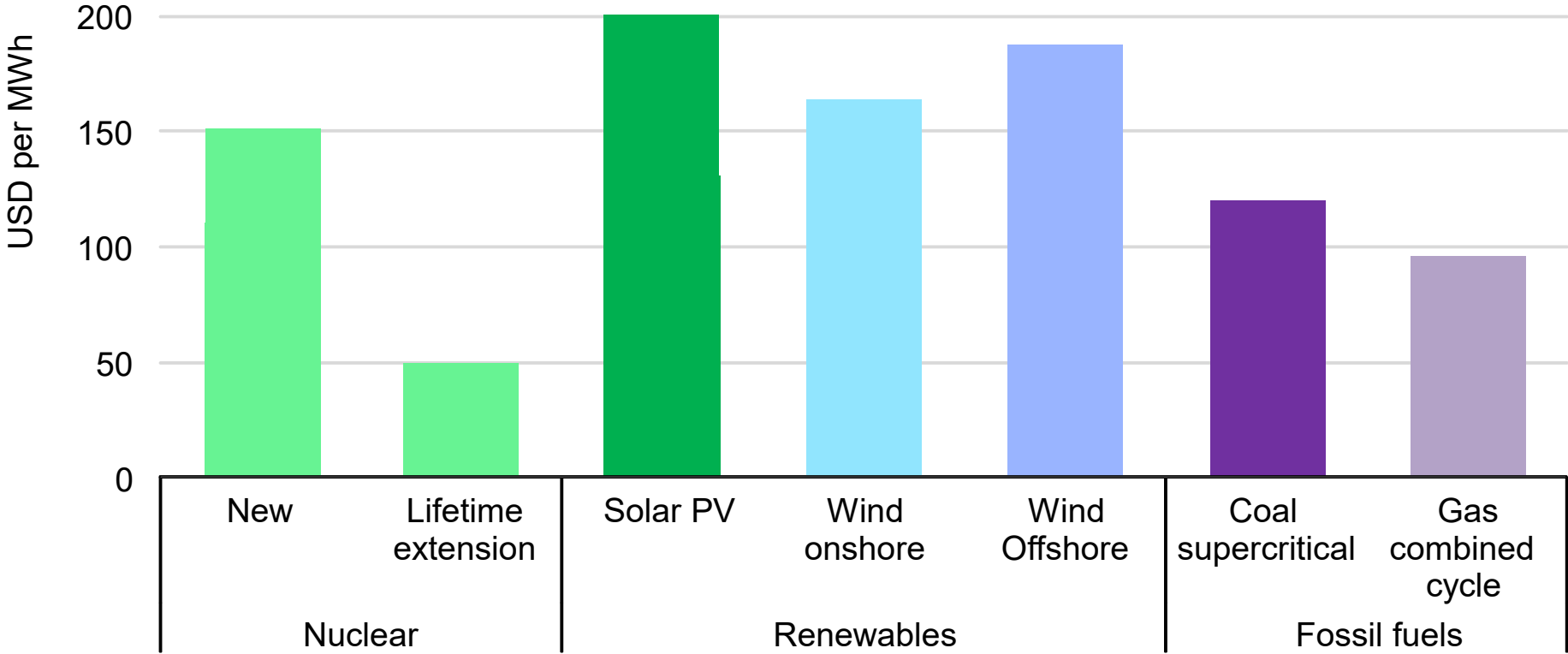
**Without additional lifetime extensions or new projects, nuclear capacity in advanced economies would decline by two-thirds by 2040**



# Nuclear lifetime extensions provide cheap clean electricity



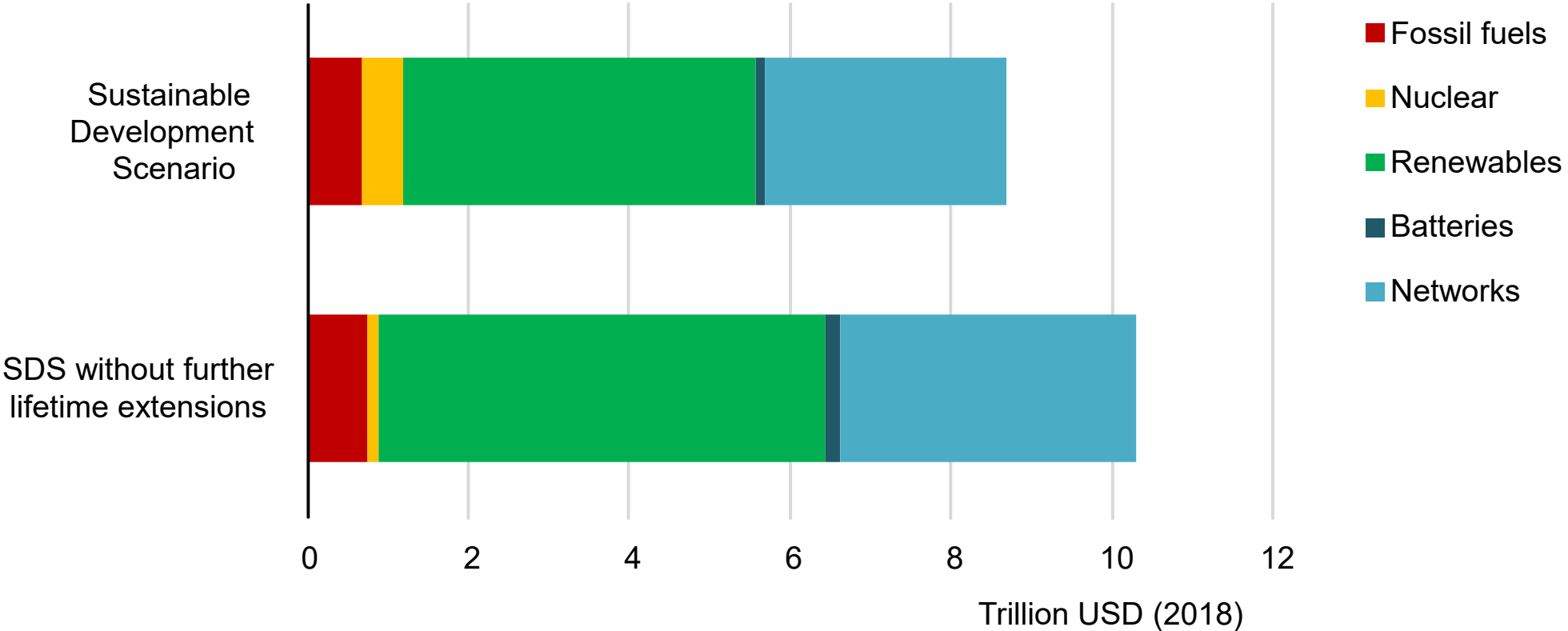
Levelised cost of electricity (LCOE) in Japan by technology in 2018



**Nuclear lifetime extensions are cost-competitive with new solar and wind, and provide a dispatchable source of clean electricity**

# Nuclear power is part of a cost-effective clean energy transition

Power sector investment needs in advanced economies on a sustainable energy pathway to 2040



**Electricity investment needs to increase to lead clean energy transitions without nuclear complementing renewables, total investment rises by more than 15%.**

# Summary

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- The path to decarbonising the global energy system starts by decarbonising the power system.
- Existing technologies need to be fully mobilized for immediate emission reductions by 2030.
- The falling costs of clean energy technologies, including solar PV, wind power and batteries, set the stage to reshape electricity supply.
- The remaining operating life of existing nuclear plants will affect how quickly power systems can decarbonise.
- Diverse low carbon technologies, efficiency, renewables, CCUS, low carbon fuels including hydrogen, ammonia and other synthetic fuels, and nuclear are all needed for secure clean energy transitions.

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