

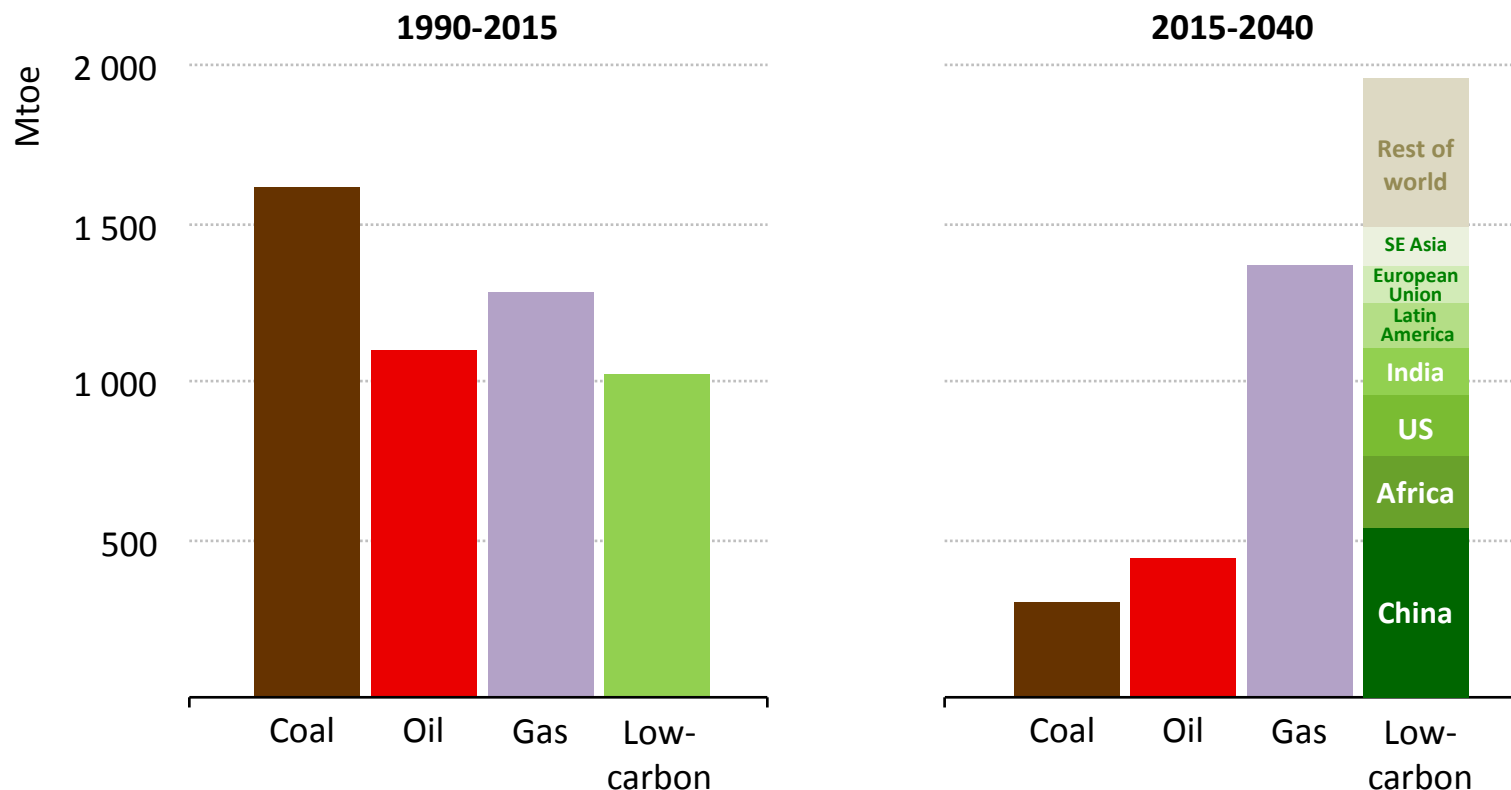
World Energy Outlook 2016

**Third IEA–IEF–OPEC Symposium
on Gas and Coal Market Outlooks**

Tim Gould, IEA

A new 'fuel' in pole position

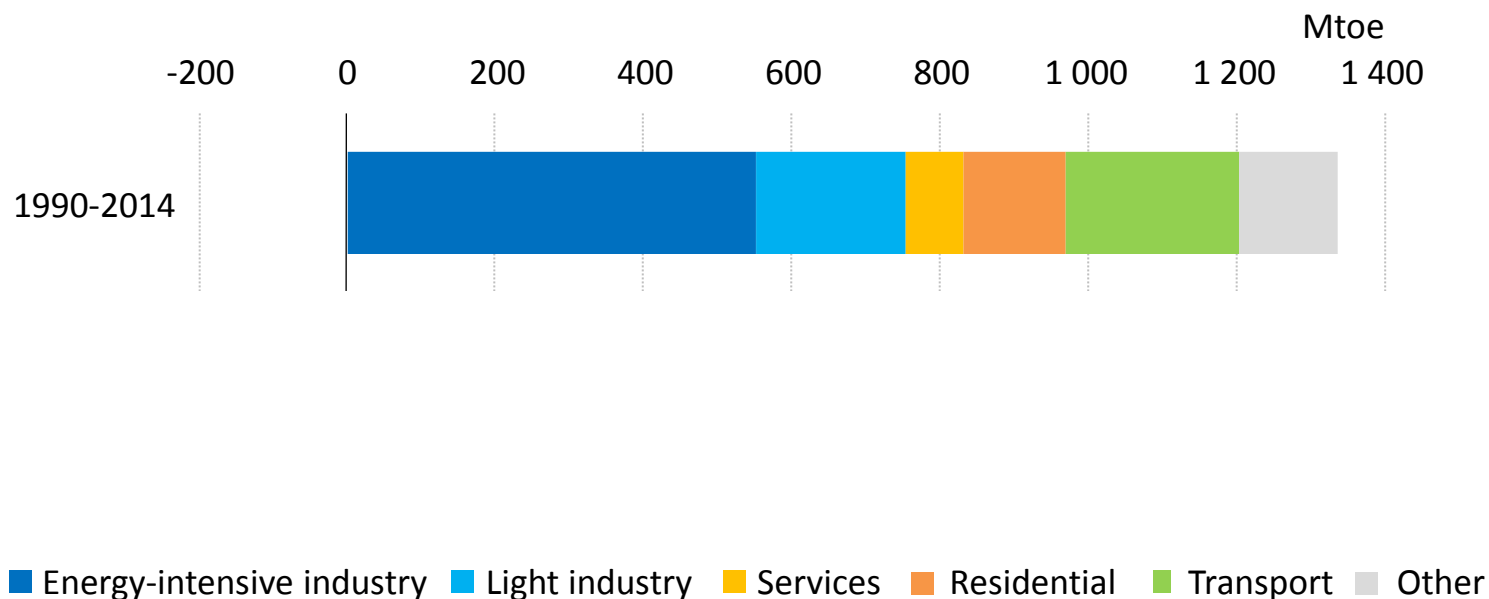
Change in global primary energy demand



Low-carbon fuels & technologies, mostly renewables, supply nearly half of the increase in energy demand to 2040

China's transition has a major impact on global trends

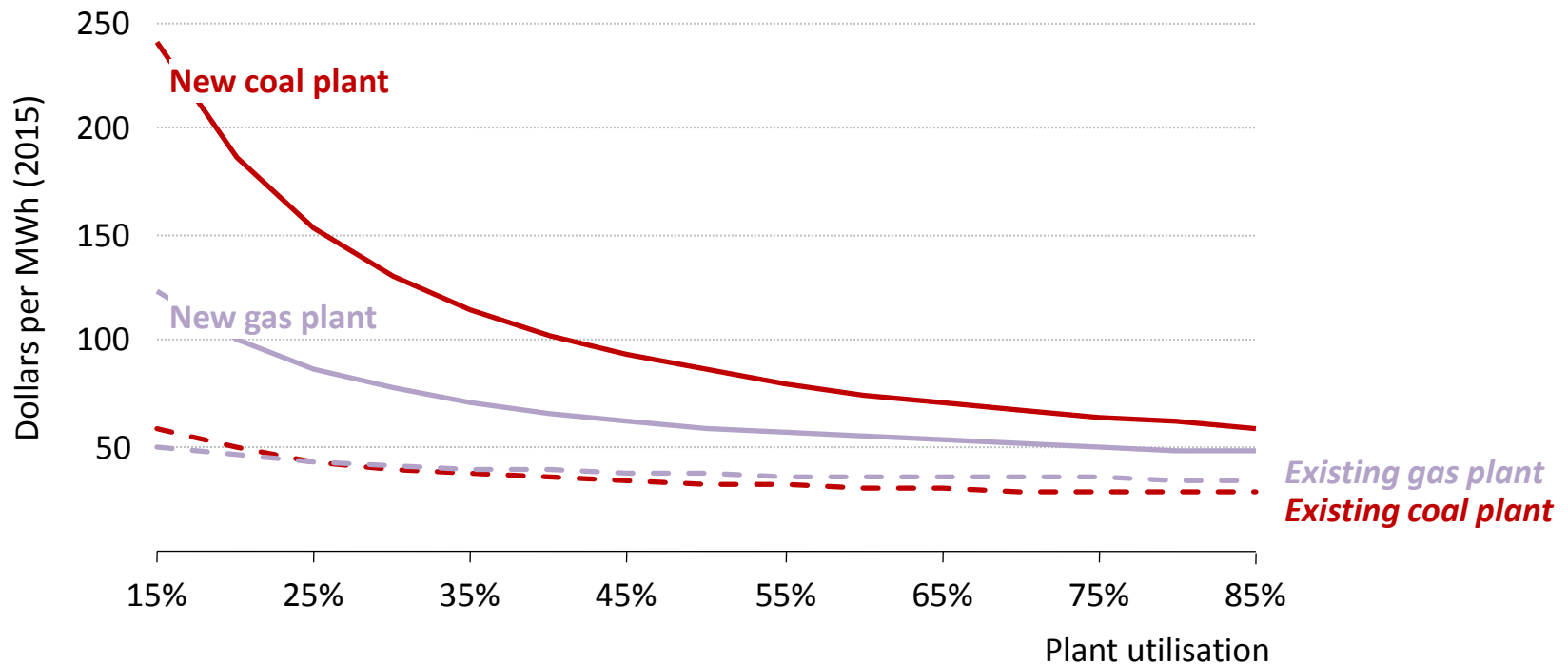
Change in total final energy consumption in China



China's energy-intensive industries are no longer the spur for future growth; the resulting fall in coal demand makes way for a strong rise in electricity & gas use

Gas is well placed in the US power sector

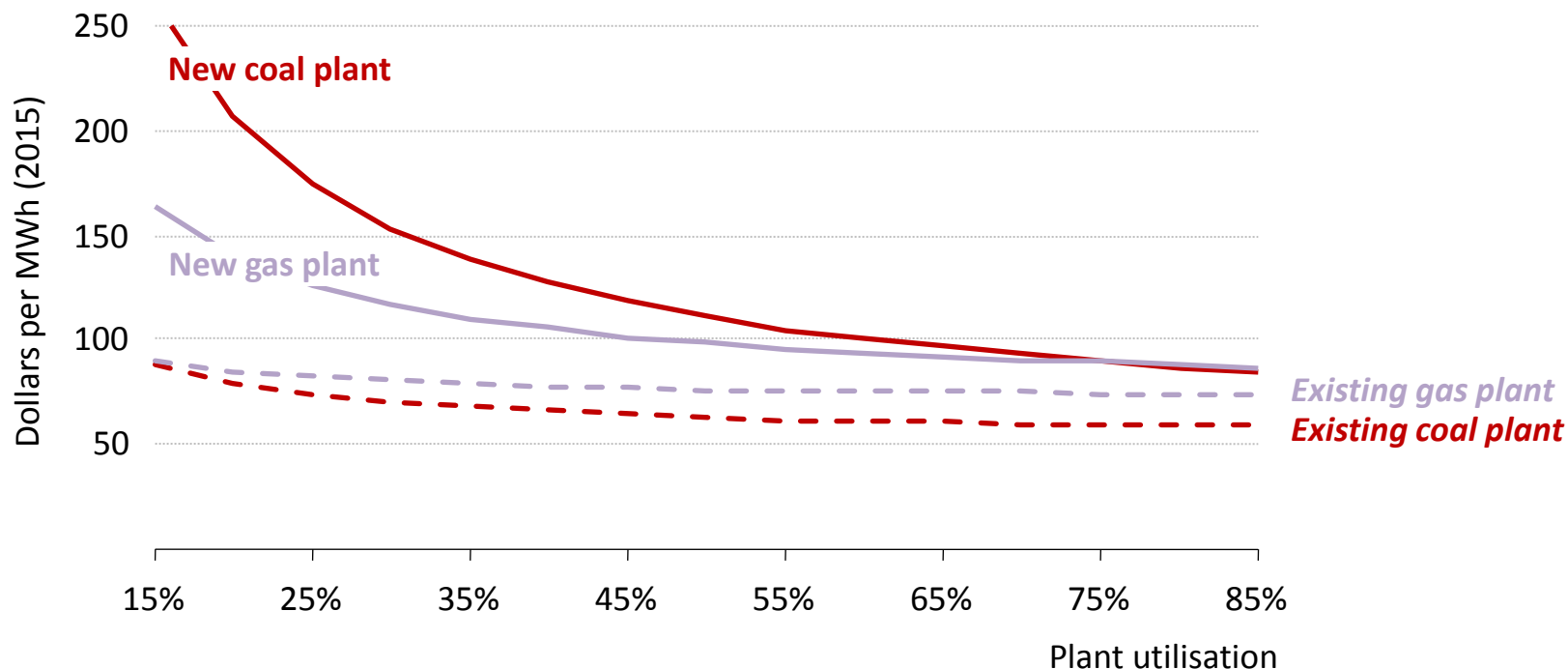
Levelised cost of electricity generation for existing and new coal and gas plant in the United States, 2025



New CCGTs beat new coal plants on a commercial basis in the United States even in baseload generation

.. but the picture changes in markets where gas is imported

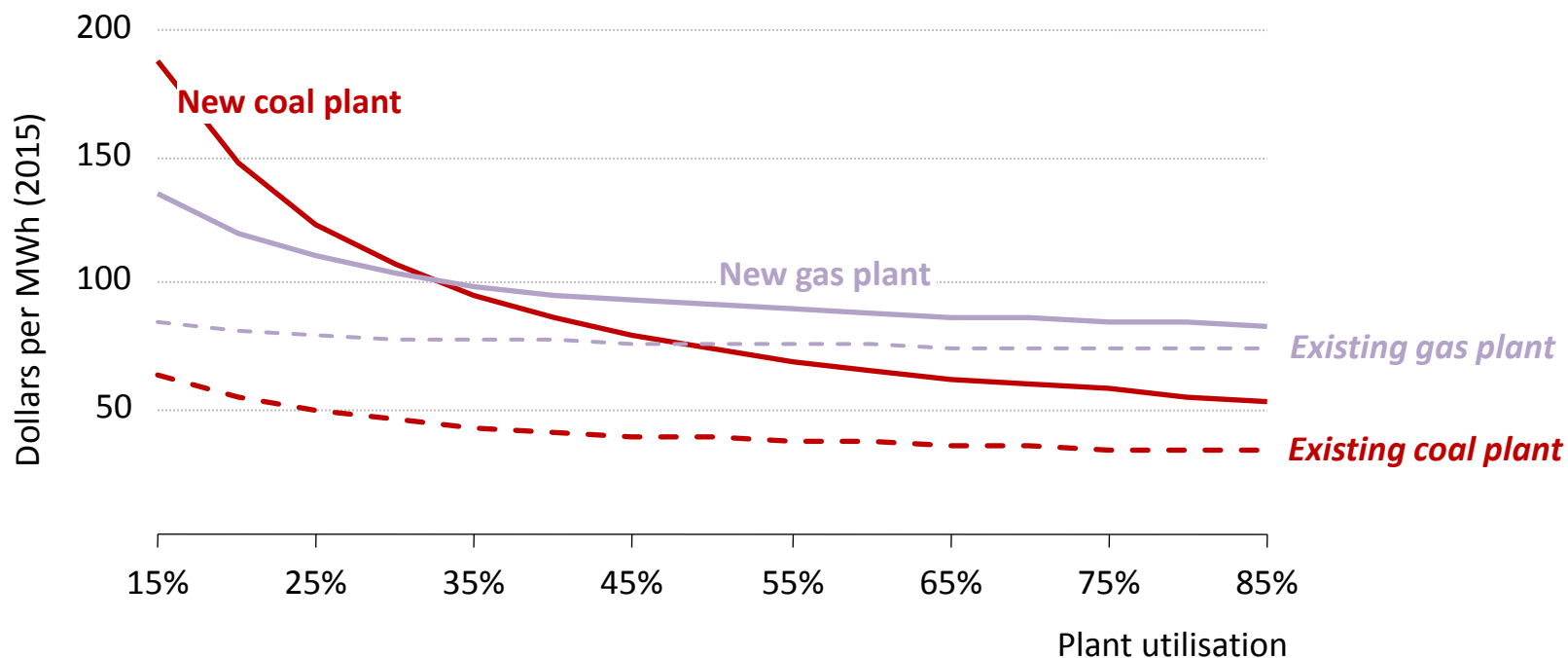
Levelised cost of electricity generation for existing and new coal and gas plant in the European Union, 2025



The commercial case for coal-to-gas switching in power generation is not self-evident in the European Union

.. and coal is a very tough competitor across much of Asia

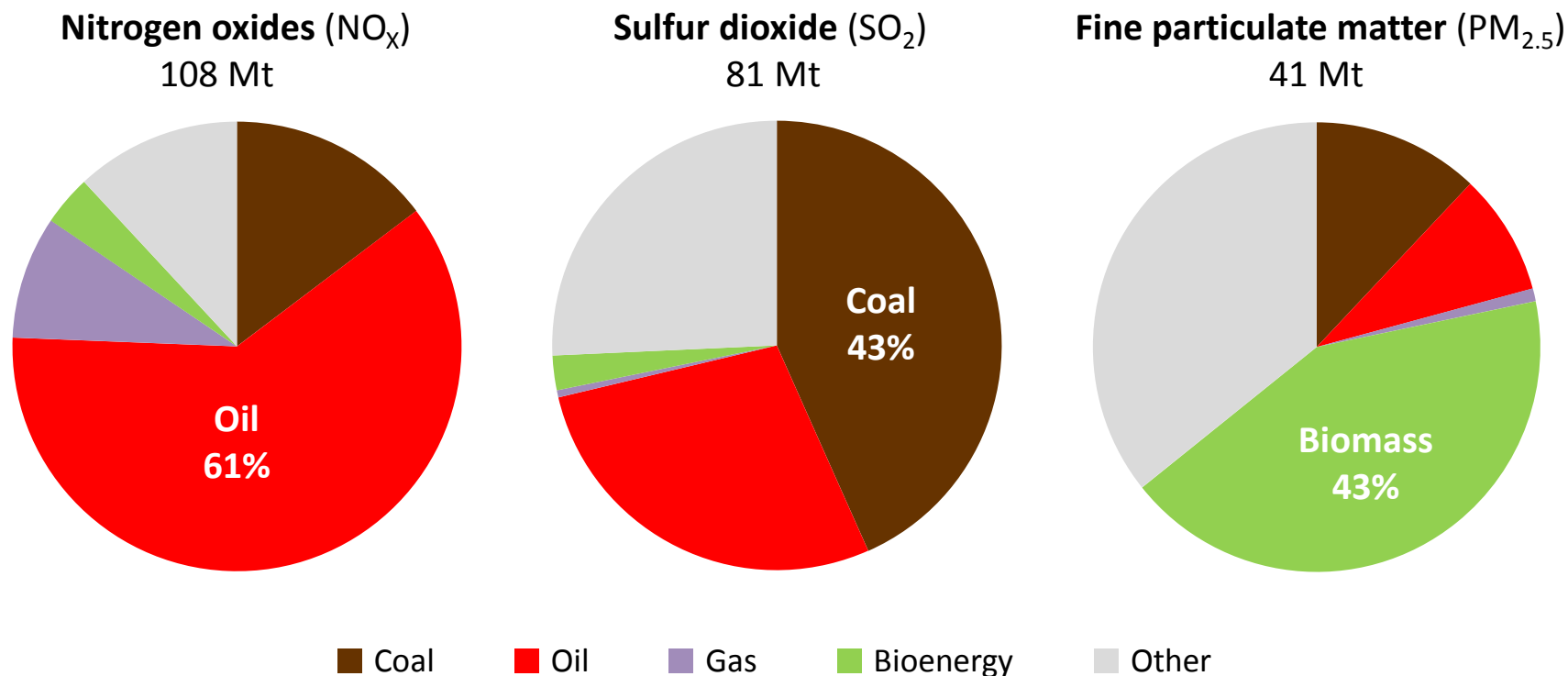
Levelised cost of electricity generation for existing and new coal and gas plant in Asia, 2025



In most Asian gas-importing countries, the economic case for gas-for-power is limited to a role in meeting peaks in demand

Air pollution is an energy problem, & an opportunity for natural gas

Pollutant emissions, 2015

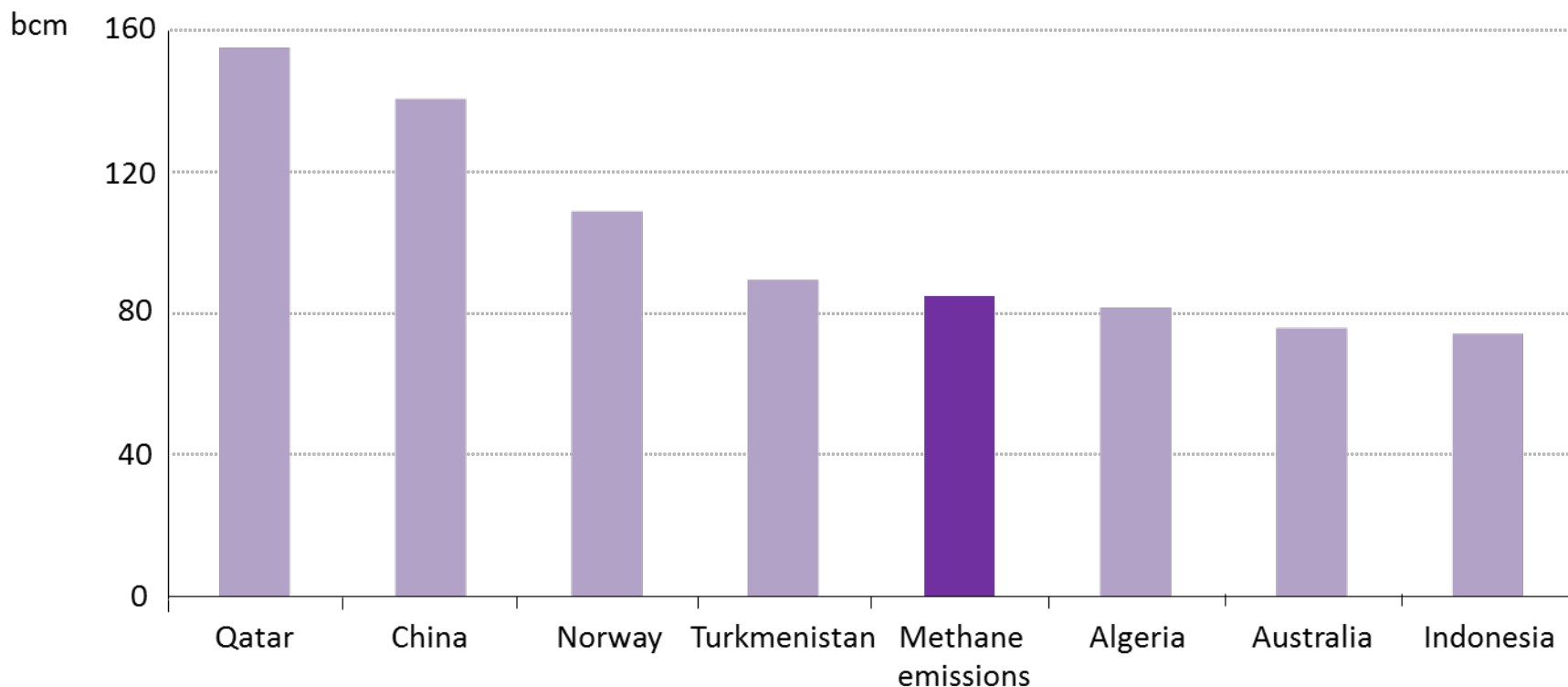


Source: WEO Special Report: Energy and Air Pollution

Energy is the single most important cause of emissions of all the main pollutants, boosting the case for gas in Asia's fast-growing urban & industrial centres

But tackling methane emissions is vital to underpin the sustainable case for gas

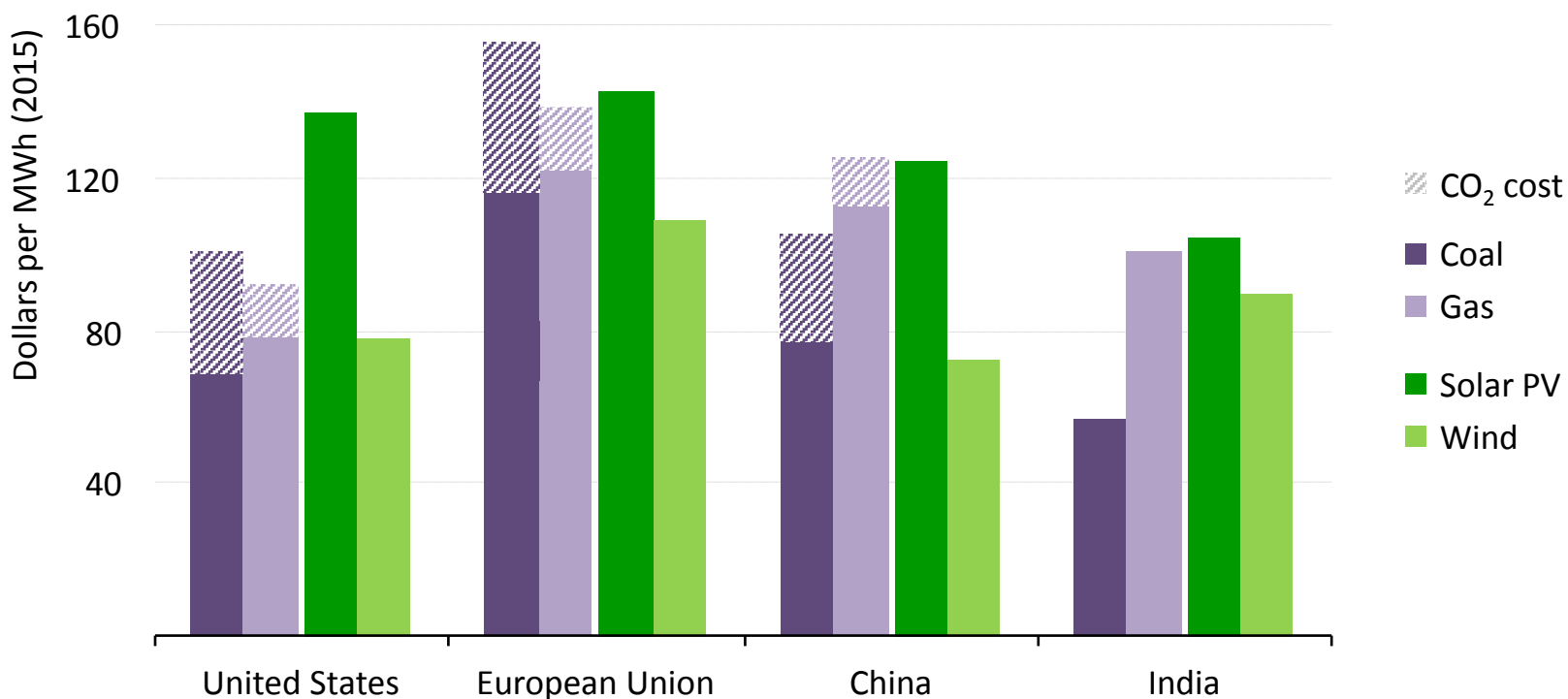
Global oil & gas sector methane emissions and gas production



Methane is a potent greenhouse gas; taking action to reduce these emissions is a major opportunity to tackle near-term warming alongside long-term reductions in CO₂

Renewables are increasingly competitive in all markets

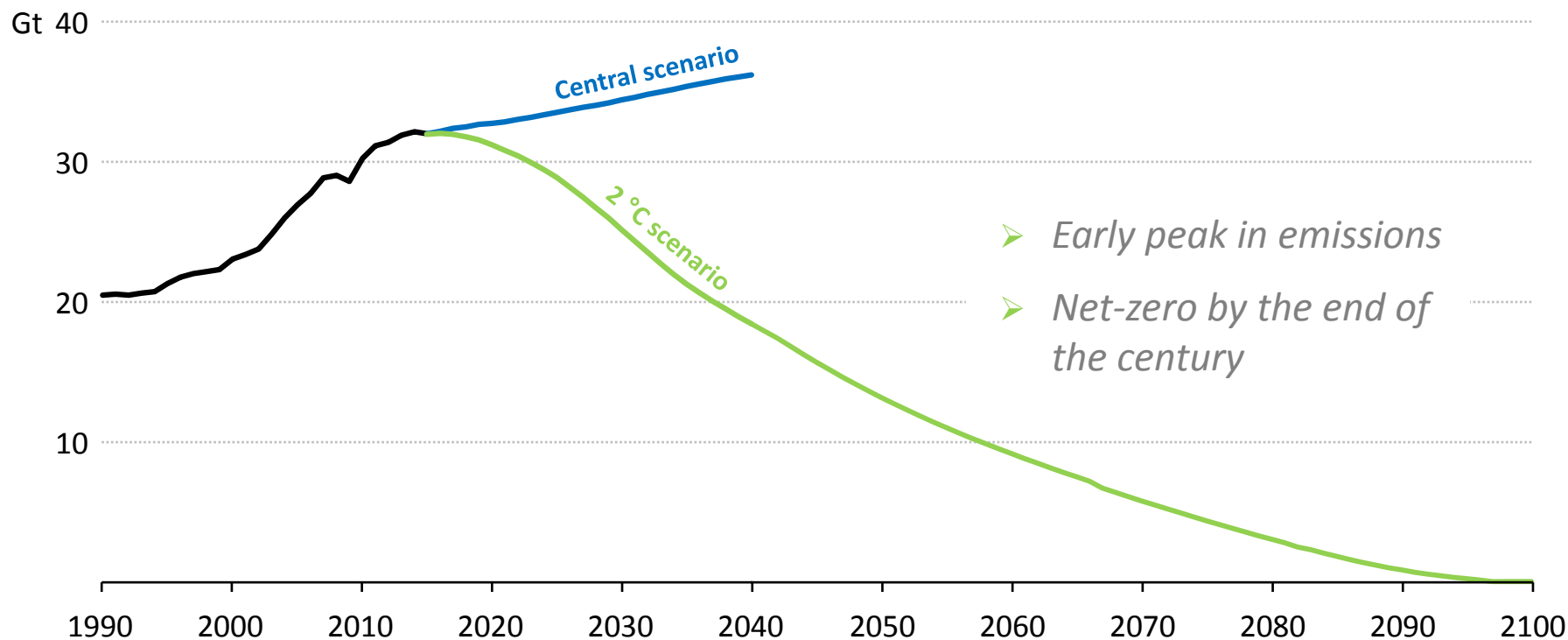
Levelised cost of electricity by selected technologies, 2040



Falling costs and rising electricity prices lead more renewables to be competitive; by 2040, nearly half of wind and solar PV do not require any subsidies

Still a long way from a pathway to energy sector decarbonisation

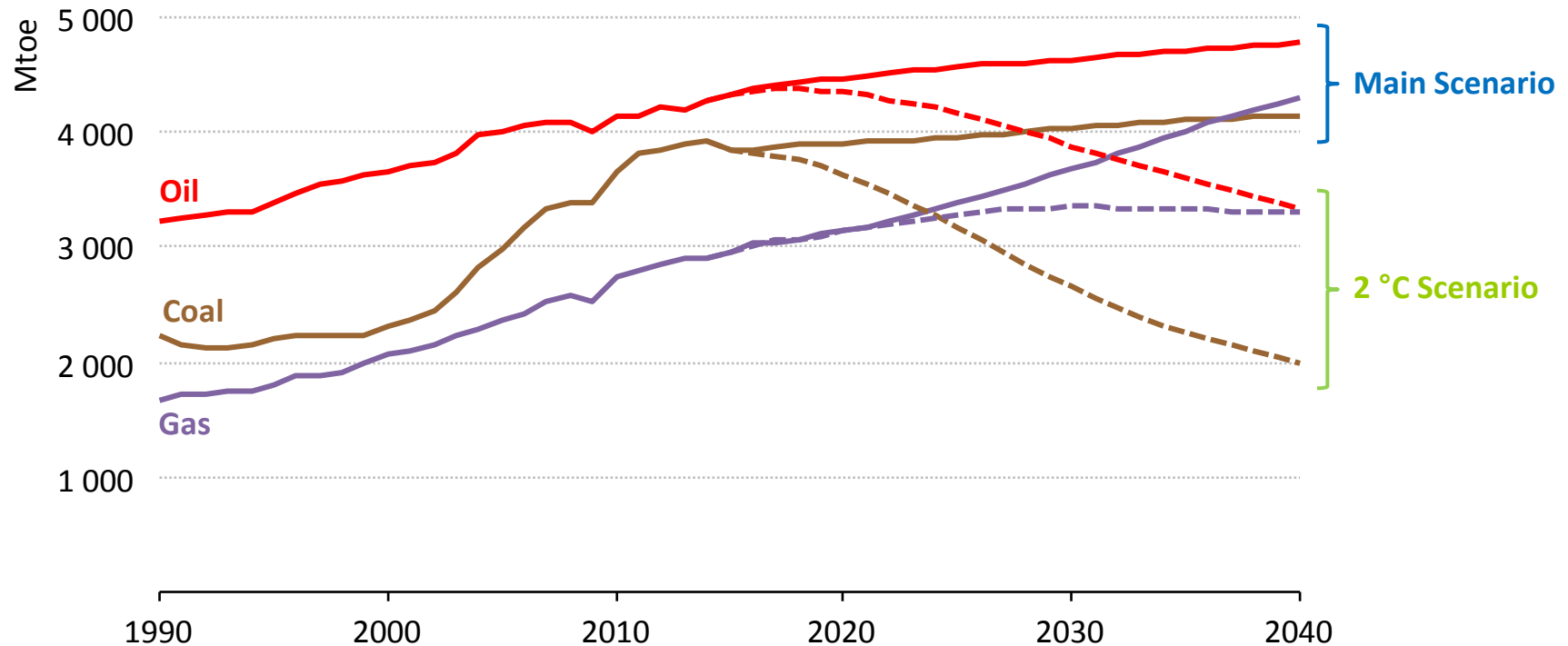
Energy-sector CO₂ emissions



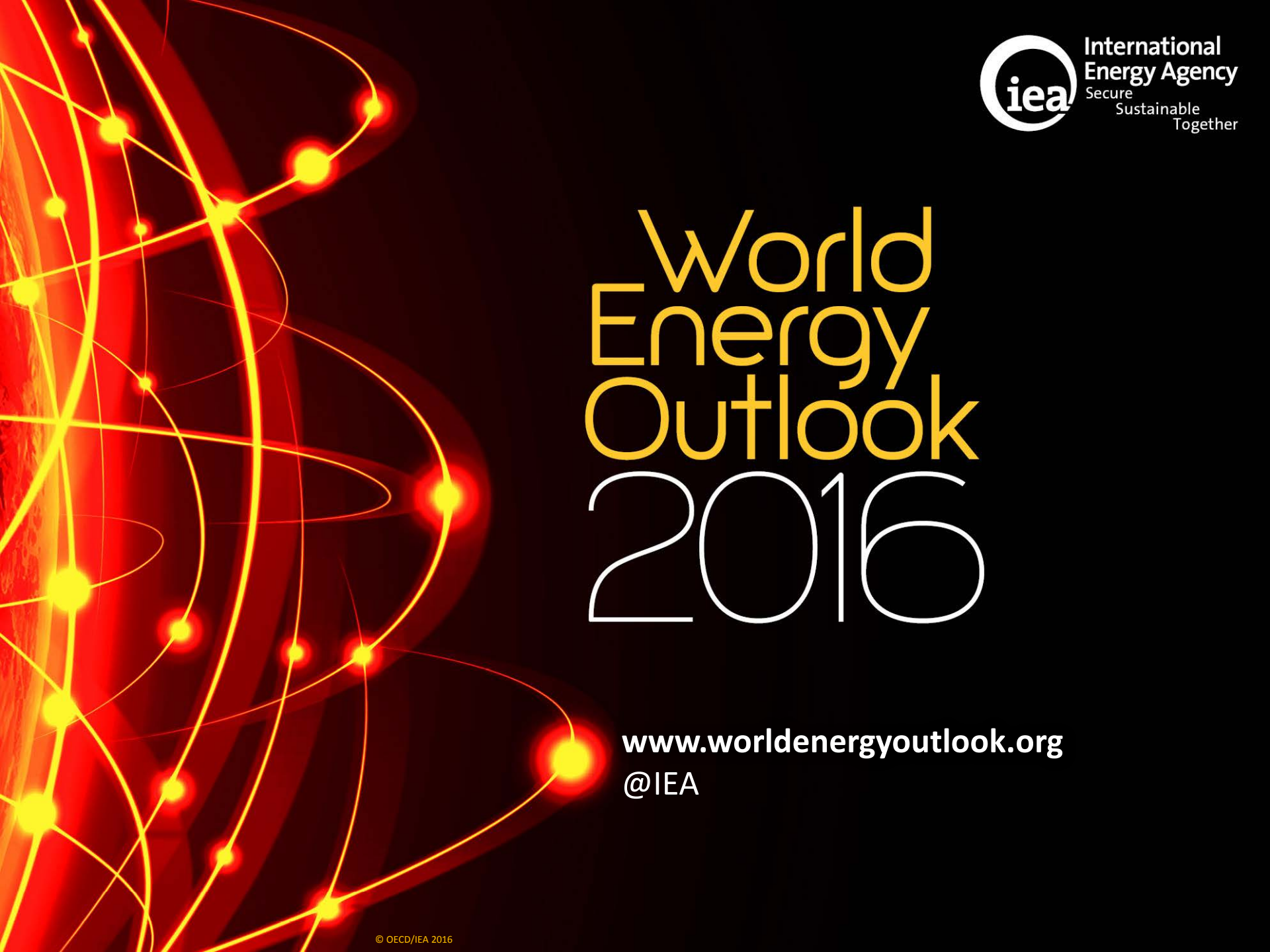
Current pledges fall short of limiting the temperature increase to below 2 °C; raising ambition to 1.5 °C is uncharted territory

Fossil fuels in a decarbonising system

Energy demand by fuel & scenario



***Coal is hit hardest in a 2 degree scenario & oil demand peaks before 2020:
only consumption of natural gas ends up higher than today***



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