

World Energy Outlook 2014

Maria van der Hoeven
Executive Director
International Energy Agency
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Signs of stress in the global energy system

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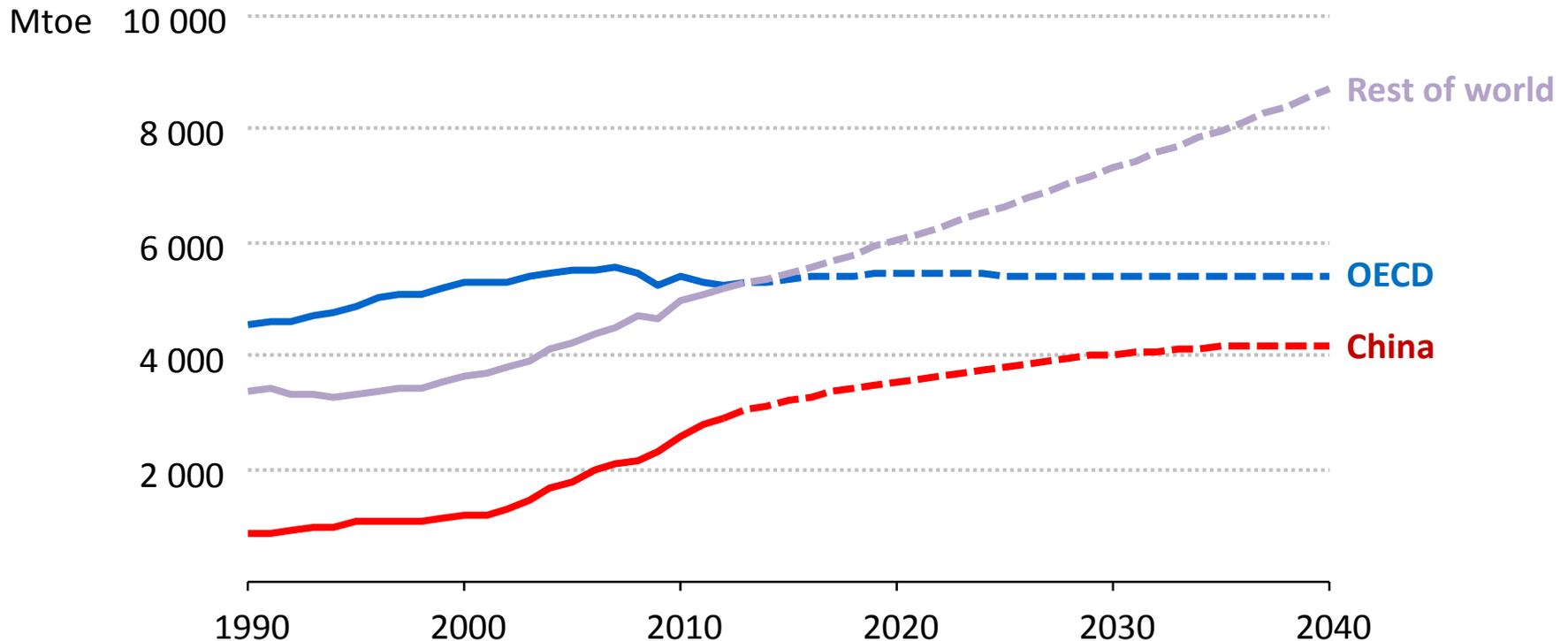
- **Current calm in markets should not disguise difficult road ahead**
 - *Turmoil in the Middle East raises doubts over future oil balance*
 - *Resurgent debate over the security of gas supply to Europe*

- **Mixed signals in run-up to crucial climate summit in Paris in 2015**
 - *Global CO₂ emissions still rising, with most emitters on an upward path*
 - *At \$550 billion, fossil fuel subsidies over four-times those to renewables*
 - *Increasing emphasis on energy efficiency starting to bring results*

- **Will change in global energy be led by policies, or driven by events?**

Changing dynamics of global demand

Energy demand by region

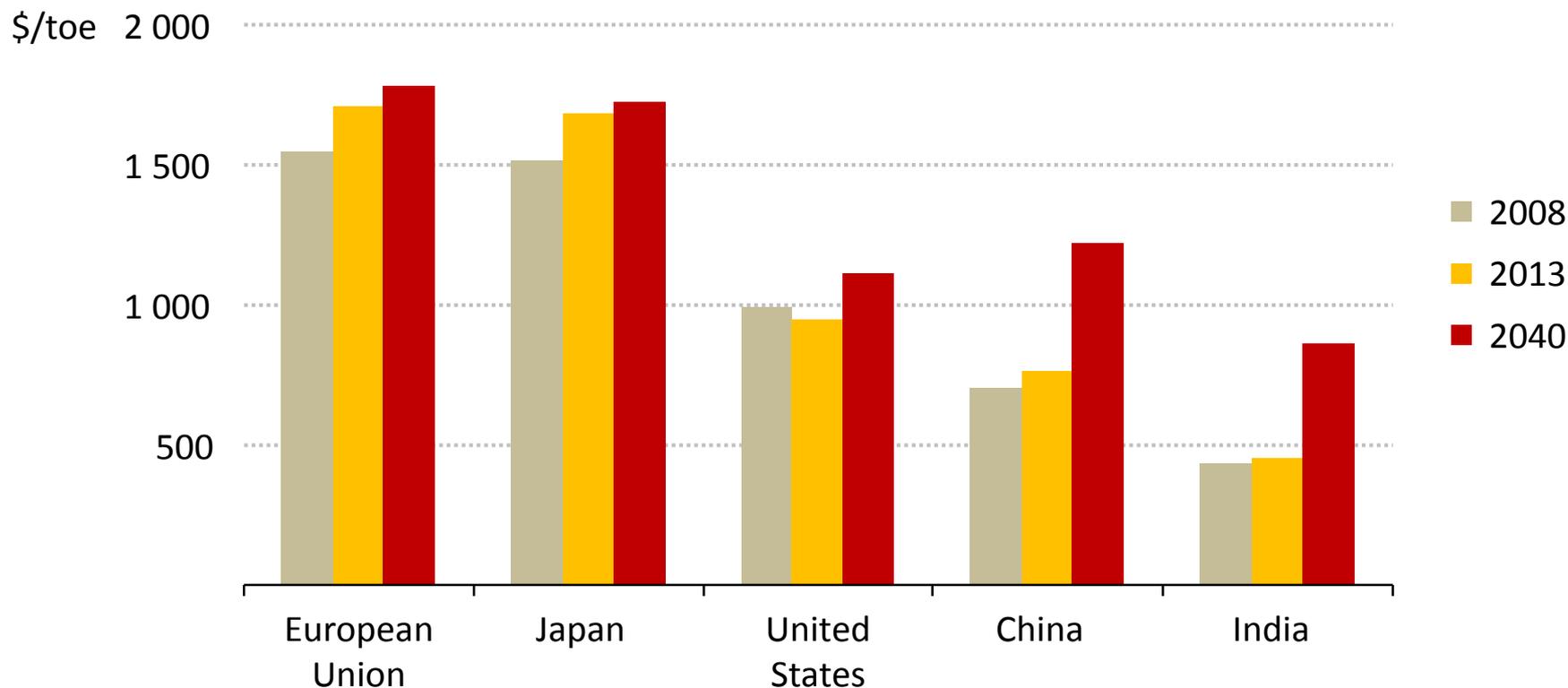


As China slows, then India, Southeast Asia, the Middle East and parts of Africa & Latin America take over as the engines of global energy demand growth.

The EU needs to ensure it pursues cost-efficient energy and climate policies

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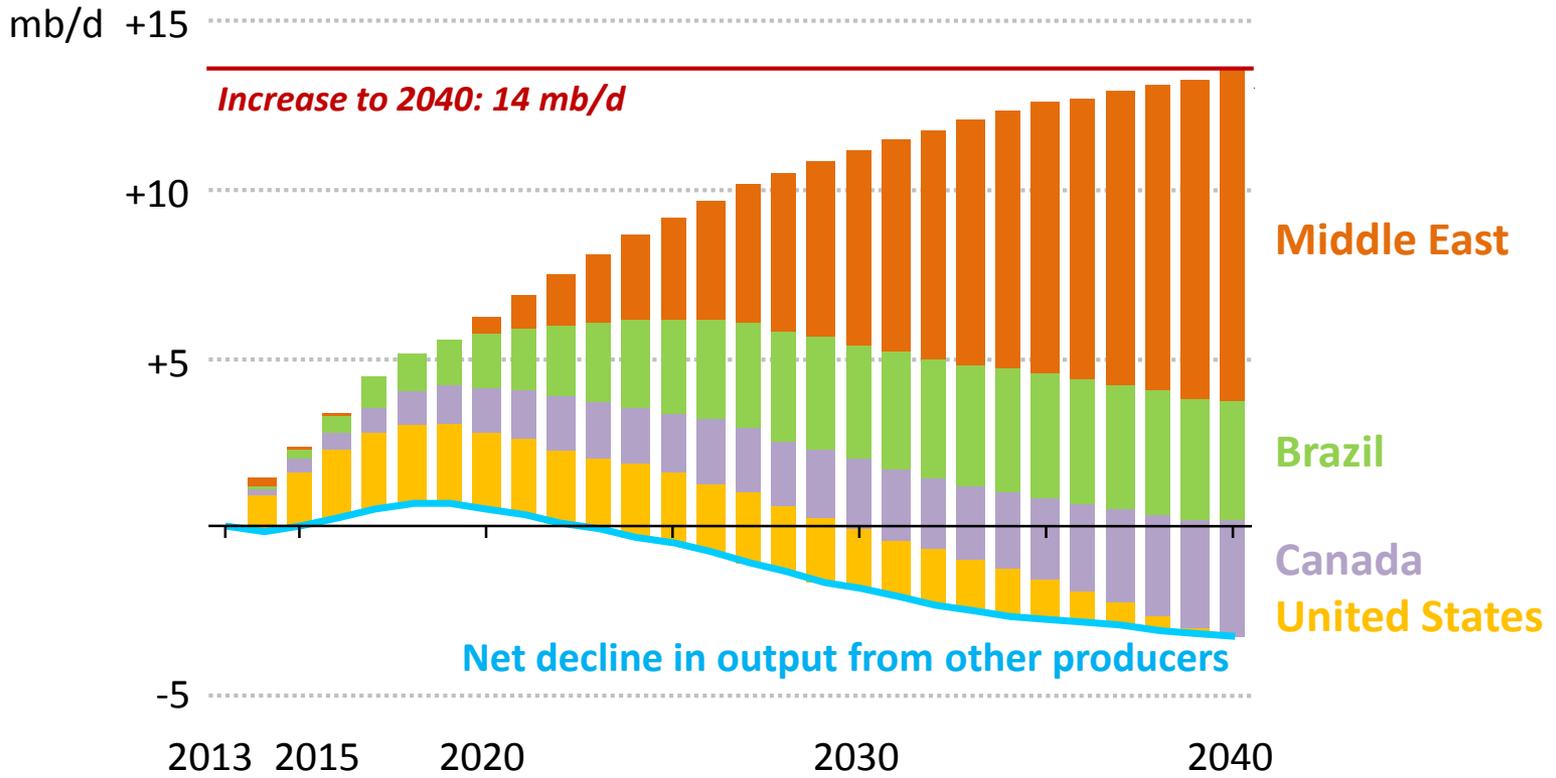
Weighted average cost of energy paid by consumers



Economies face higher costs, but the pace of change varies: China overtakes the US, costs double in India & remain high in the European Union & Japan

Instability in the Middle East a major risk to oil markets

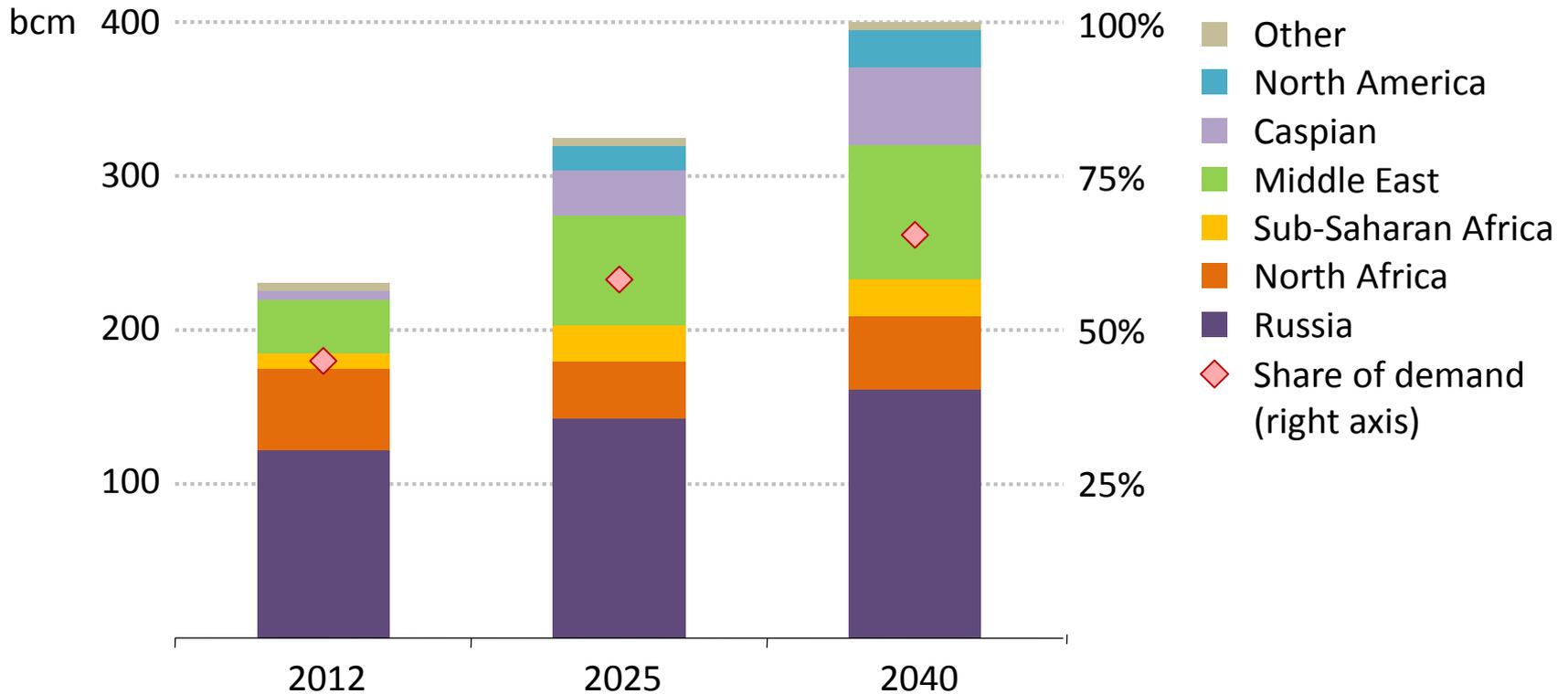
Oil production growth in United States, Canada, Brazil & the Middle East



The short-term picture of a well-supplied market should not obscure future risks as demand rises to 104 mb/d & reliance grows on Iraq & the rest of the Middle East

Europe's gas supply remains dependent on Russia

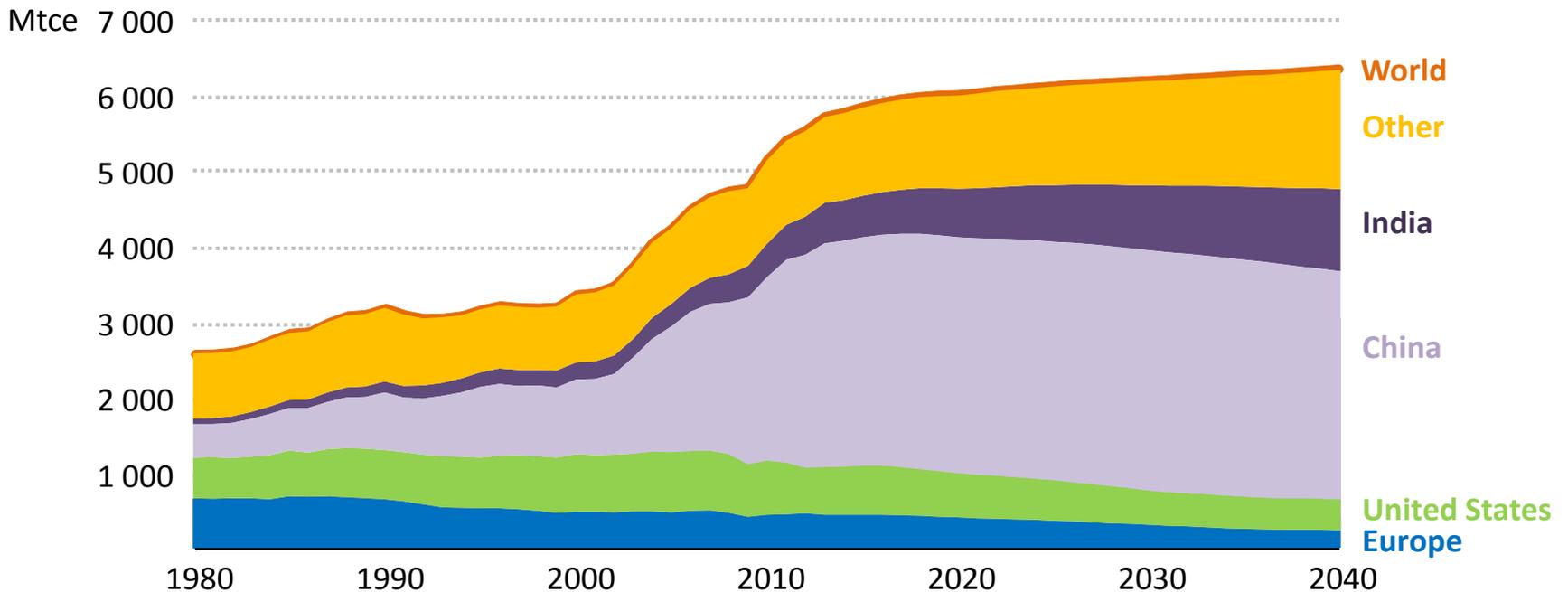
Natural gas imports by source to OECD Europe



Gas imports to Europe grow to two-thirds of demand in 2040; more supplies come from the southern gas corridor and LNG, but Russia remains dominant

Global coal demand leveling off

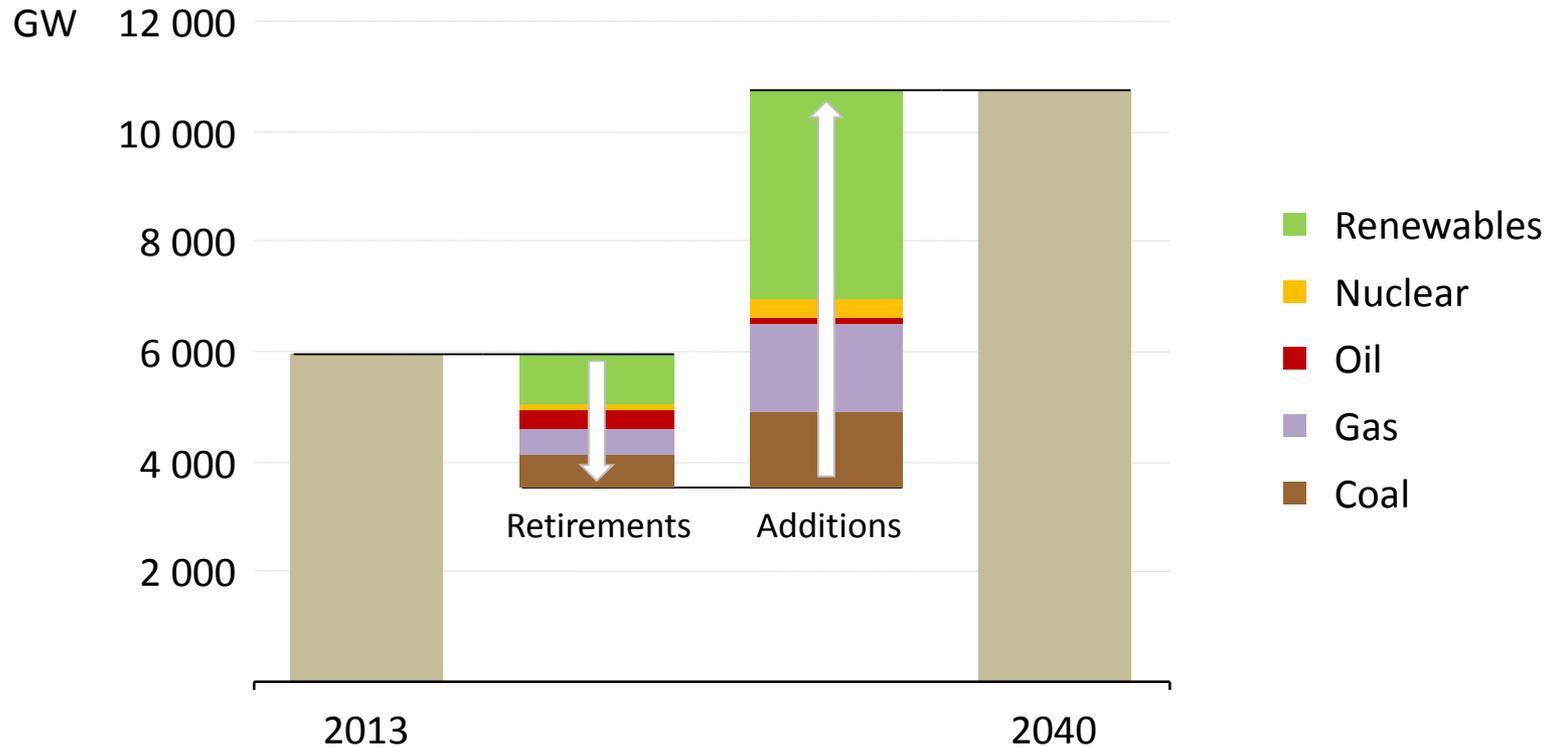
Global coal demand by key region



Global coal demand growth slows rapidly due to more stringent environmental policies, underlining the importance of high-efficiency plant & CCS to coal's future

Retirements add to the investment challenge in the power sector

Power capacity by source, 2013-2040

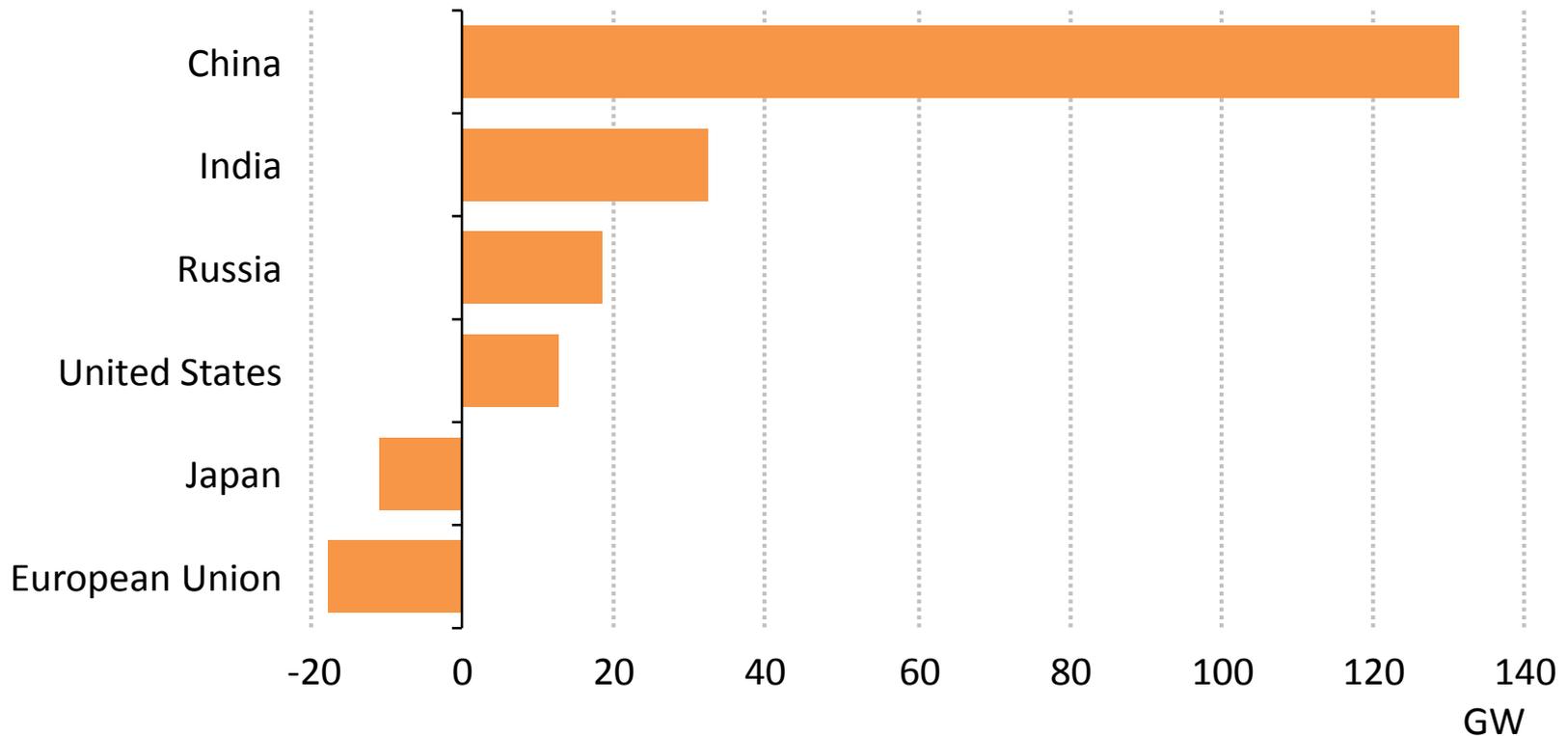


Despite limited demand growth, OECD countries account for one-third of capacity additions – to compensate for retirements & to decarbonise

Nuclear capacity grows by 60%, but no nuclear renaissance in sight

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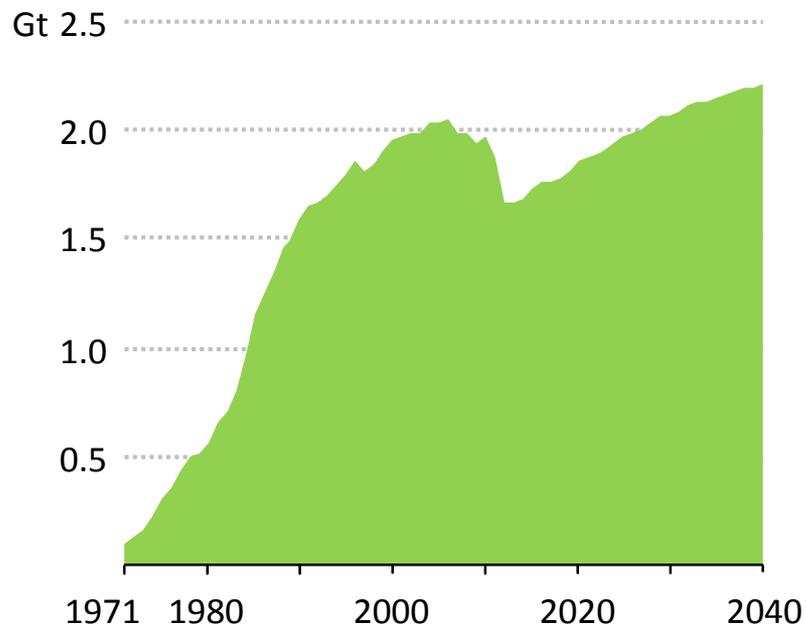
Net capacity change in key regions, 2013-2040



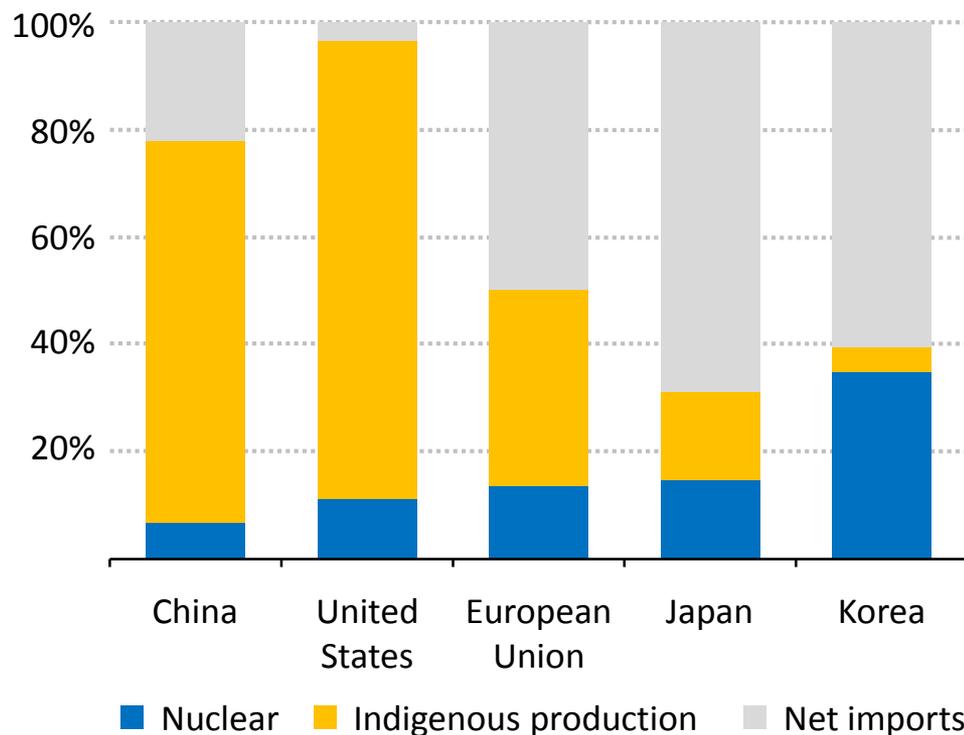
Capacity grows by 60% to 624 GW 2040, led by China, India, Korea & Russia; yet the share of nuclear in the global power mix remains well-below its historic peak

Nuclear power can play a role in CO₂ abatement & energy security

CO₂ emissions avoided annually by nuclear power 1971-2040



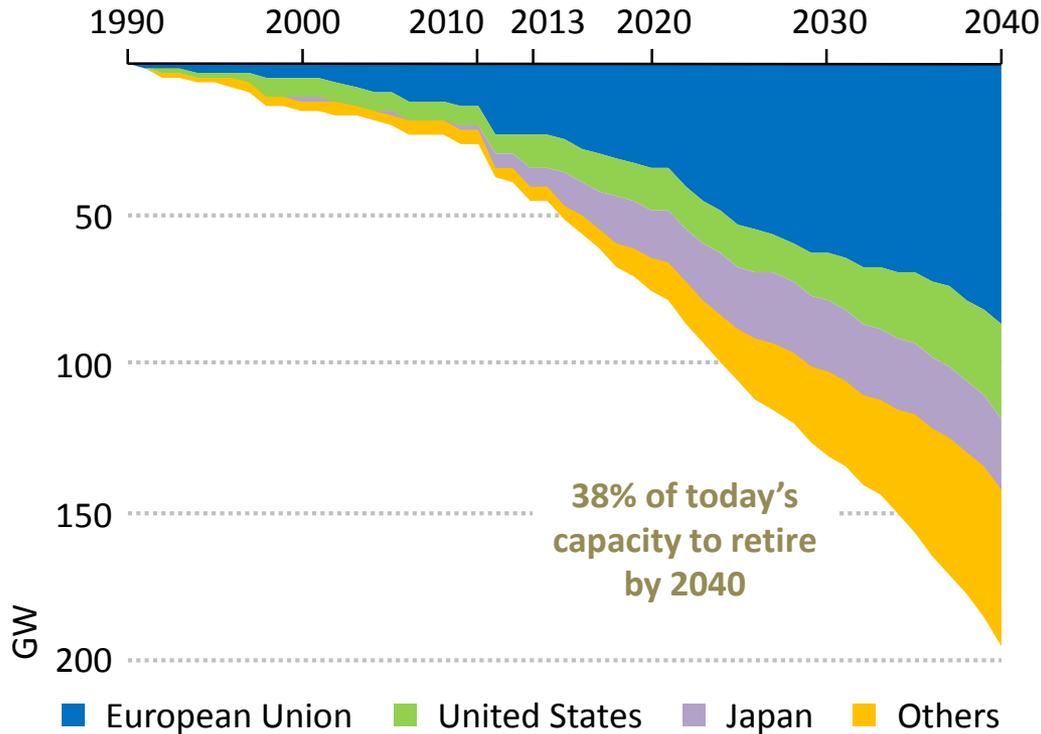
Share of energy demand met by domestic sources and nuclear power in 2040



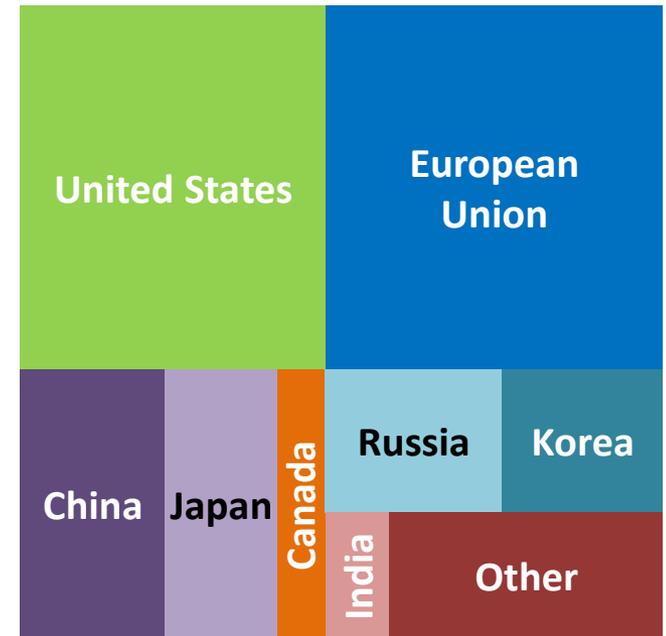
By 2040, an expanded nuclear fleet has saved almost 4 years of current CO₂ emissions & for some countries has improved energy security & balances of energy trade

Nuclear power: public concerns must be heard and addressed

Retirements of nuclear power capacity 1990-2040



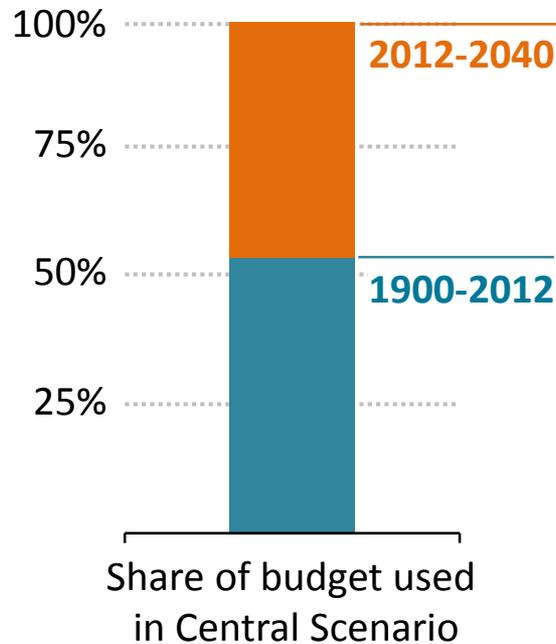
Spent nuclear fuel 1971-2040: 705 thousand tonnes



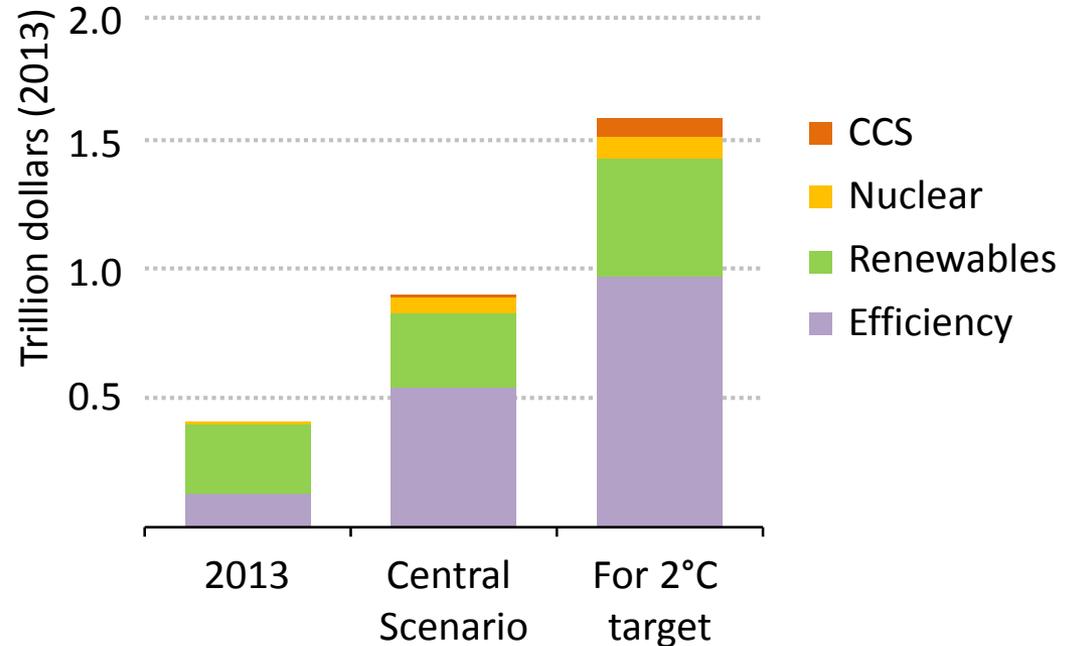
Key public concerns include plant operation, decommissioning & waste management; By 2040, almost 200 reactors are retired & the amount of spent fuel doubles

The 2 °C goal – last chance in Paris?

World CO₂ budget for 2 °C
~2300 Gt



Average annual low-carbon investment, 2014-2040

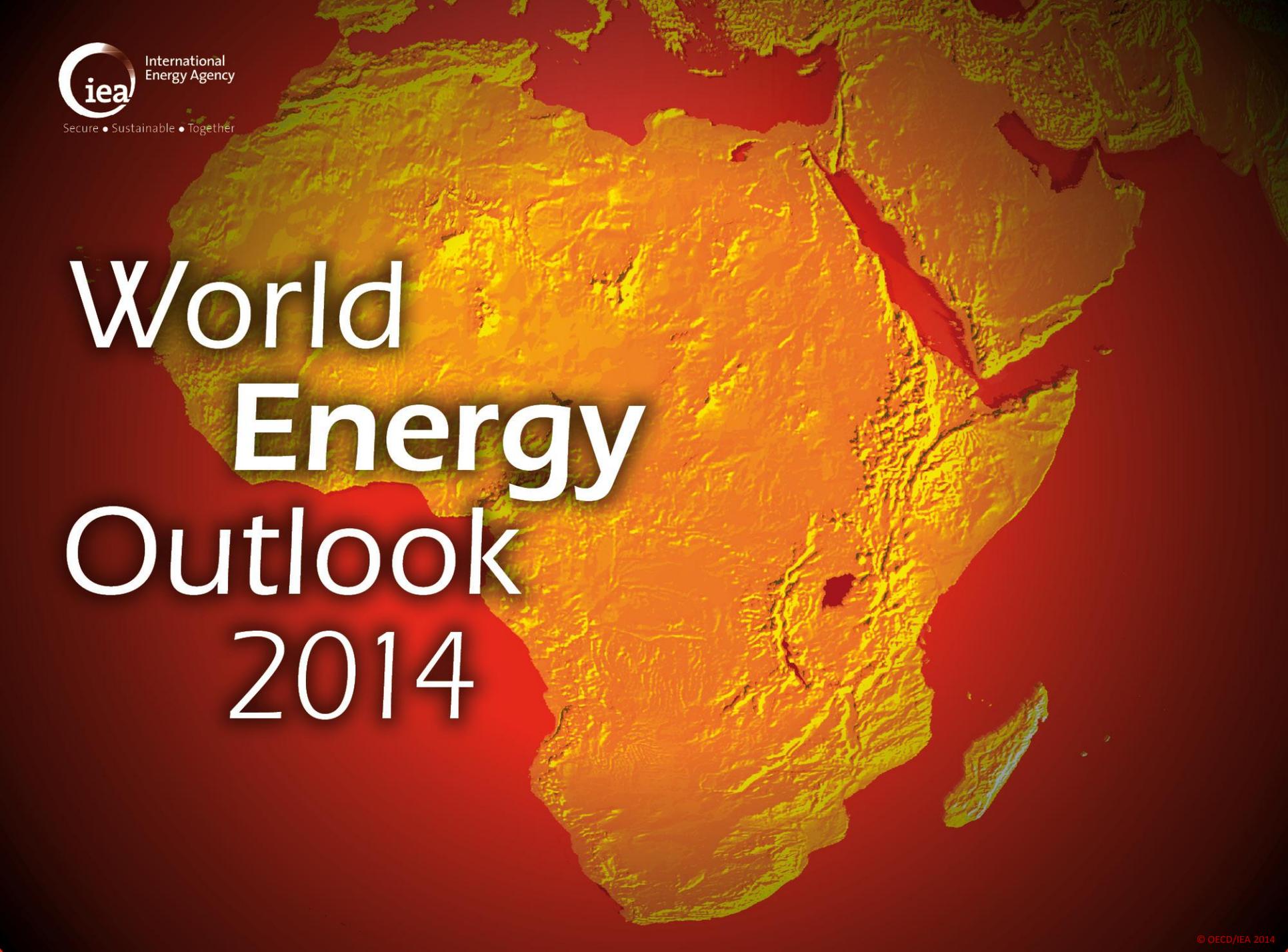


The entire global CO₂ budget to 2100 is used up by 2040 – Paris must send a strong signal for increasing low-carbon investment four times beyond current levels

Navigating a stormy energy future: implications for Central Europe

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- **Geopolitical & market uncertainties are set to propel energy security high up the energy agenda**
- **Without reform to power markets, the reliability of Europe's electricity supply is under threat**
- **Nuclear power can play a role in energy security & carbon abatement – but costs, financing & public concerns are key issues**
- **Without clear direction from Paris in 2015, the world is set for warming well beyond the 2 °C goal**
- **Policies for the medium- and long-term are essential to steer the energy system onto a safer course**



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