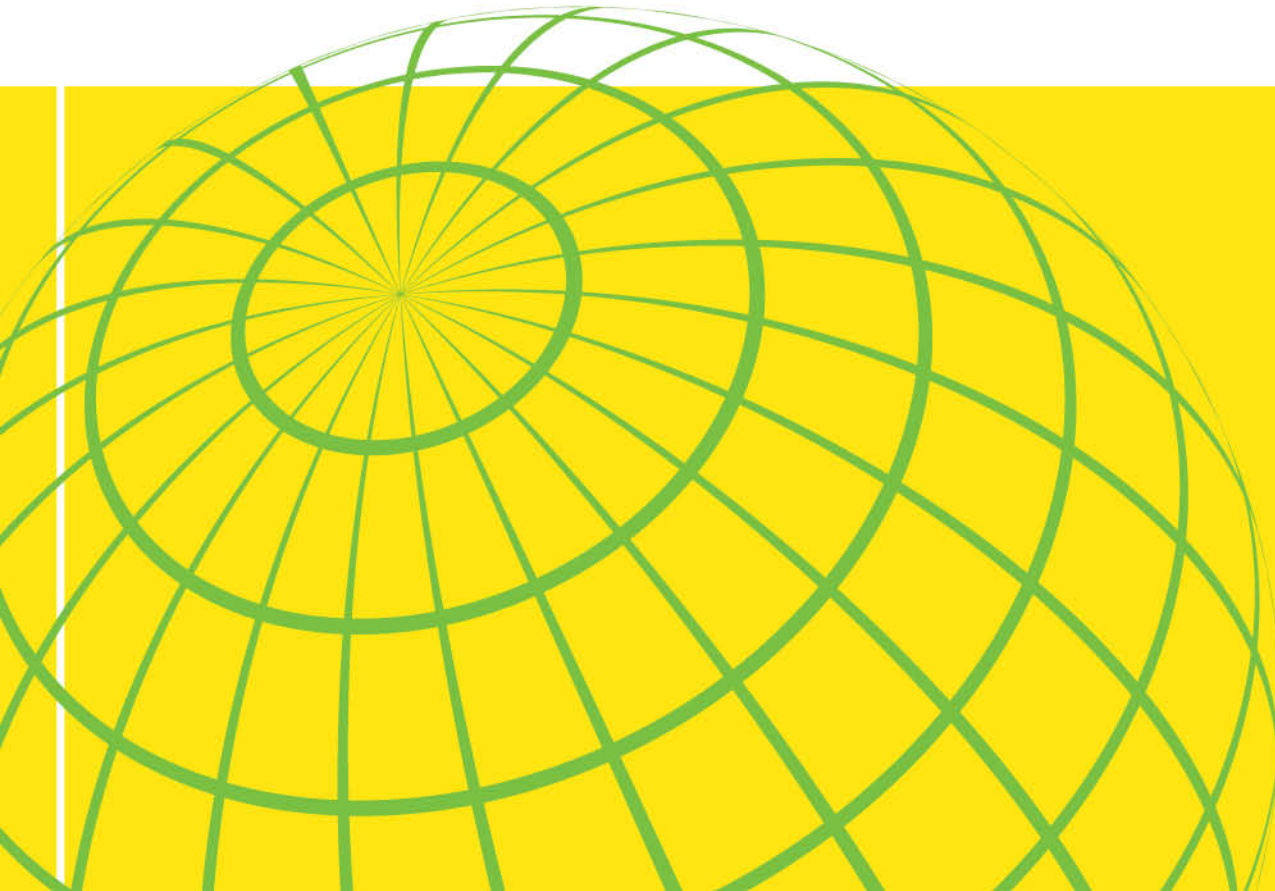


BP Energy Outlook 2030



Charles Cameron,
Head of Technology, BP Downstream
CONCAWE Symposium, Brussels. 25th February, 2013



Contents



	Page
Introduction	3
Global energy trends	5
Outlook 2030: Transport, CO ₂ emissions	11
Implications & Conclusions	14



Population, income and energy growth

Population

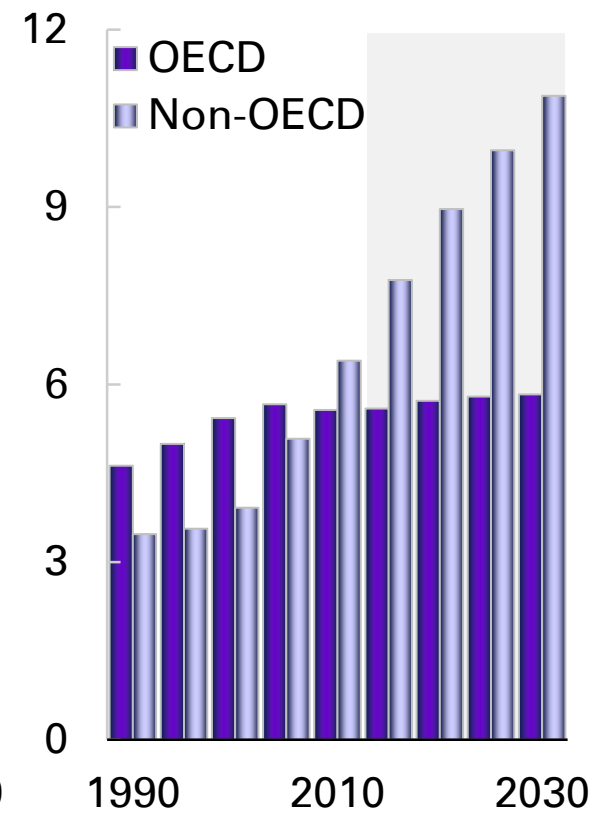
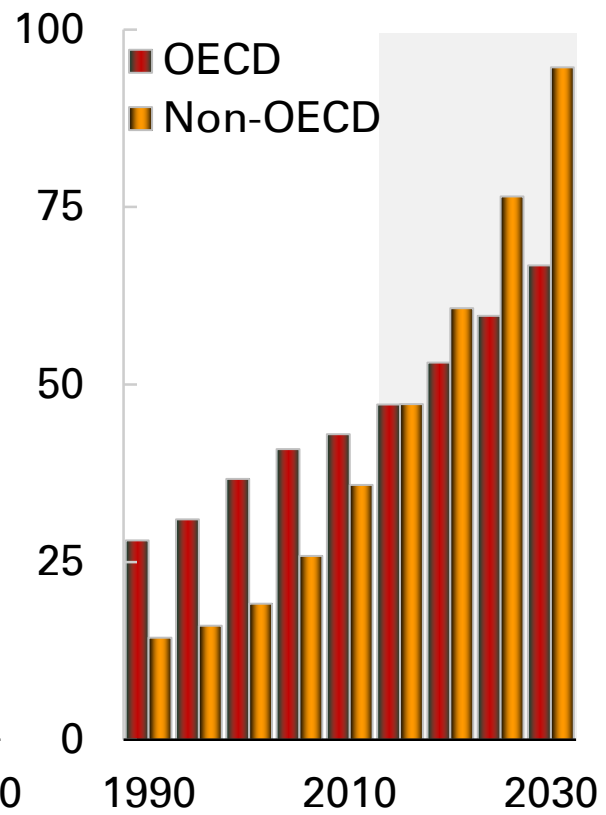
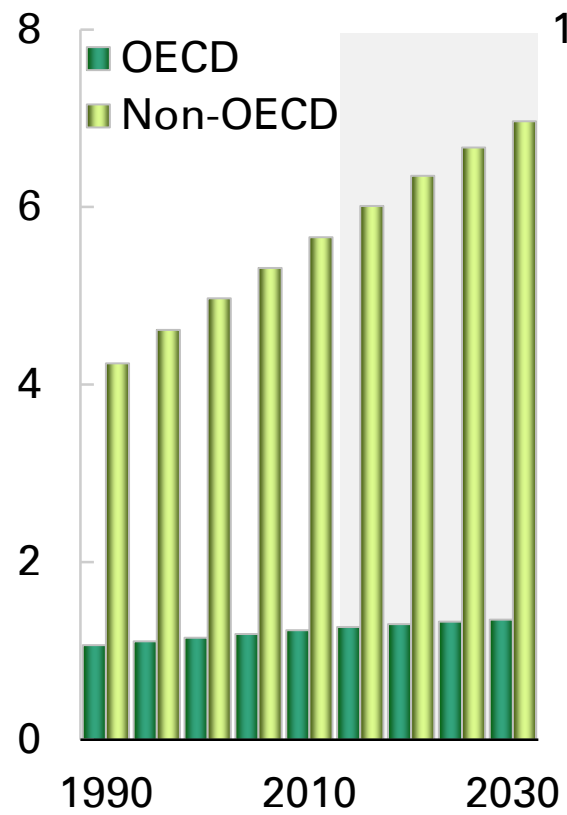
GDP

Primary energy

Billion

Trillion \$2011

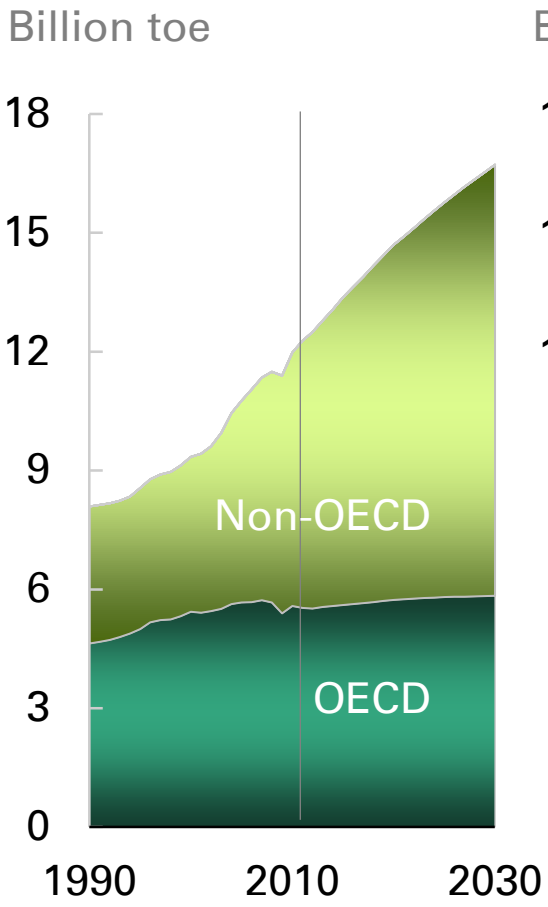
Billion toe



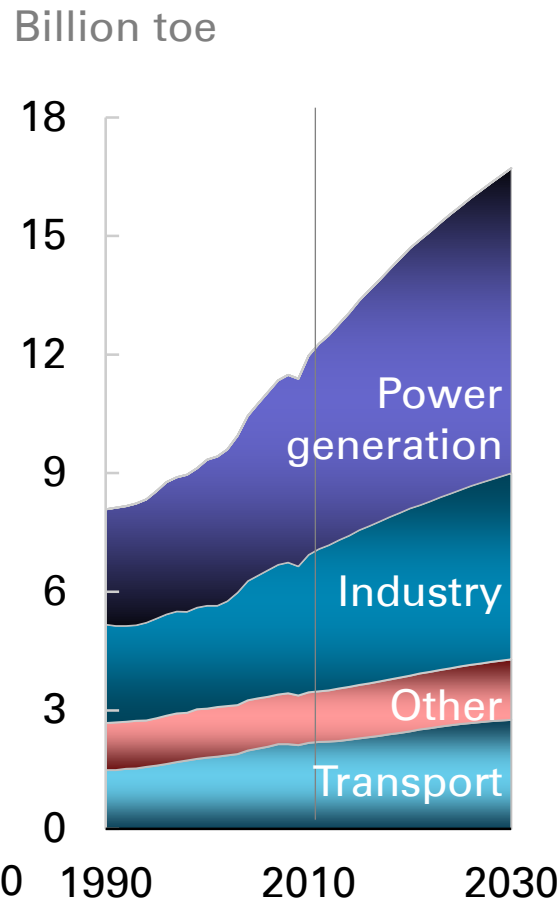


Industrialisation drives energy demand

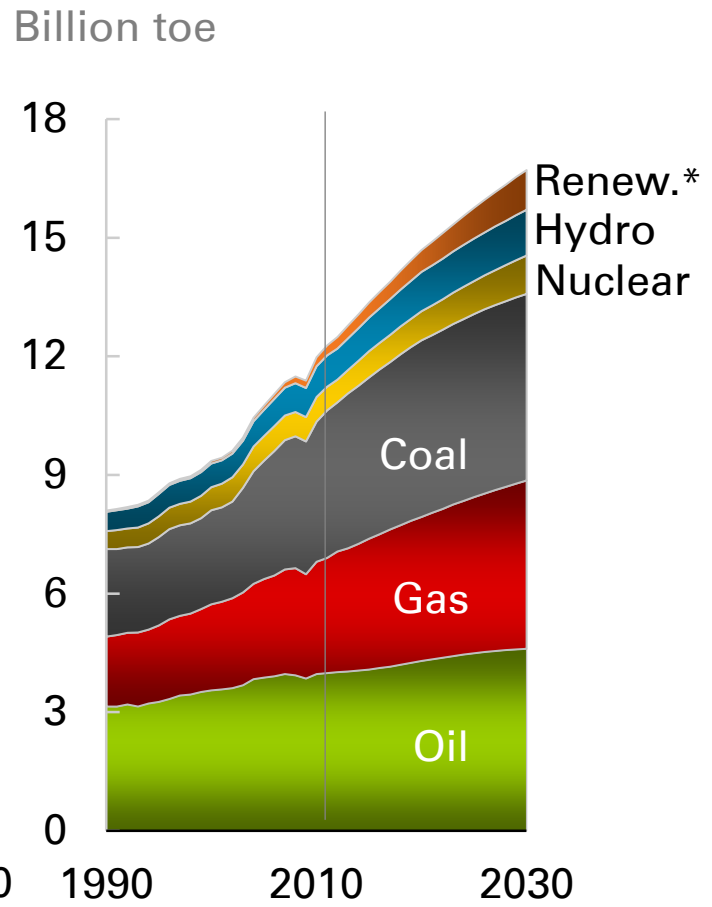
By region



By primary use



By fuel



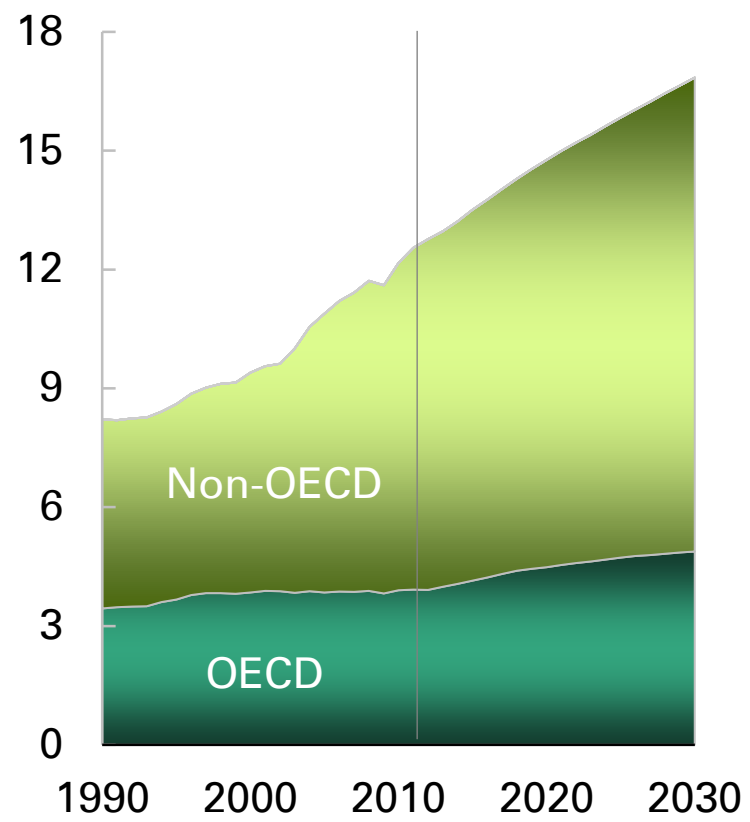
*Includes biofuels



Emerging economies dominate energy production growth

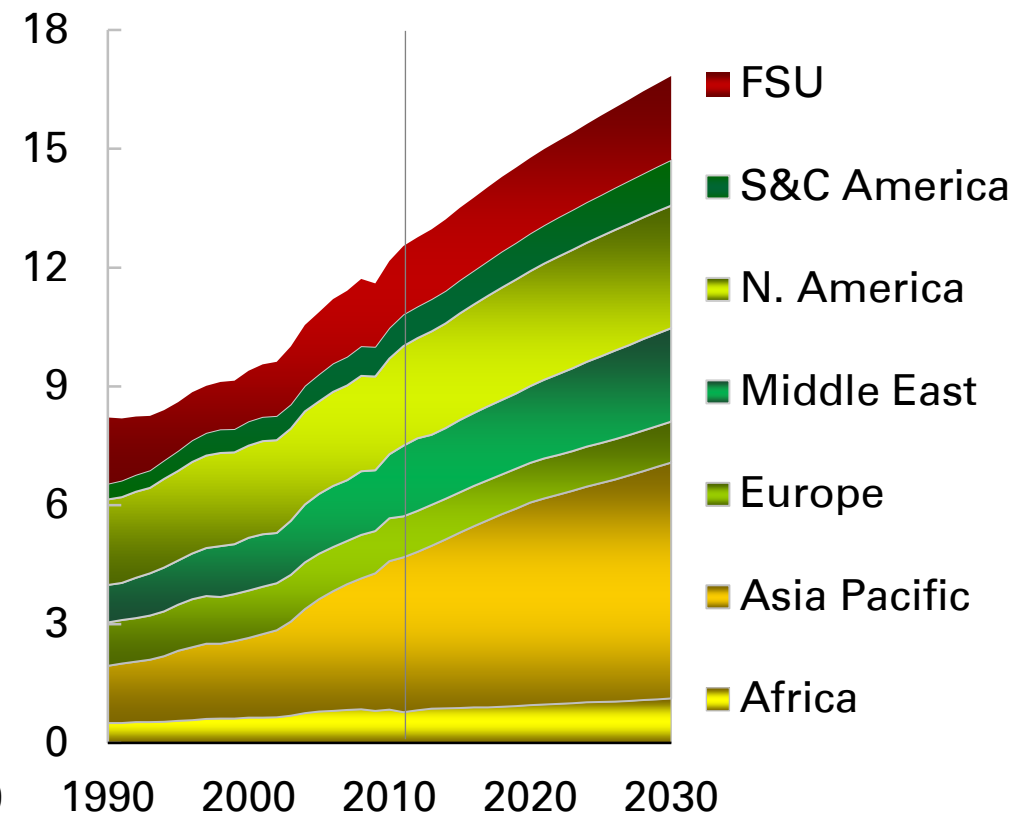
Primary energy production

Billion toe



Primary energy production

Billion toe

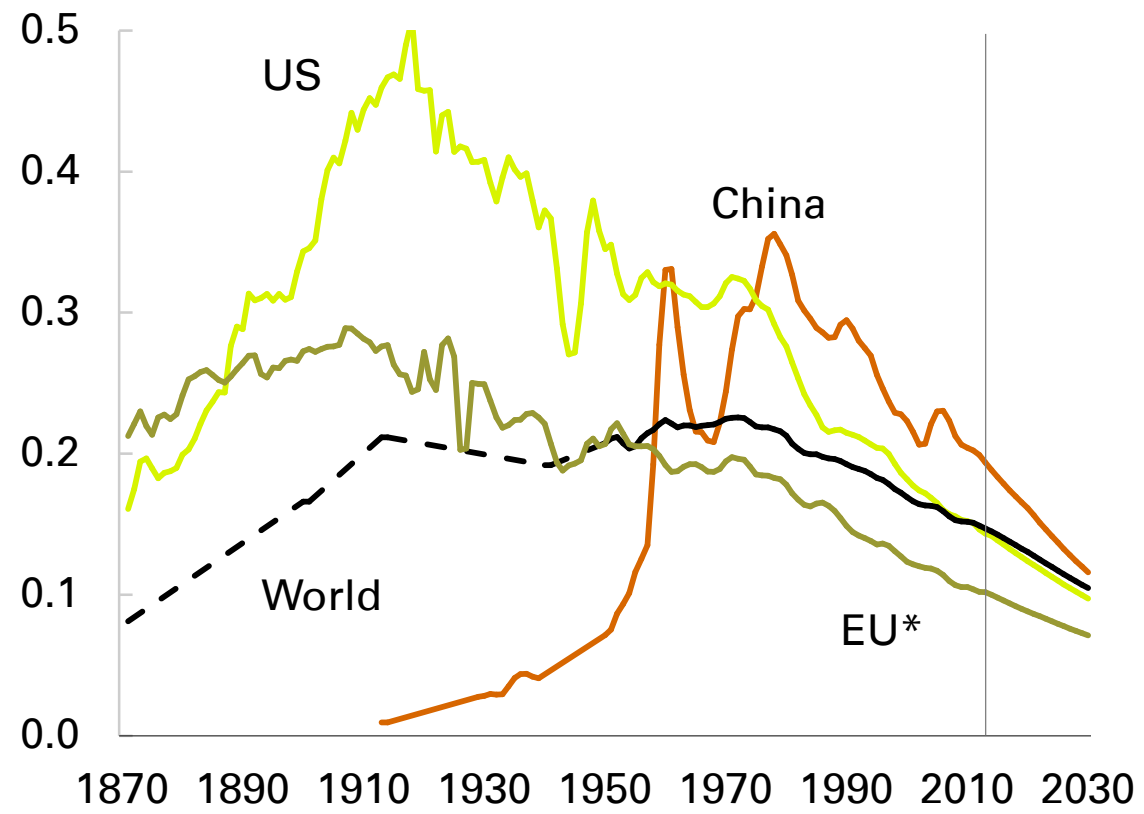




Energy efficiency improvements are critical...

Energy intensity by region

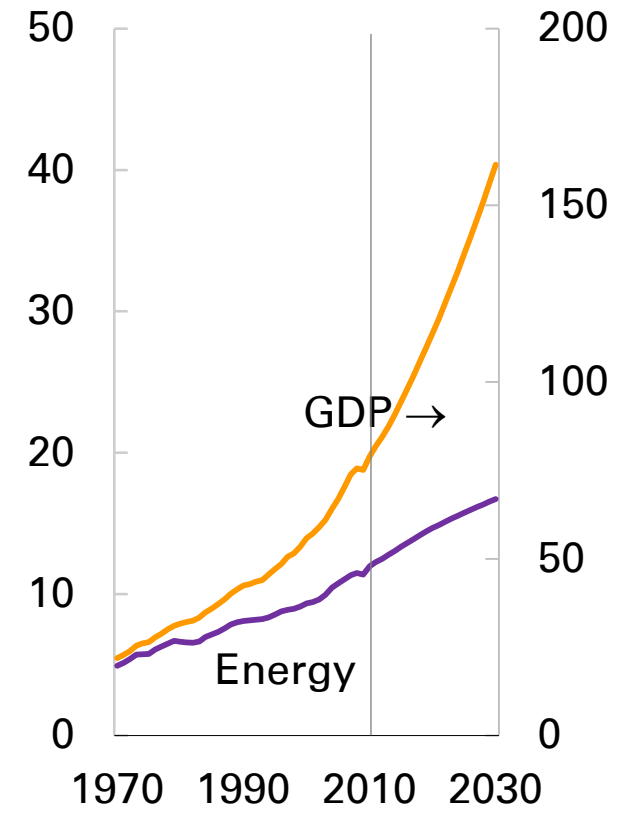
Toe per thousand \$2011 GDP



*Euro4 (France, Italy, Germany, UK) pre-1970

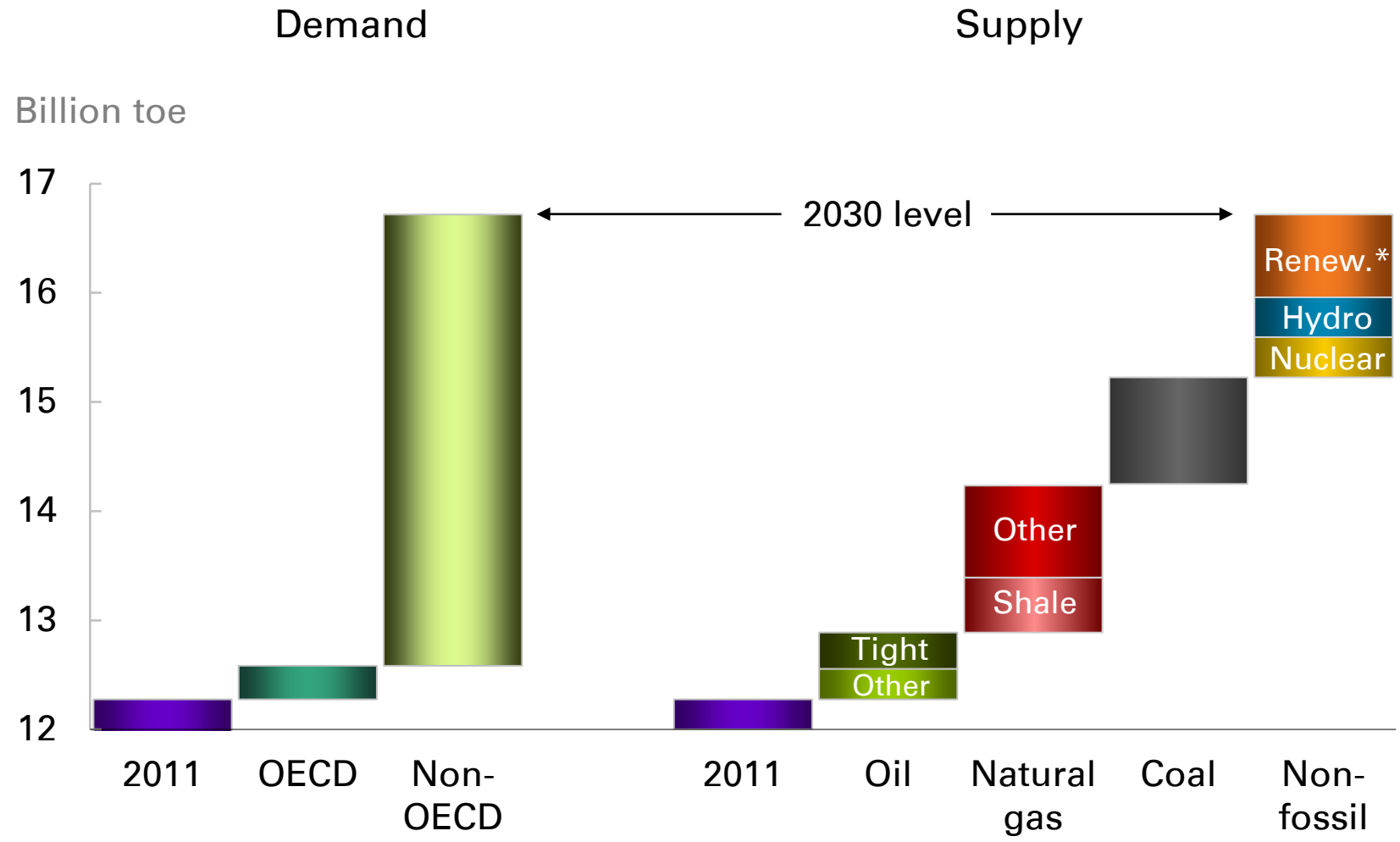
Energy and GDP

Billion toe Trillion \$2011





Energy demand growth is matched by supply...

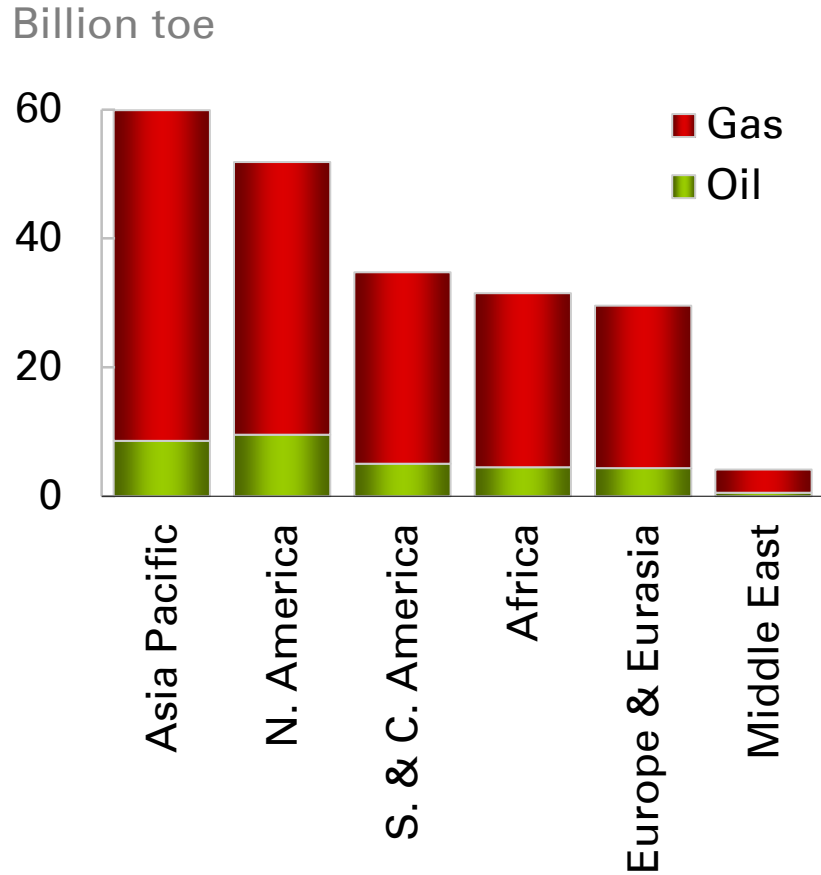


*Includes biofuels

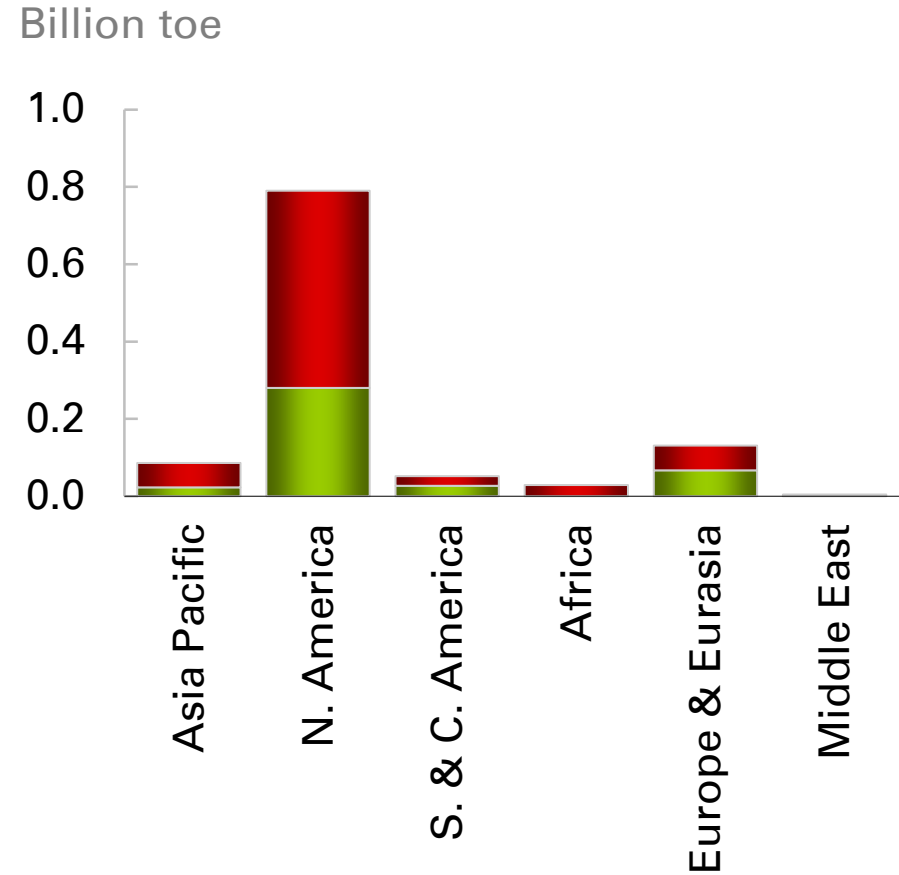


Shale gas and tight oil resources and production...

Current resources



Production in 2030

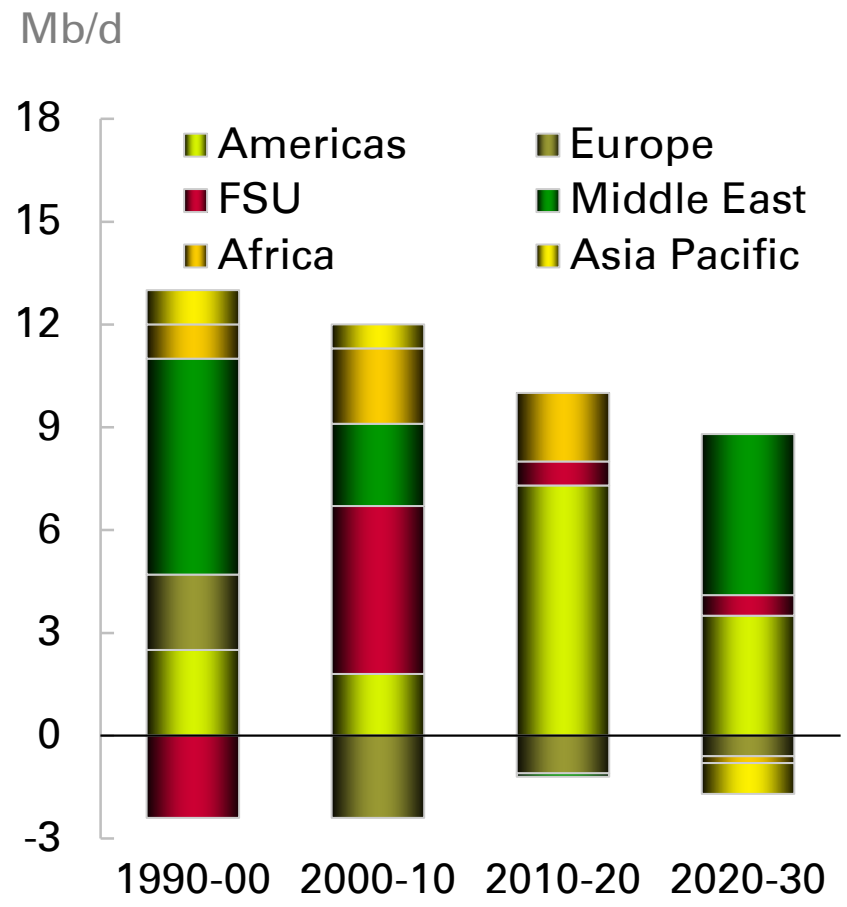


Resources data © OECD/IEA 2012

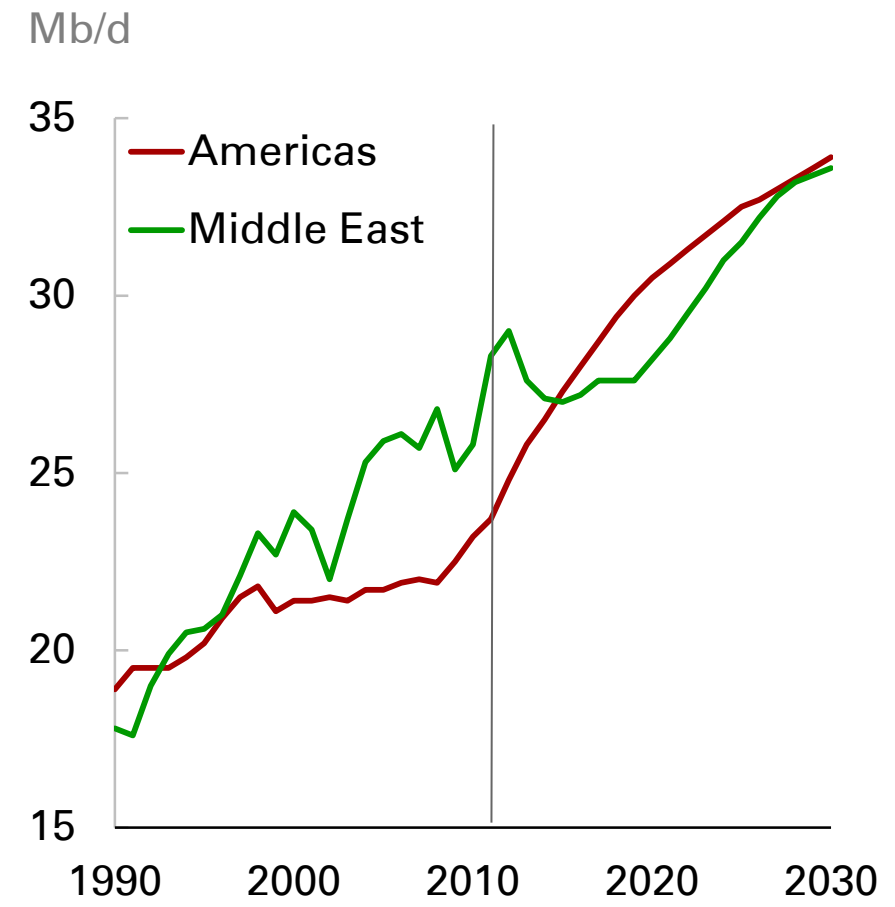


With the Americas dominating global supply growth...

Supply growth by decade



Americas surpass Middle East



New, local, economic primary energy benefitting the Americas



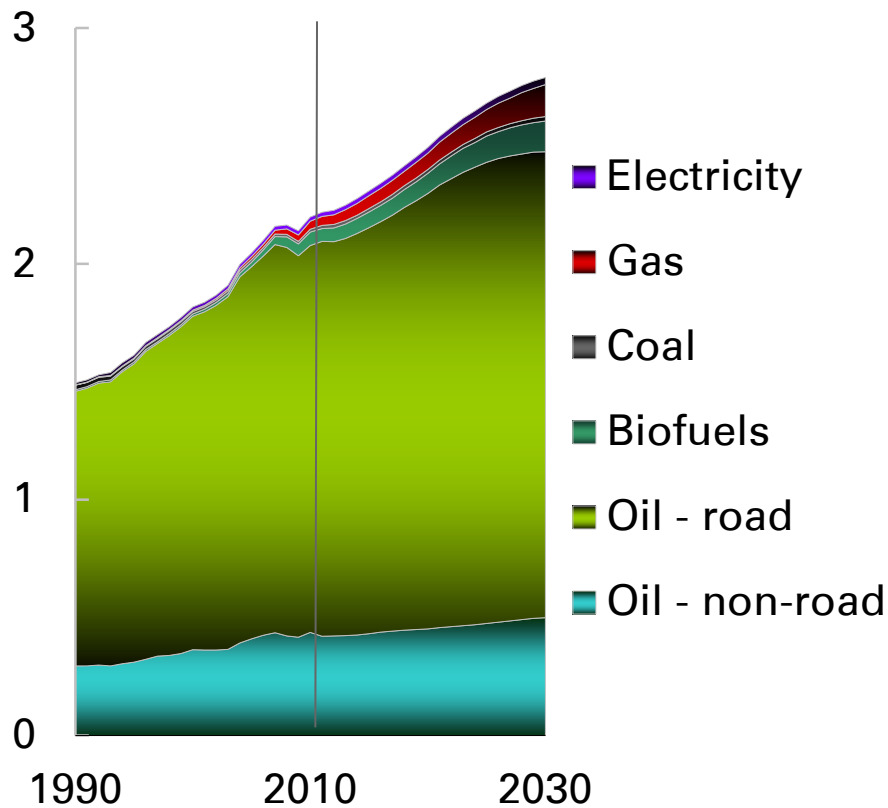
- The US could approach energy neutral (no net imports) around 2030
- Access to low cost gas and oil is stimulating a manufacturing economy
 - Revival of the North American chemicals & other manufacturing
- With no access to local, low cost primary energy, the consequences for EU refining and chemicals is challenging: high labour, energy, social costs



Global transport demand growth slows...

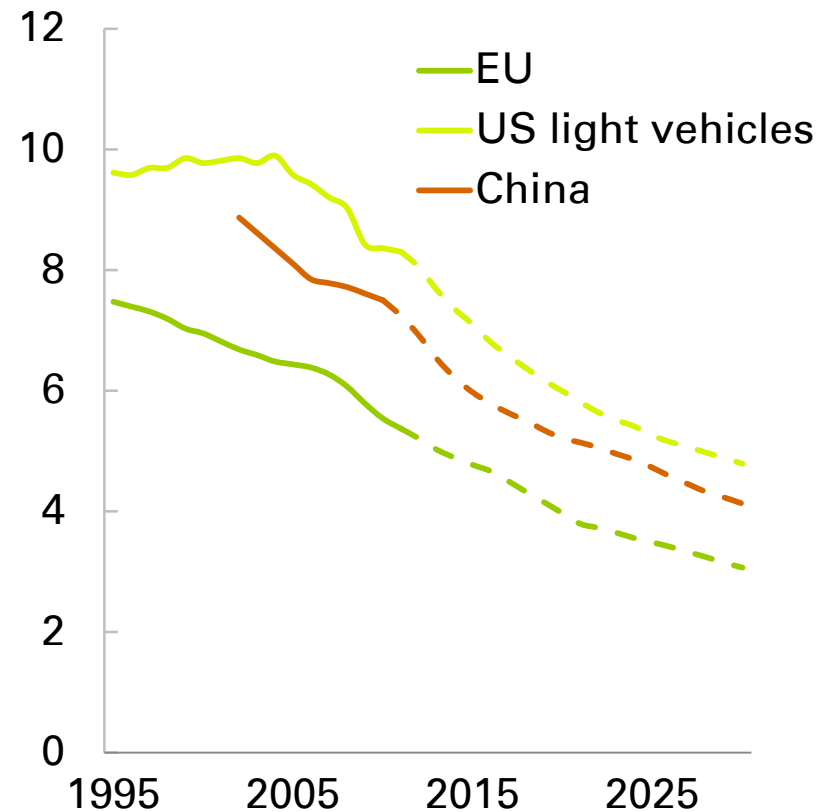
Transport demand by fuel

Billion toe



Fuel economy of new cars

Litres per 100 km

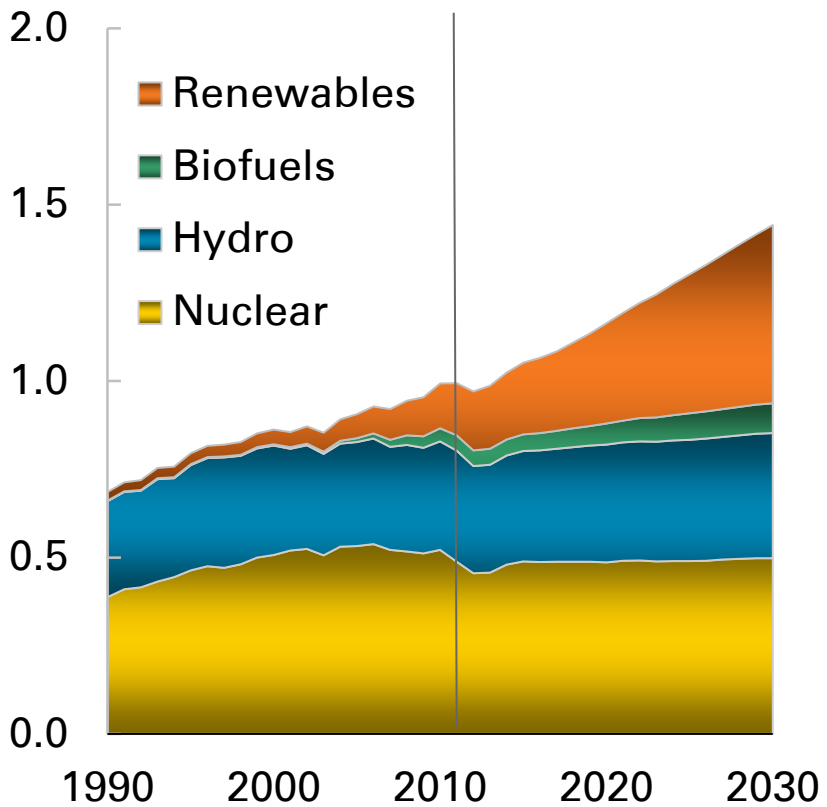




Non-fossil fuels growth is led by renewables in the OECD...

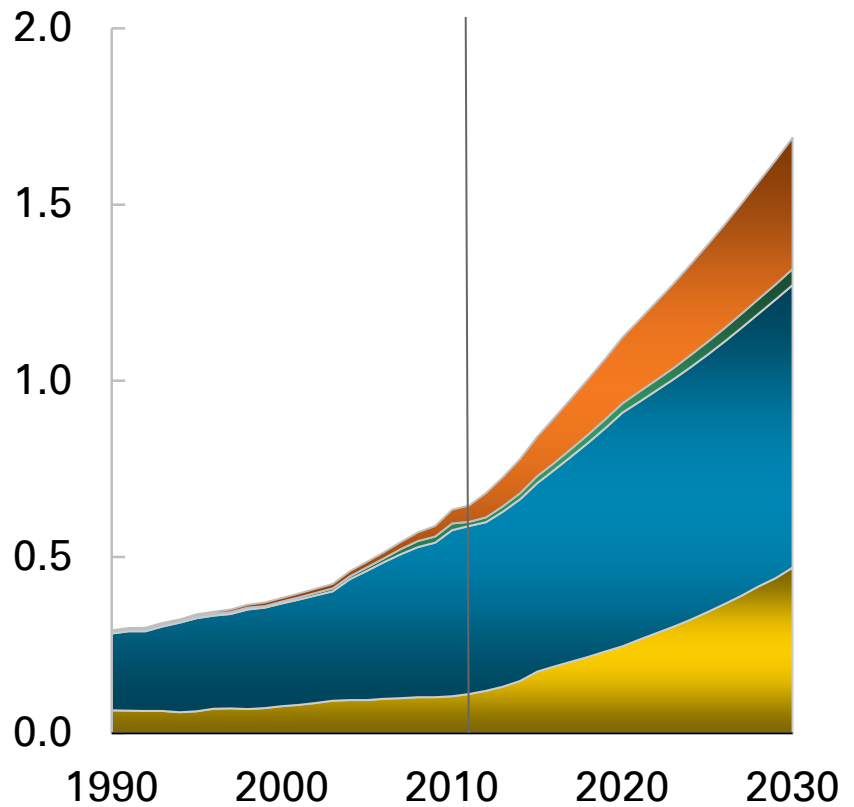
OECD

Billion toe



Non-OECD

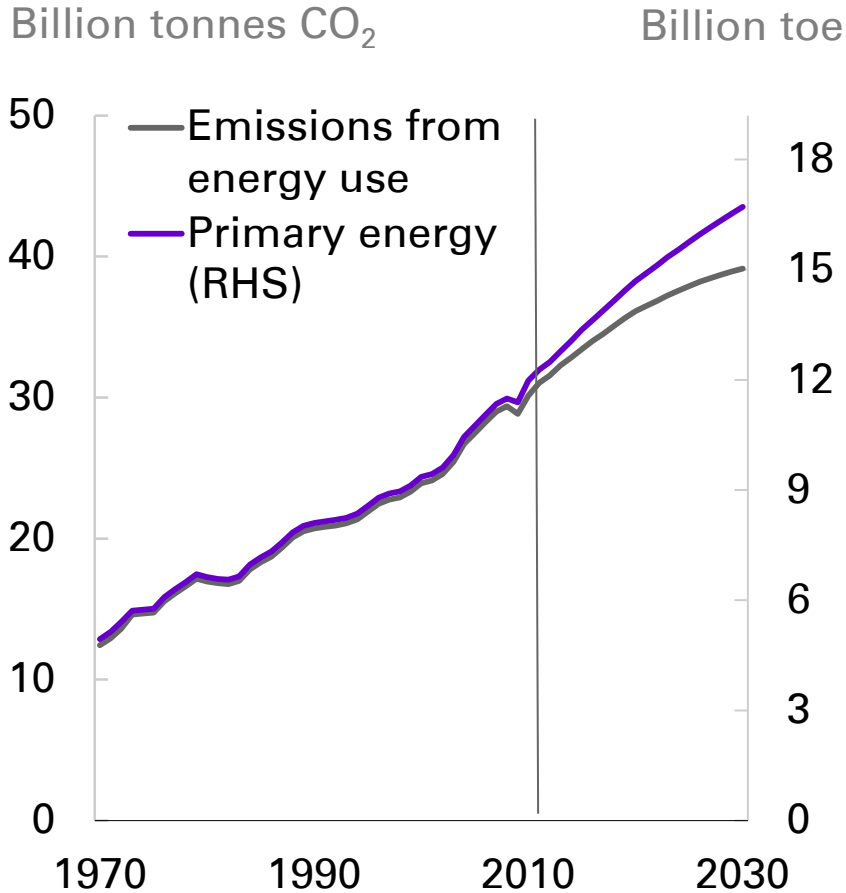
Billion toe



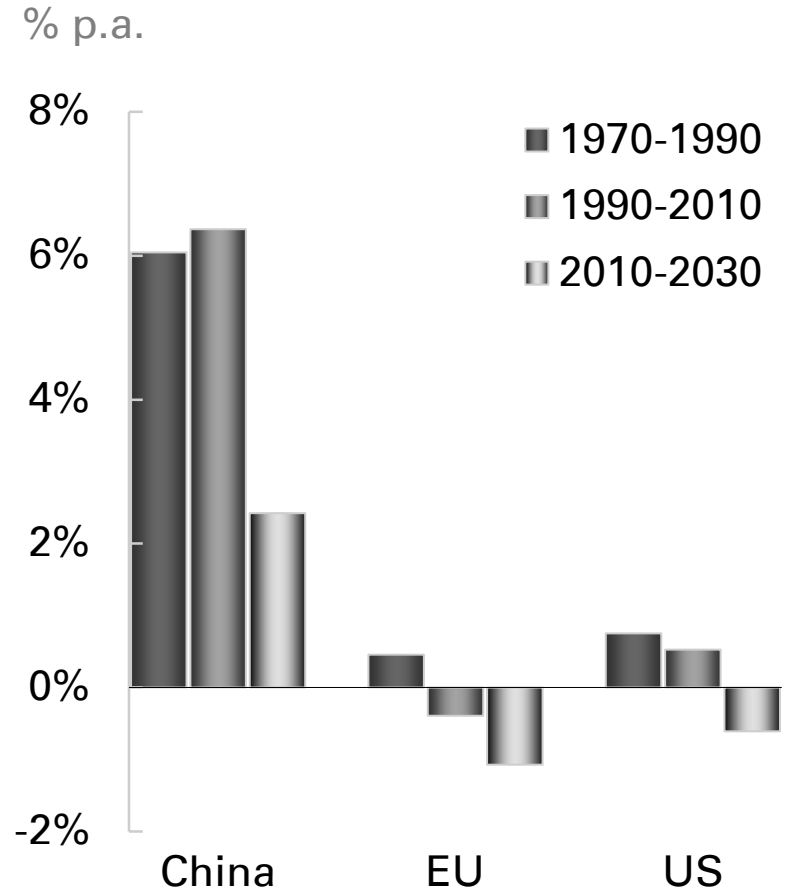


Energy demand growth drives carbon emissions...

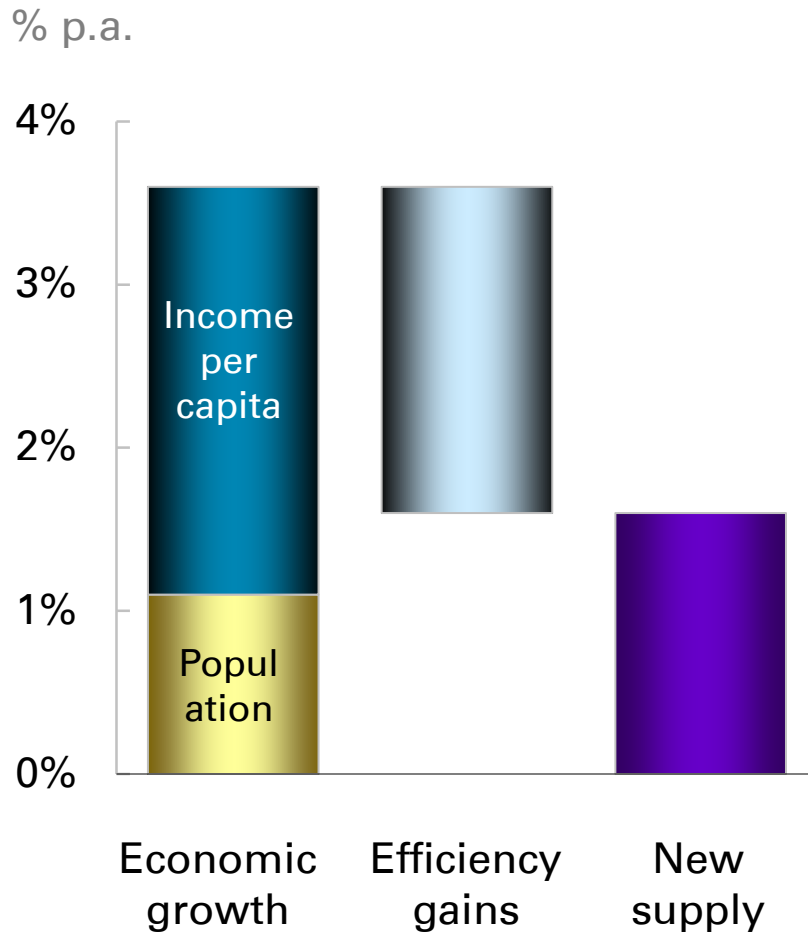
CO₂ emissions and primary energy



Growth of CO₂ emissions



Conclusion



- Economic growth needs energy
- Competition and innovation are the key to meeting this need
 - energy efficiency
 - new supplies
- Energy security and climate change remain challenges