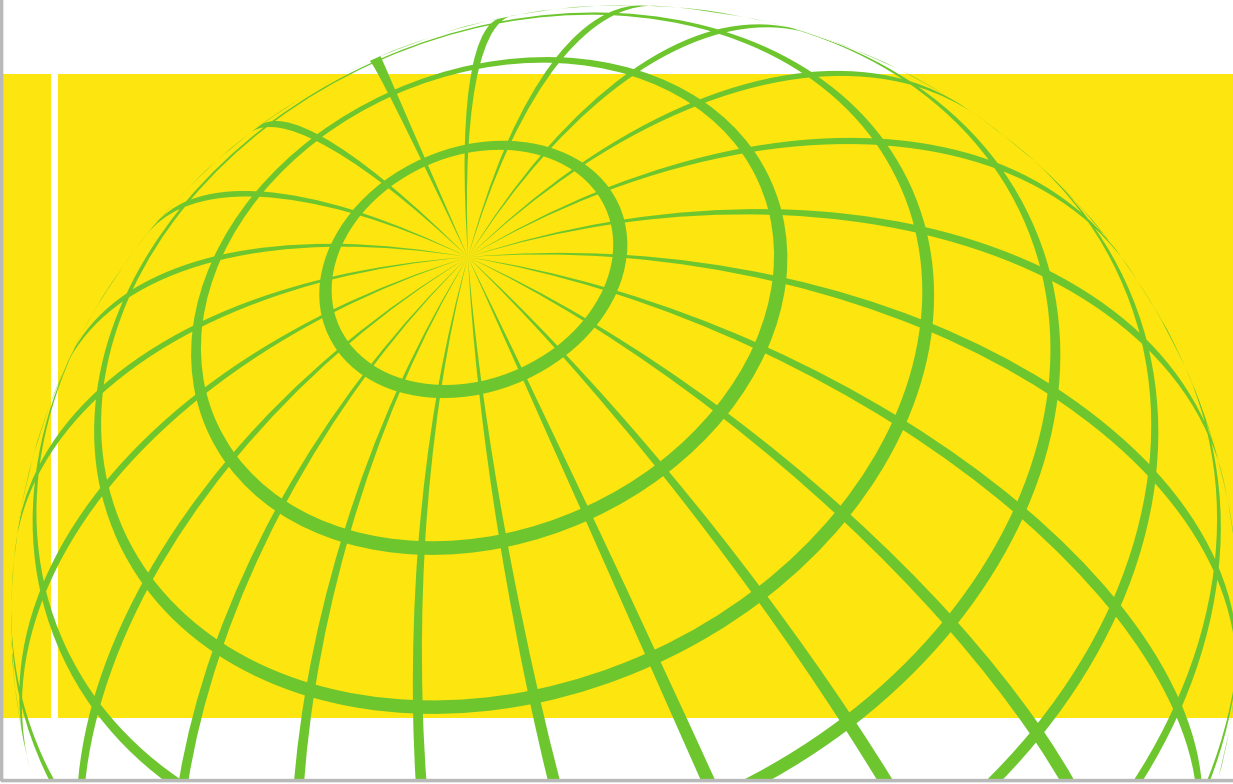


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BP Energy Outlook 2030

Christof Rühl, Group Chief Economist



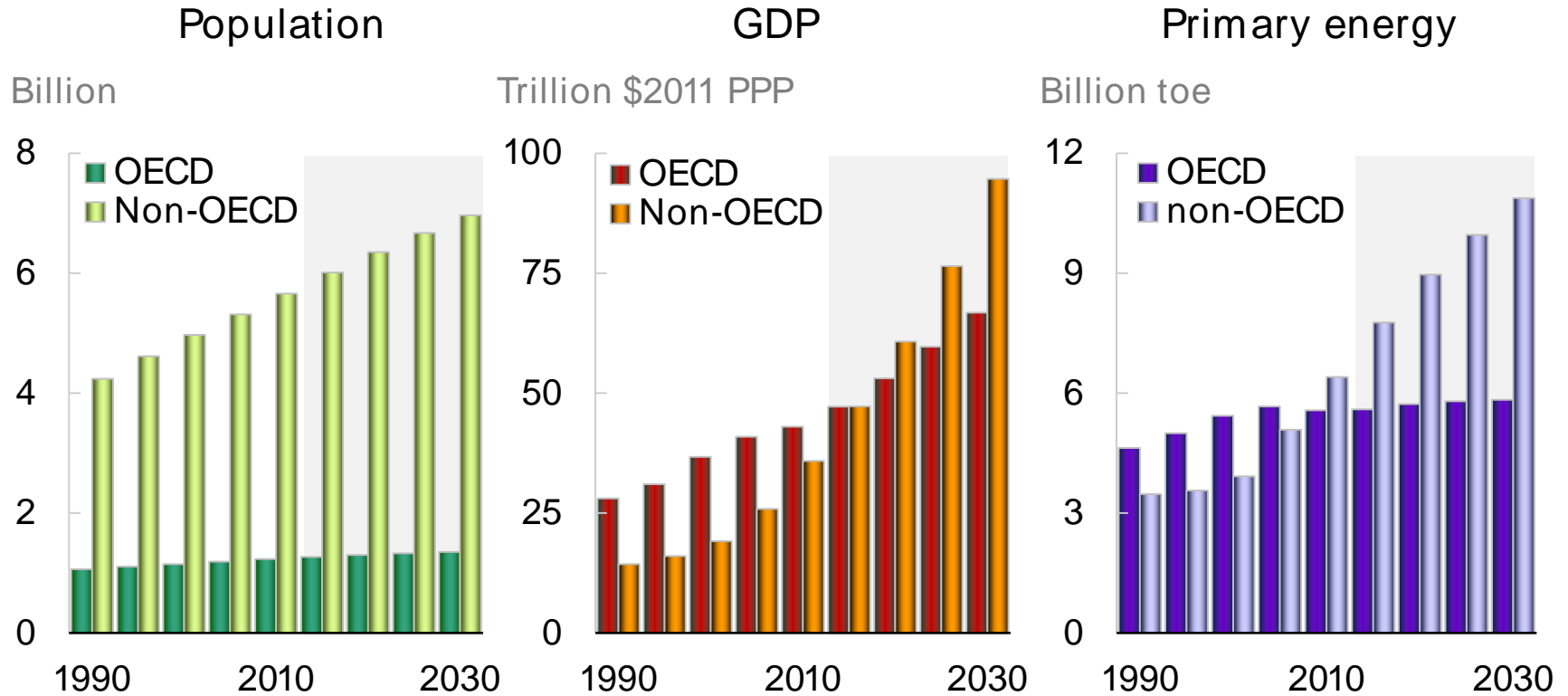
Introduction

Global energy trends

Outlook 2030: Fuel by fuel

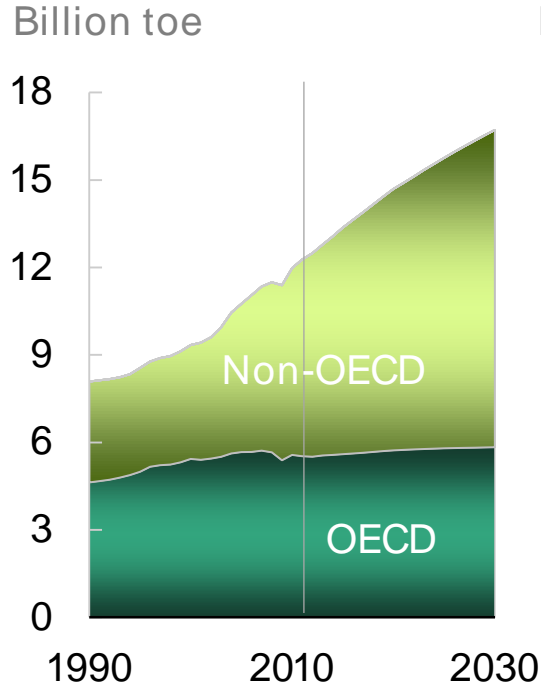
Implications

Population, income and energy growth

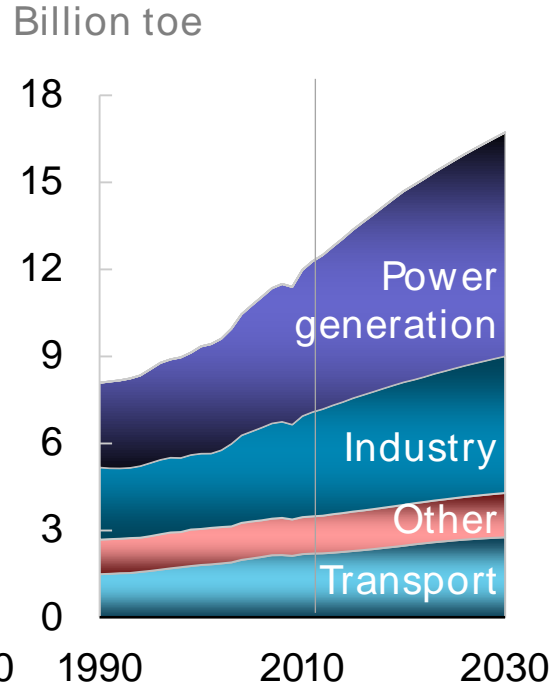


Industrialisation drives energy growth

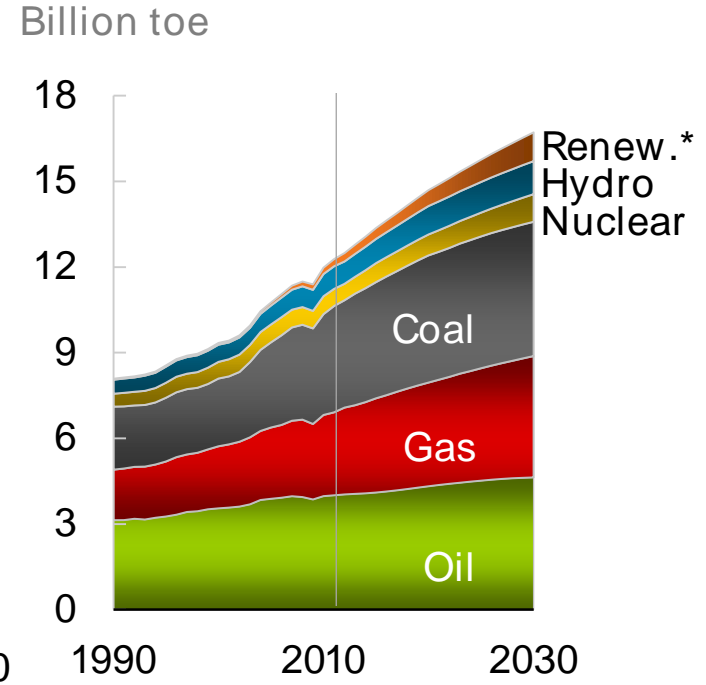
By region



By primary use



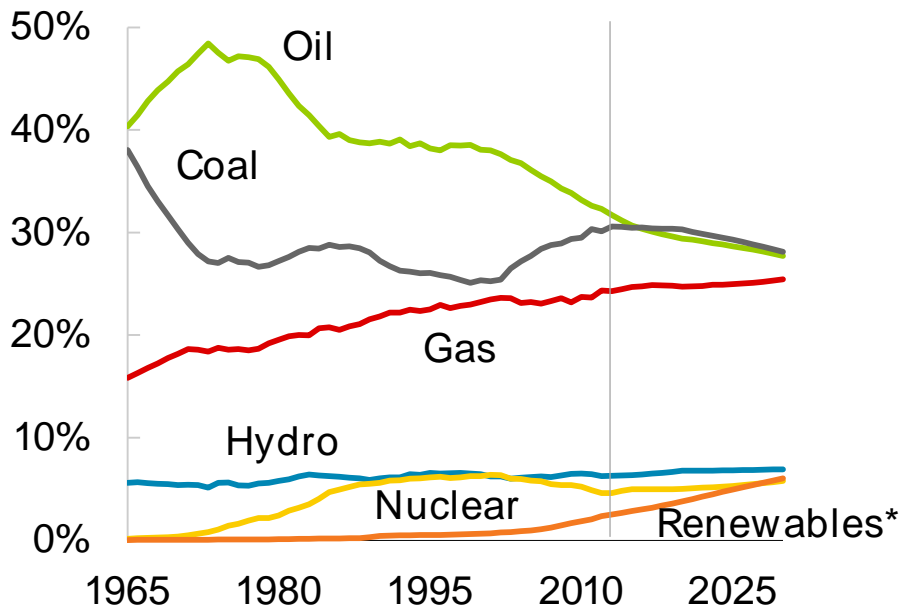
By fuel



* Includes biofuels

Fuel shares and energy prices

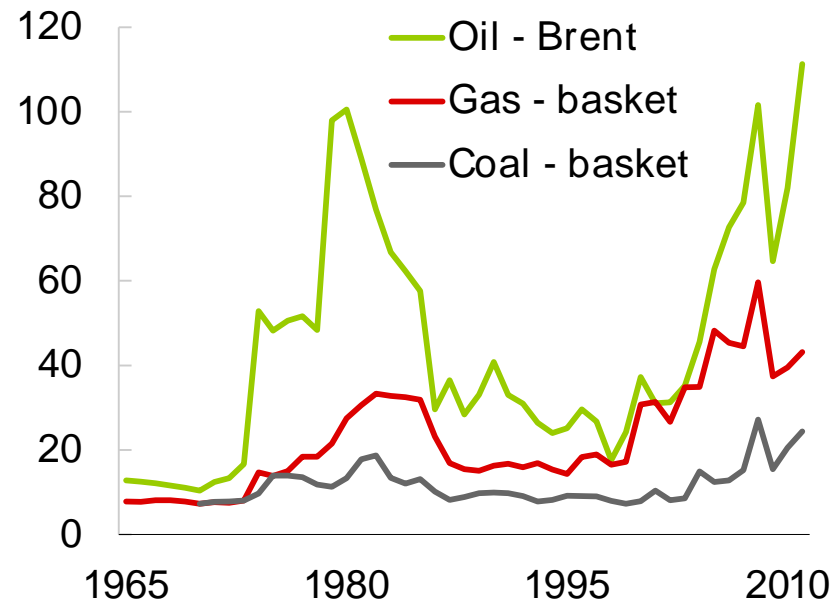
Shares of world primary energy



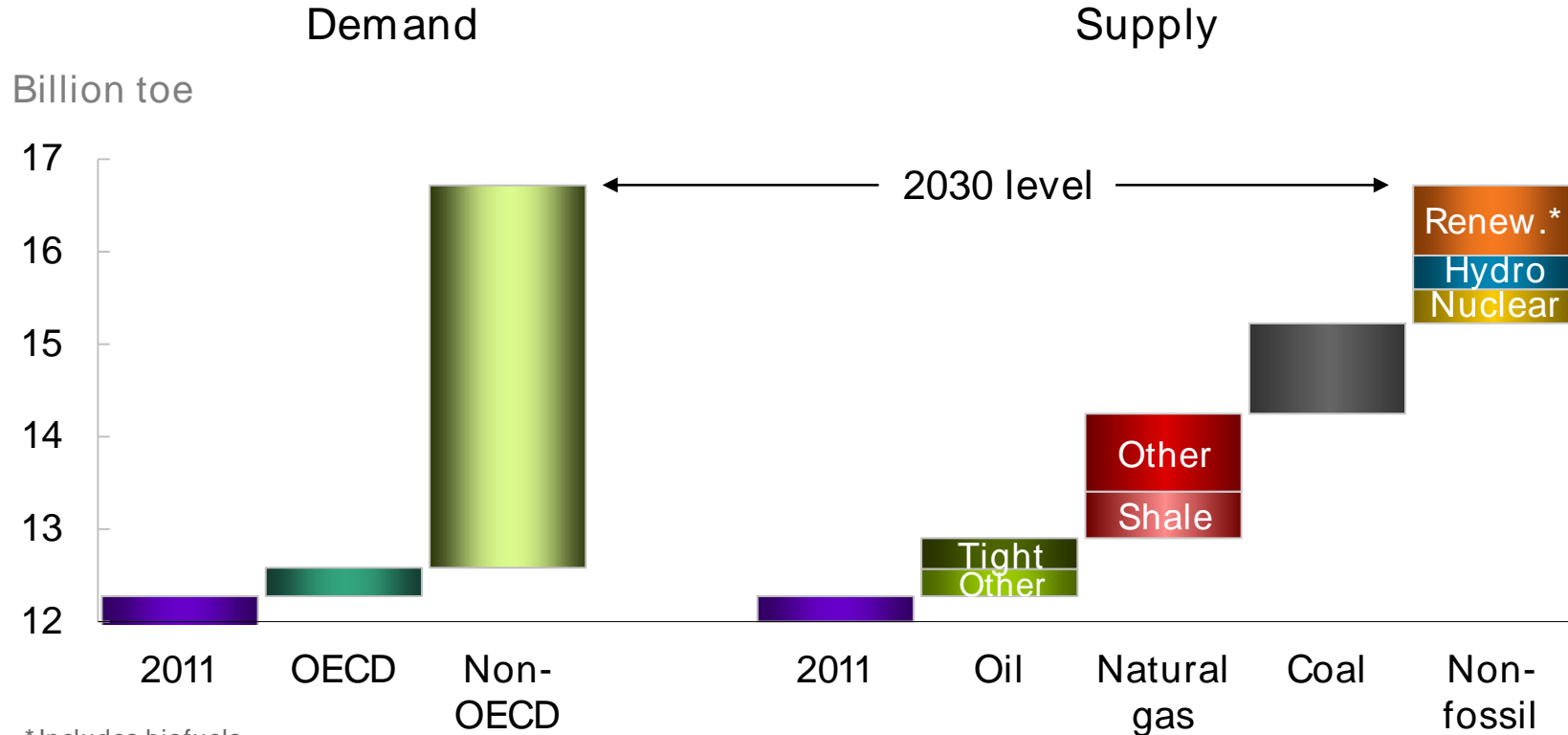
* Includes biofuels

Energy prices

\$2011/boe



Energy supply growth



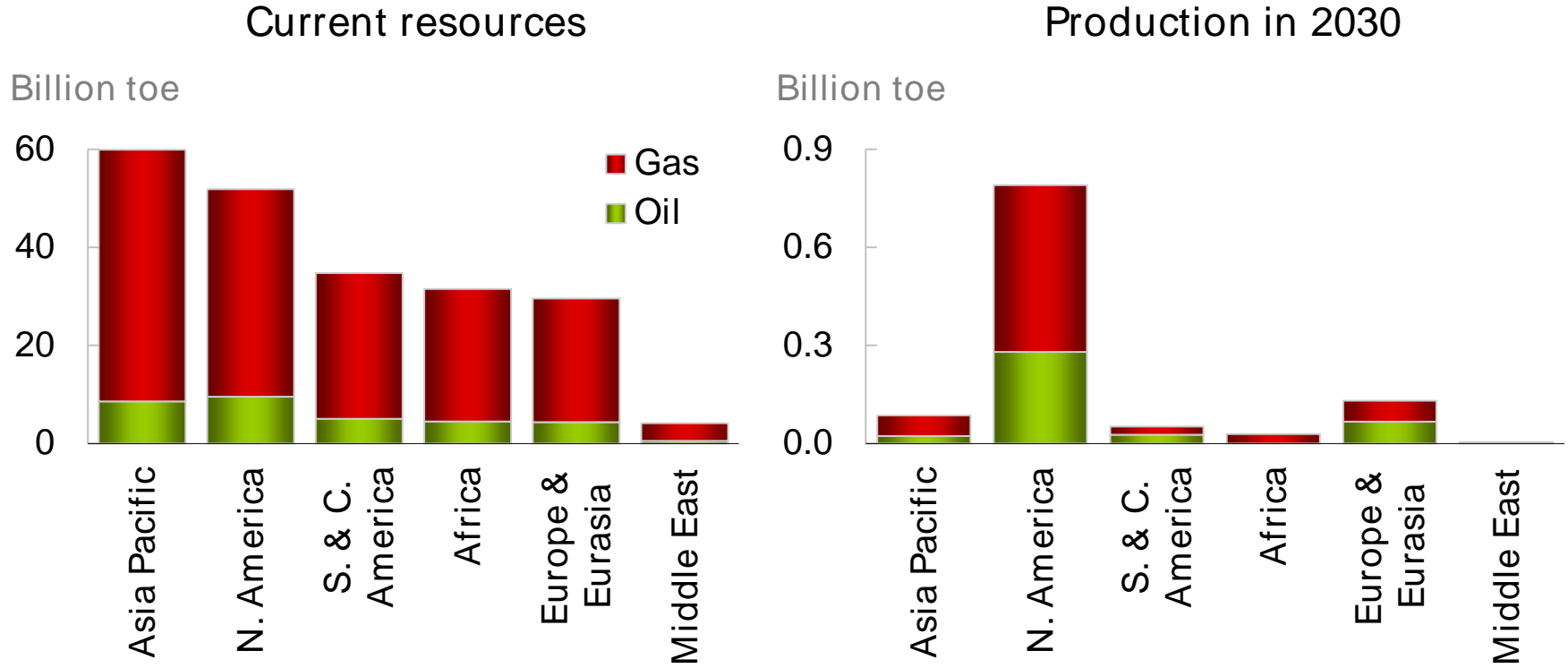


Tight oil and shale gas implications

Characteristics

Implications

Shale gas and tight oil: resources and production

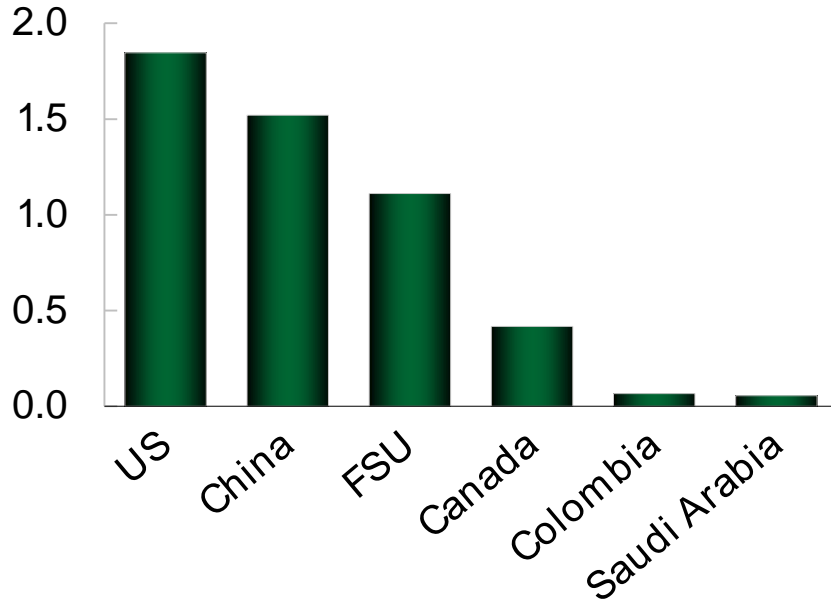


Resources data © OECD/IEA 2012

US tight oil and shale gas: infrastructure requirements

Onshore oil & gas rigs 2011

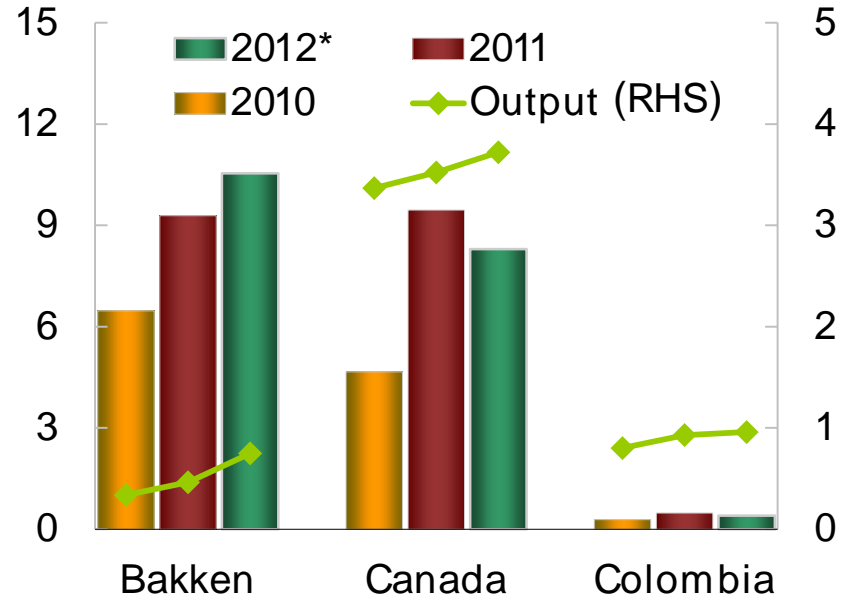
Thousands



Oil wells drilled and output

Thousands

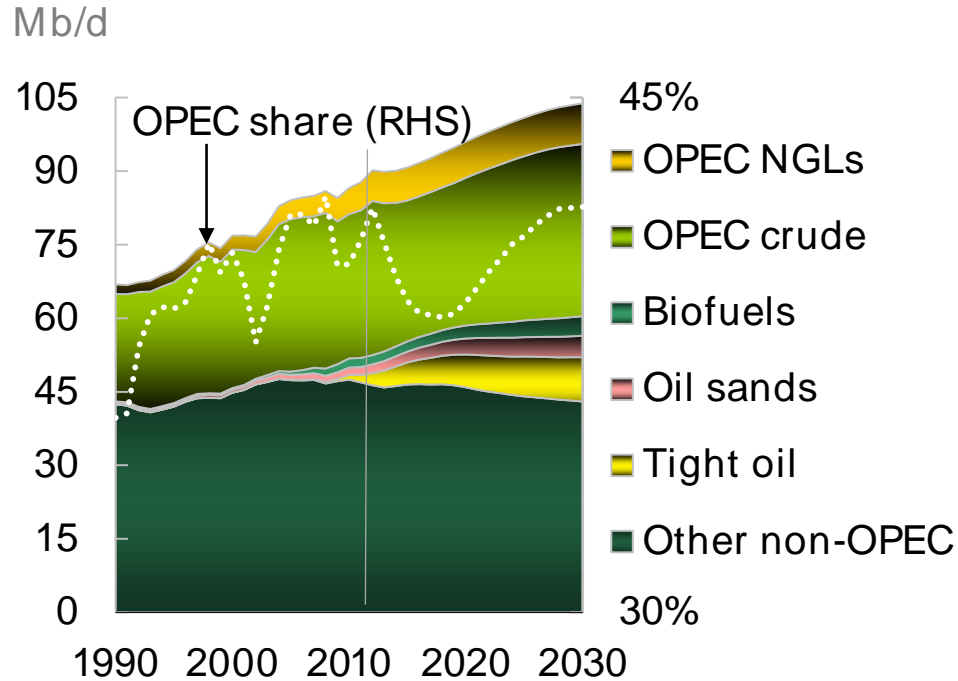
Mb/d



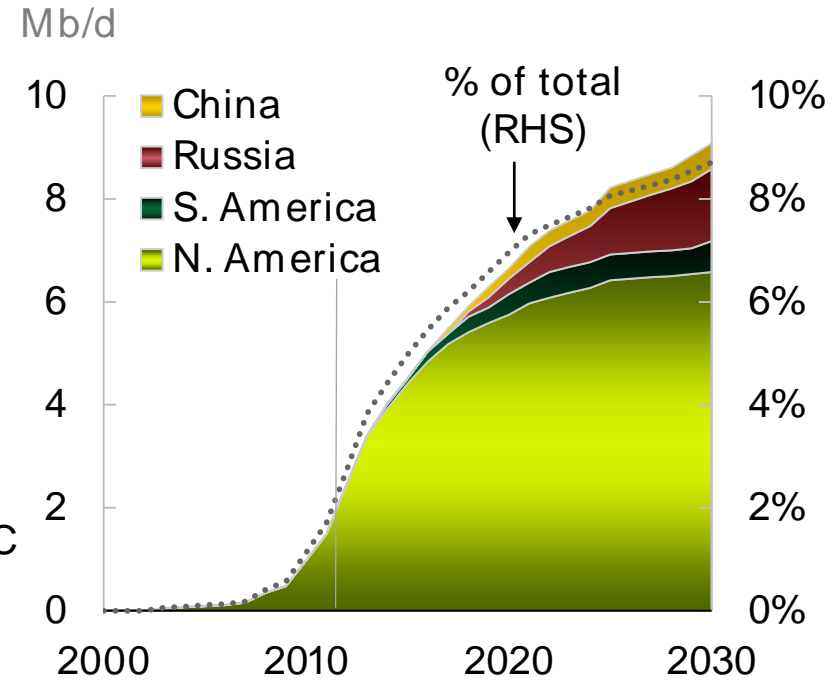
* Annualised from 1Q-3Q data

Global supply growth and tight oil

Liquids supply by type



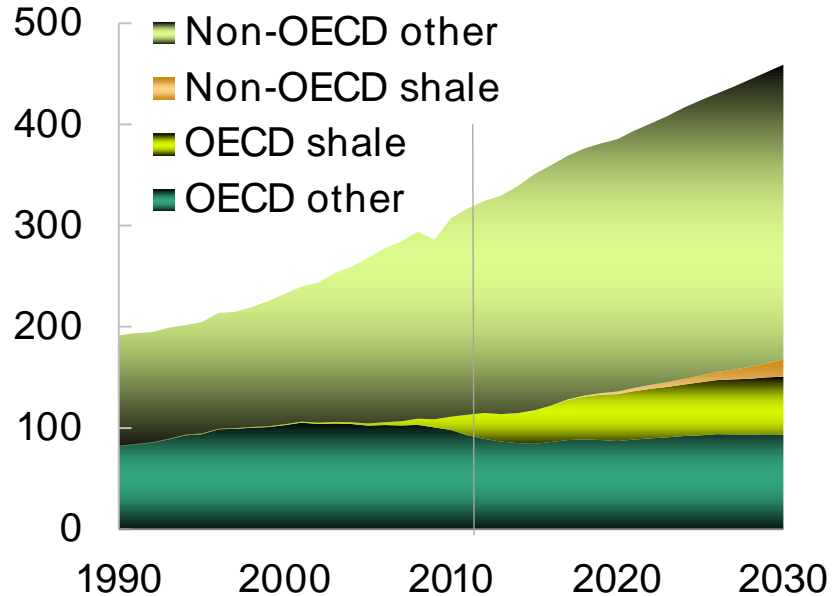
Tight oil output



Shale gas and global supply growth

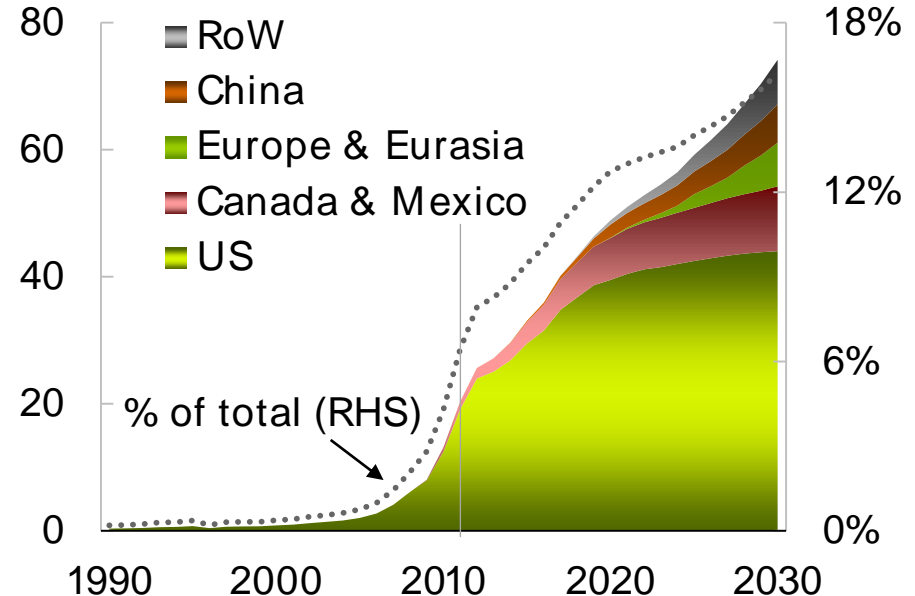
Gas production by type and region

Bcf/d



Shale gas production

Bcf/d



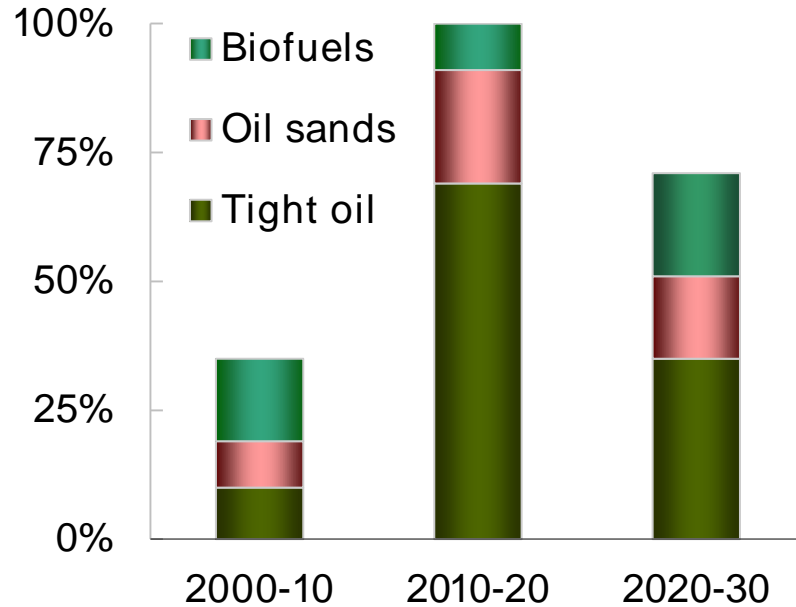
Tight oil and shale gas implications

Characteristics

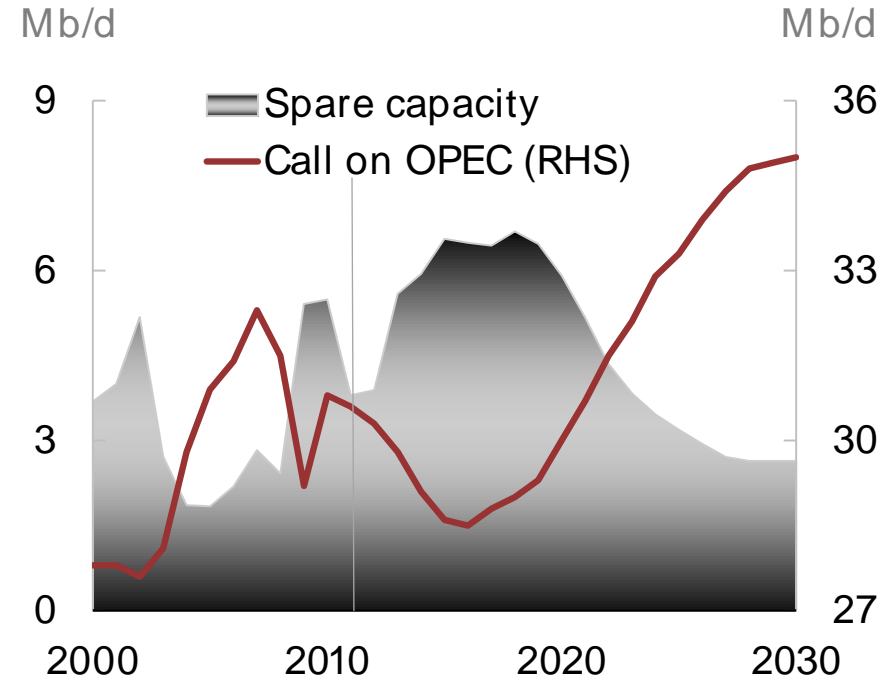
Implications

(1) Unconventional oil and the call on OPEC

Unconventionals share of net global supply growth

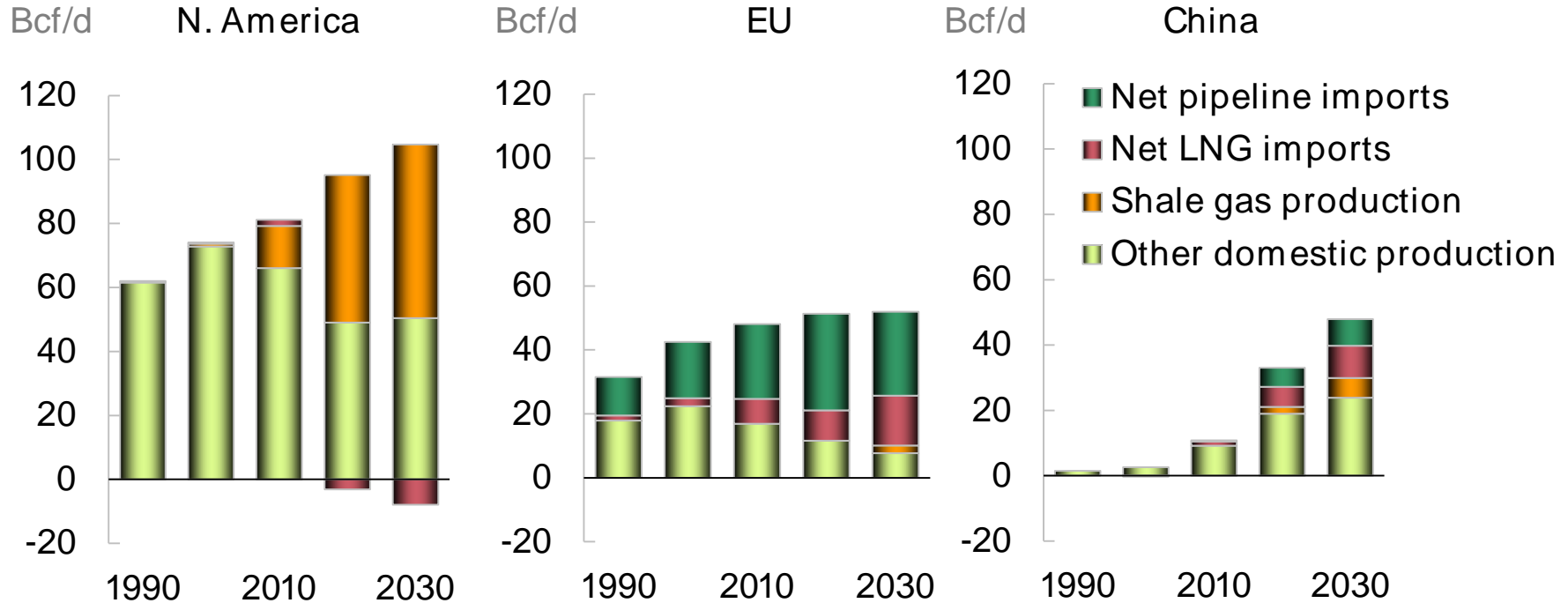


Call on OPEC & spare capacity



Shale gas: regional growth

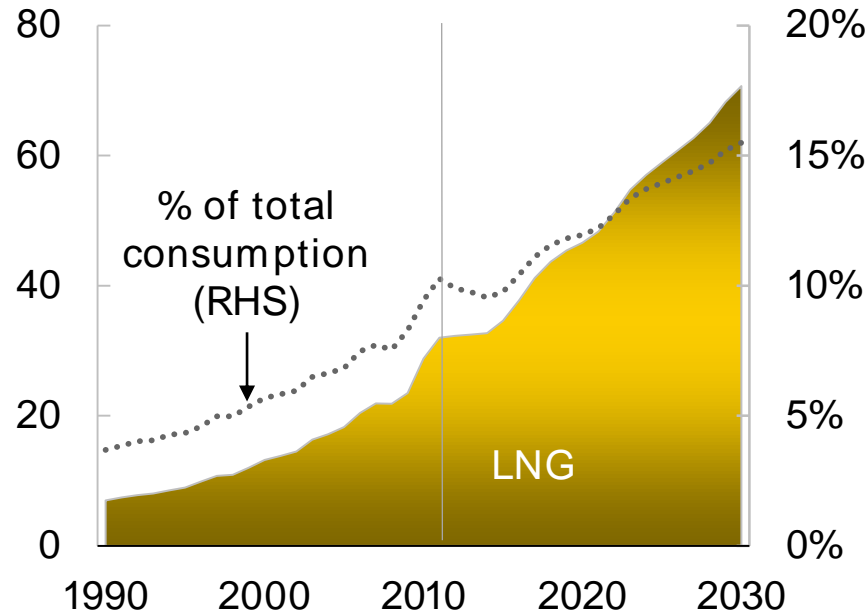
Sources of gas supply, by region



Gas trade and market integration

LNG exports

Bcf/d

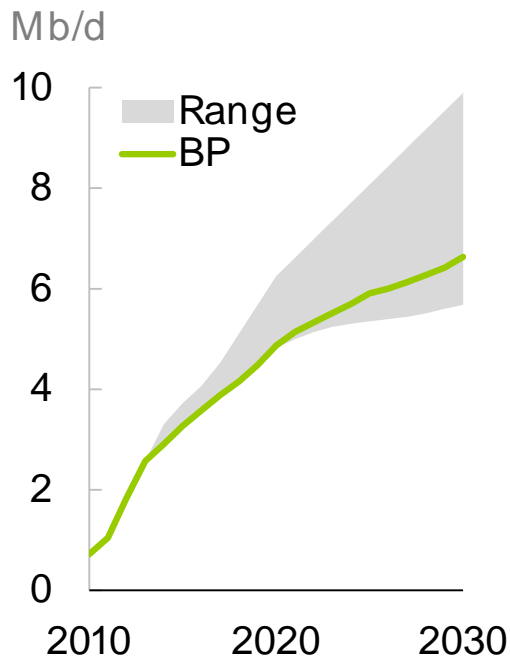


LNG diversification

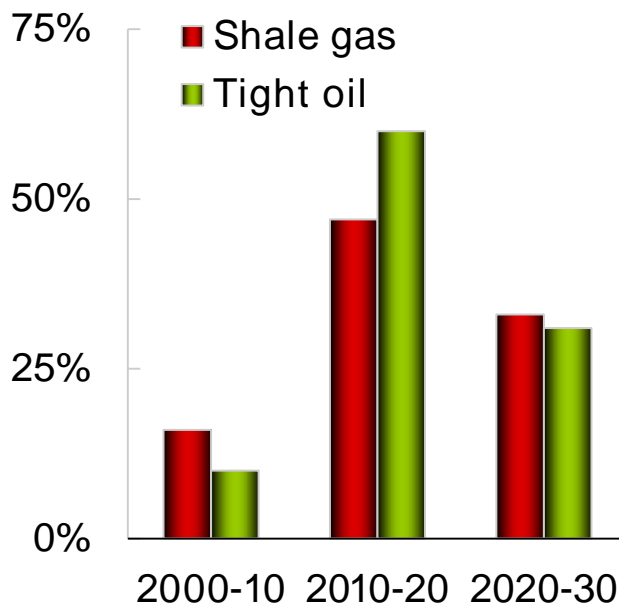


(2) Tight oil and shale gas uncertainties

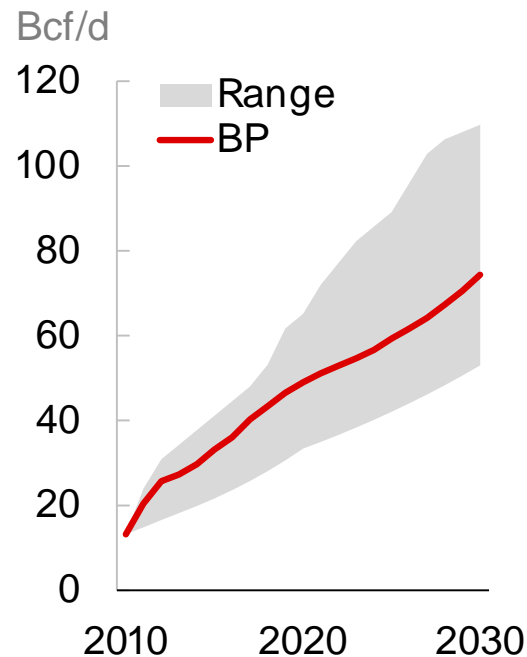
Range of tight oil forecasts
(excludes NGLs)



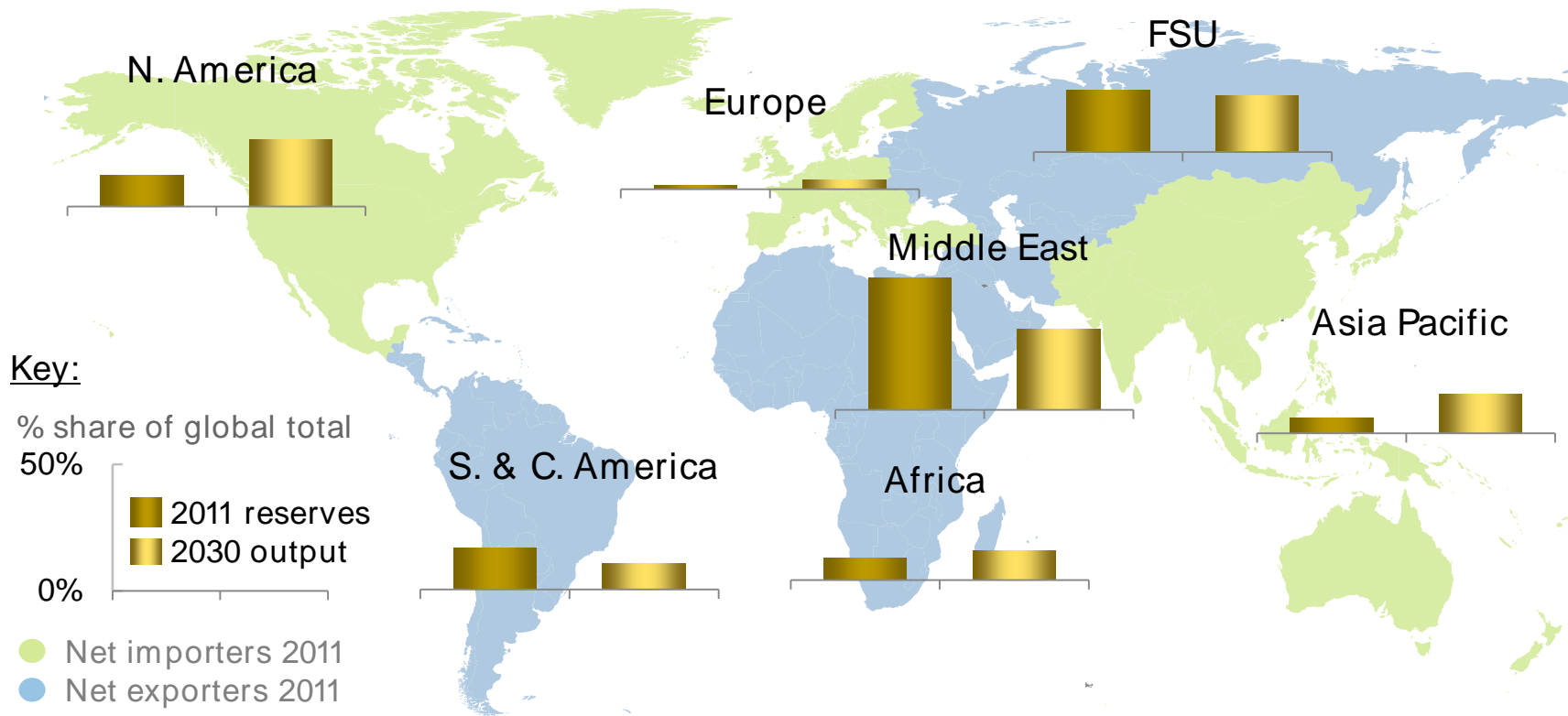
Share of global supply
growth



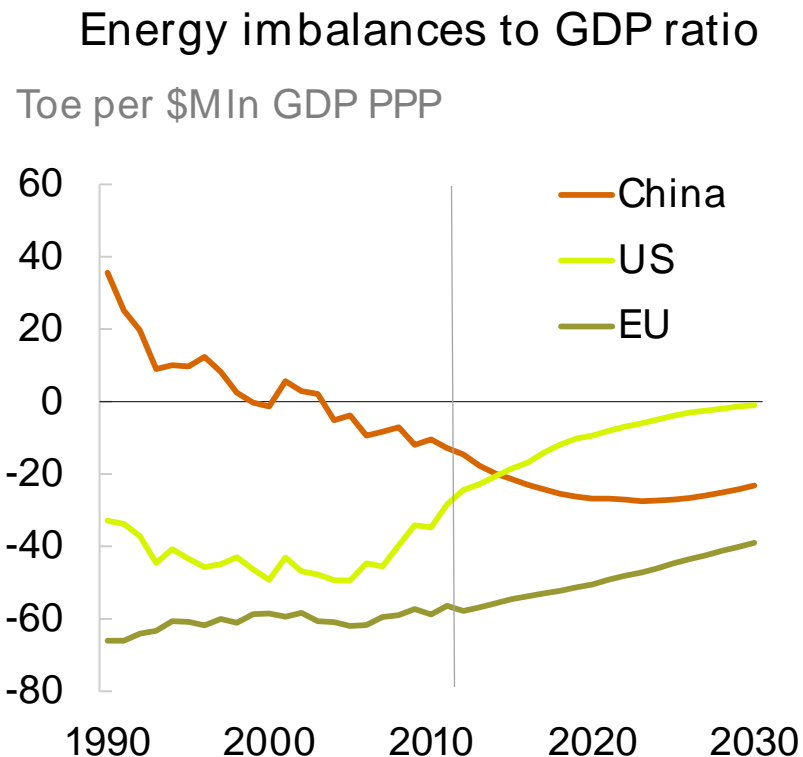
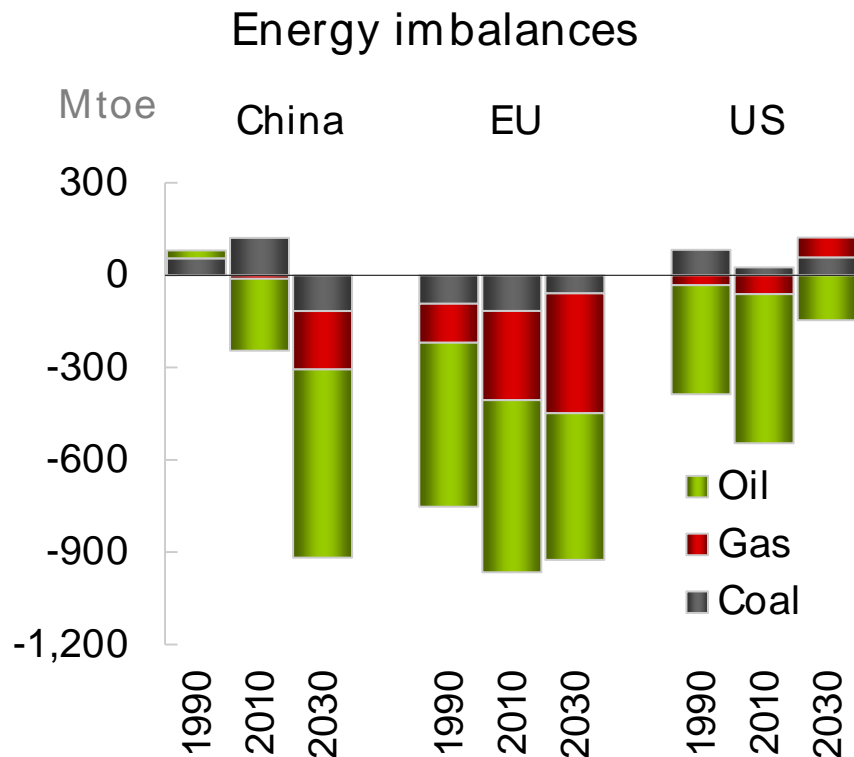
Range of shale gas
forecasts



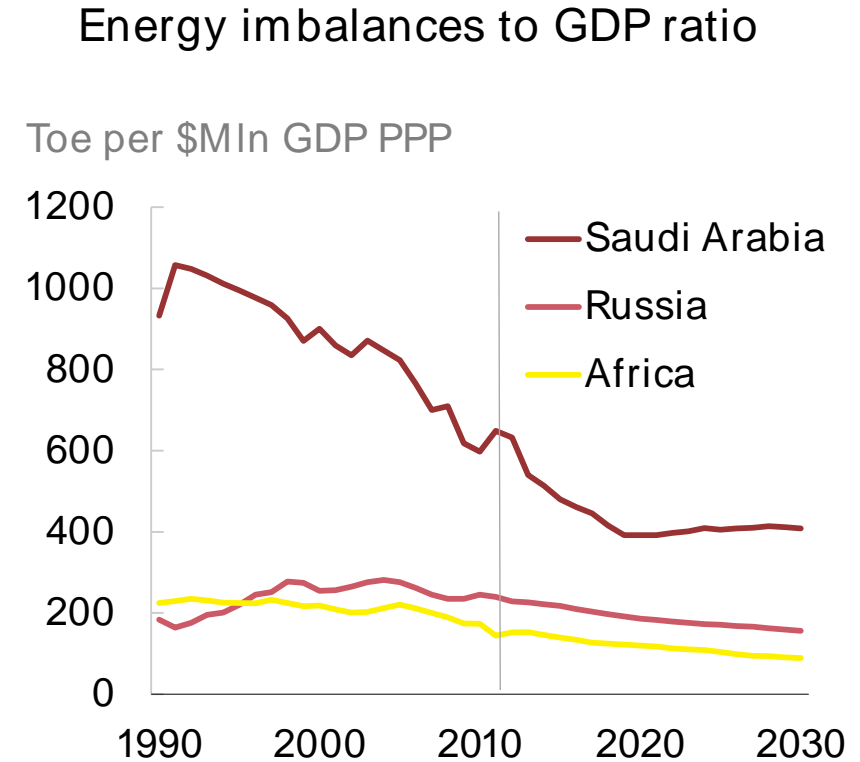
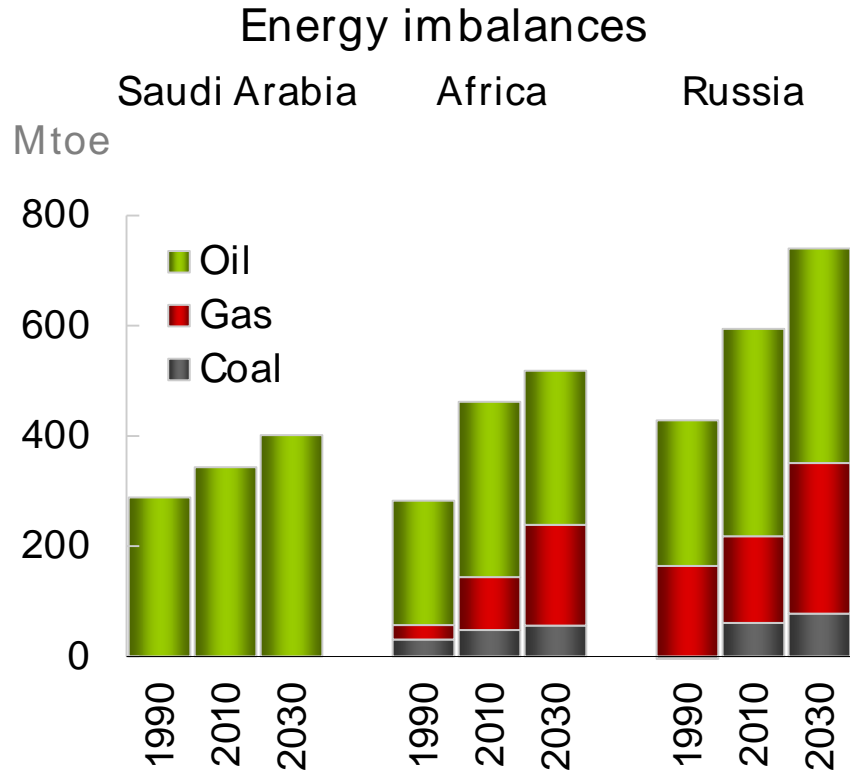
Oil and gas: reserves and production



(3) Energy imbalances and (4) economics: import profiles

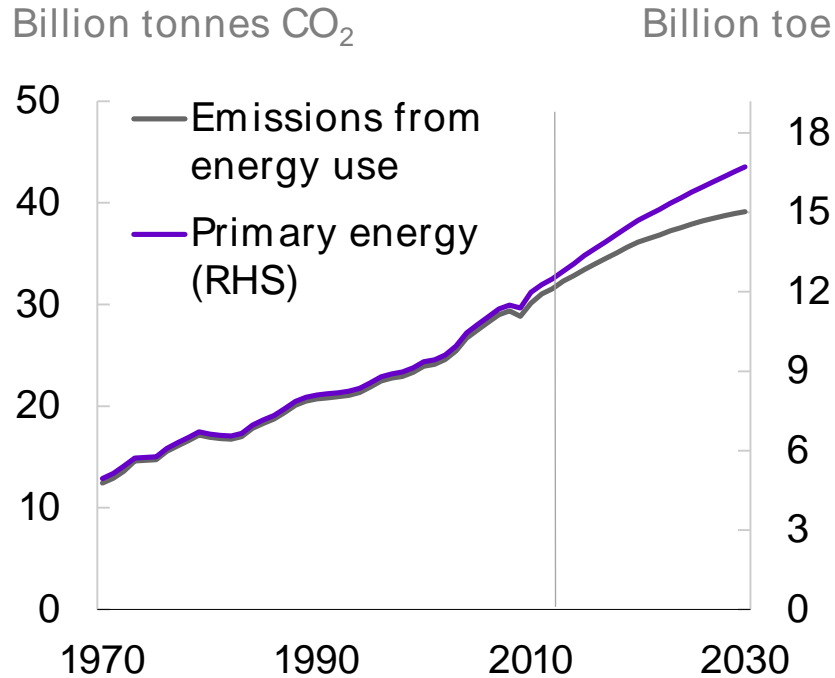


(3) Energy imbalances and (4) economics: export profiles

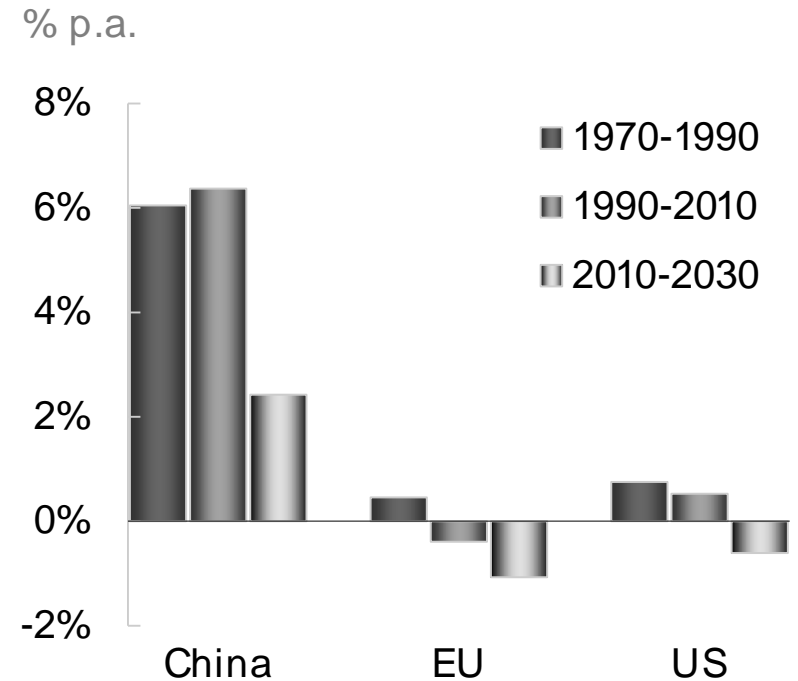


(5) Energy and carbon emissions

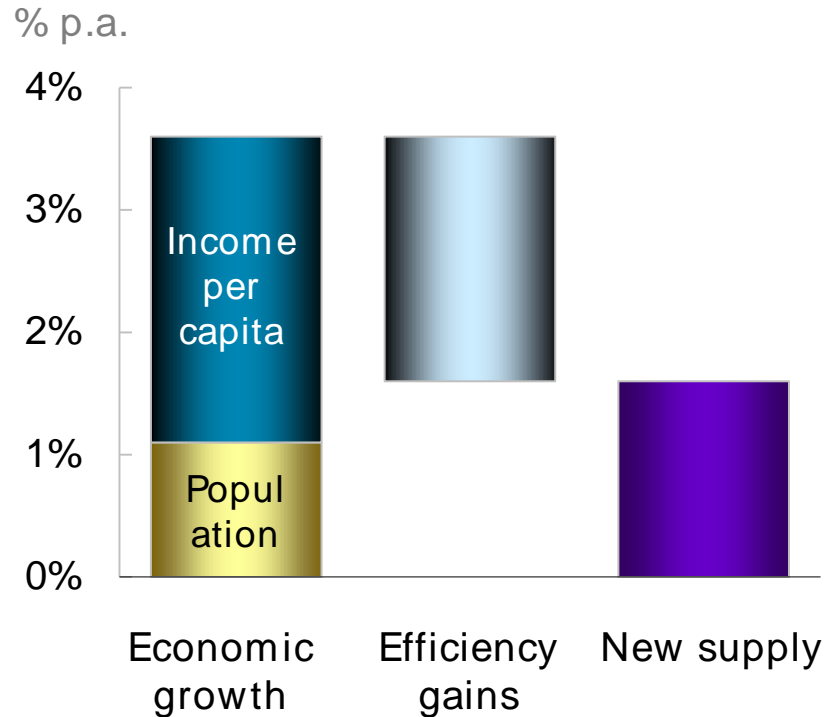
CO₂ emissions and primary energy



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

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