

BP Statistical Review of World Energy

June 2014

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Energy in 2013: Taking stock

Paul Appleby, Head of Energy Economics

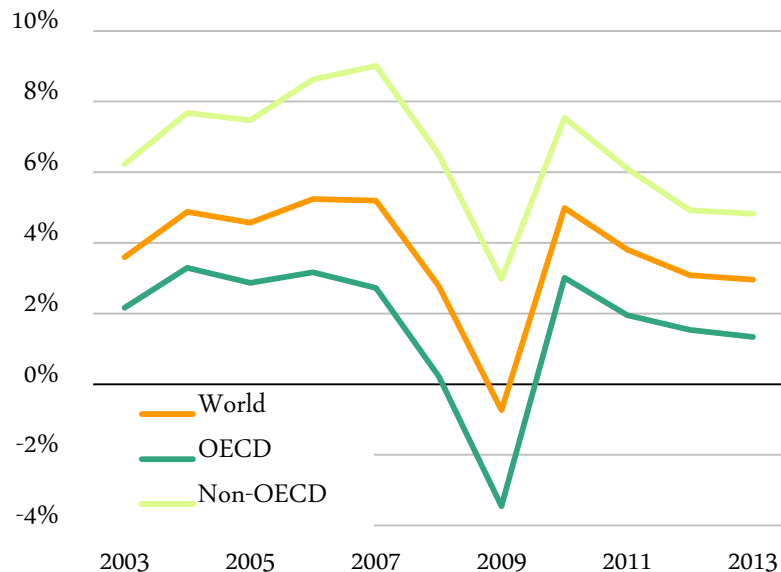




Energy and the economy

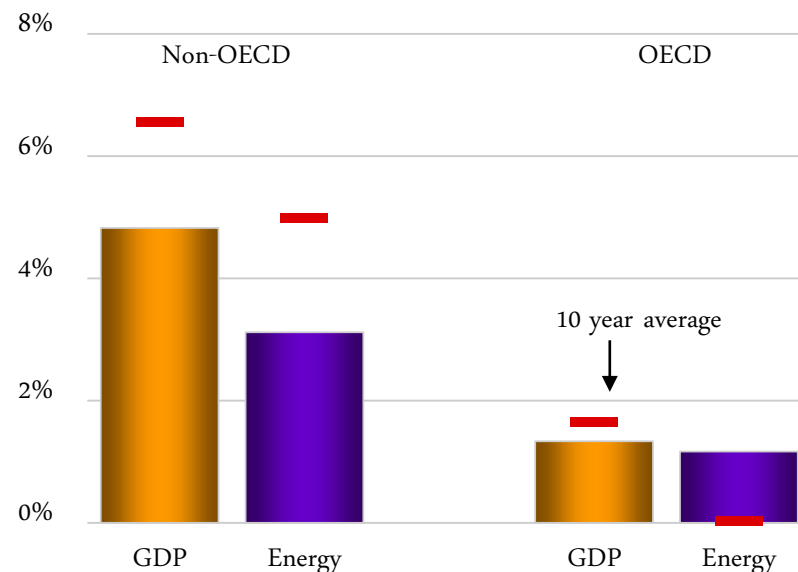
GDP growth

Annual change, %



Energy and GDP in 2013

Annual change, %



Source: includes data from Oxford Economics

Note: GDP growth based on Purchasing Power Parity measure of GDP

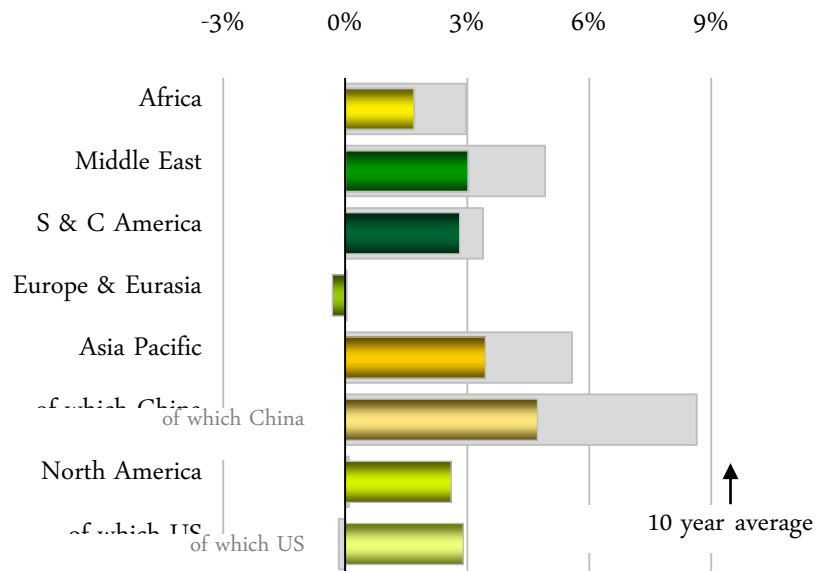
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Energy consumption in 2013

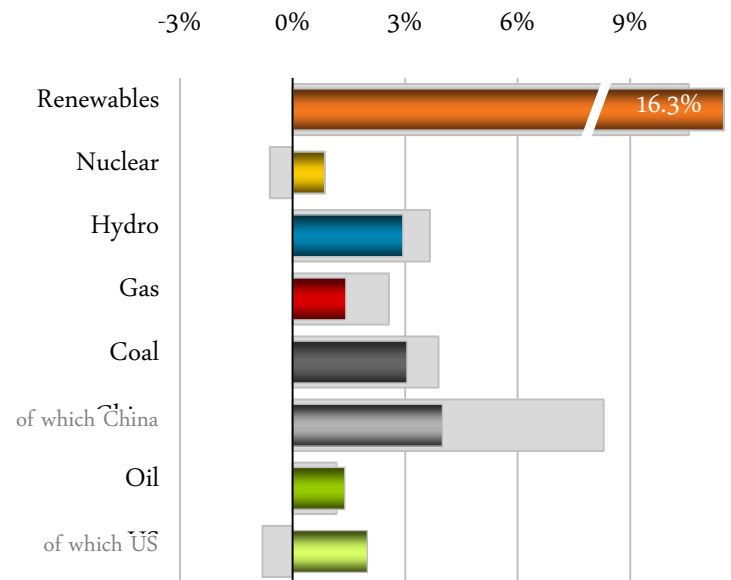
Growth by region

Annual change, %



Growth by fuel

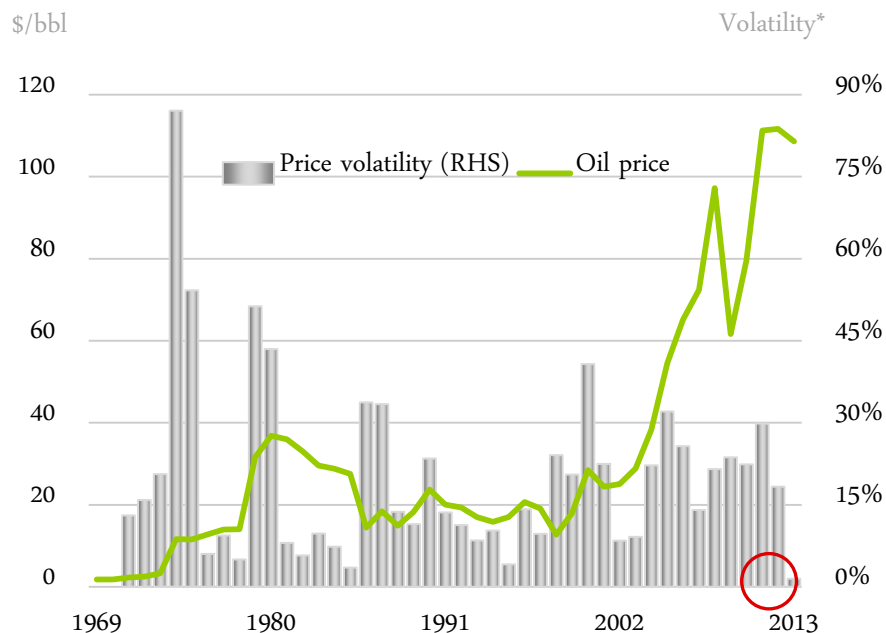
Annual change, %





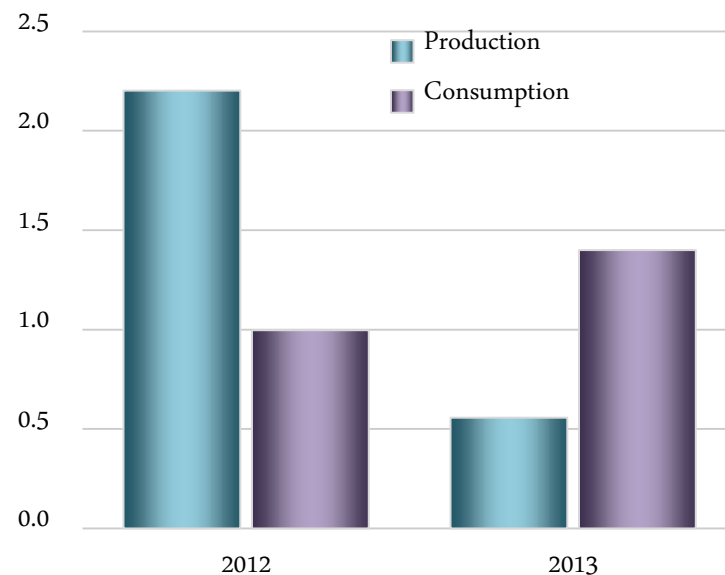
The oil market in 2013

Oil prices and volatility



Production and consumption growth

Annual change, Mb/d



Source: includes data from Platts

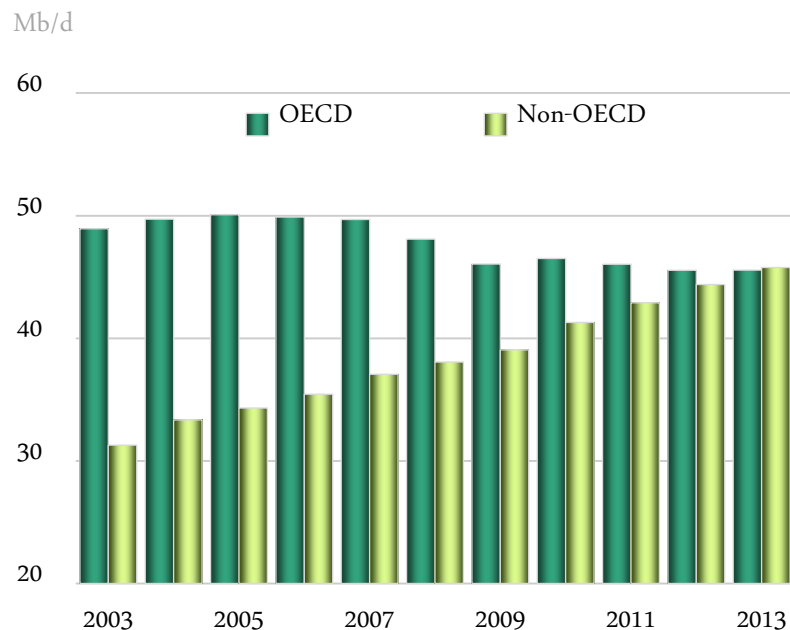
* Three year standard deviation

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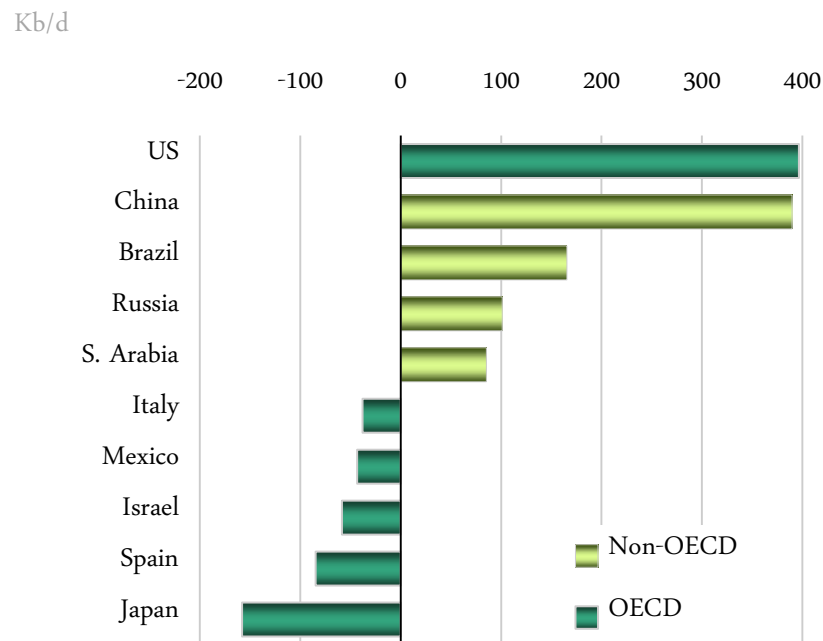
Oil consumption



Oil consumption



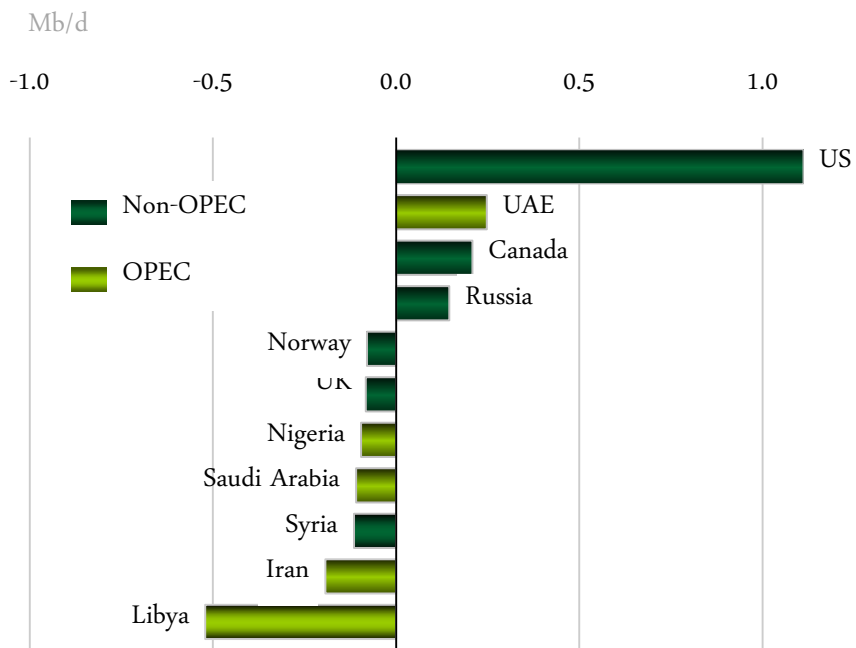
Largest changes in 2013



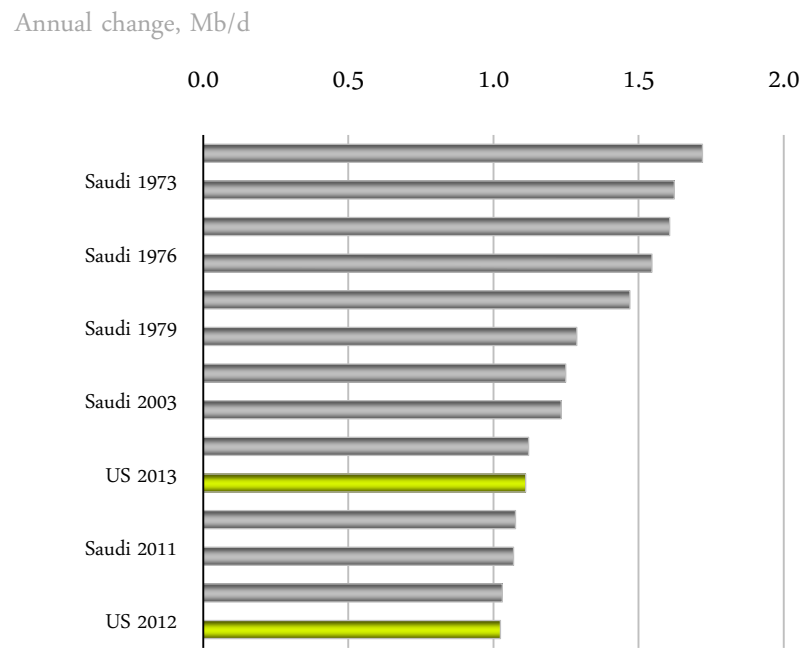
Oil production



Largest changes in 2013



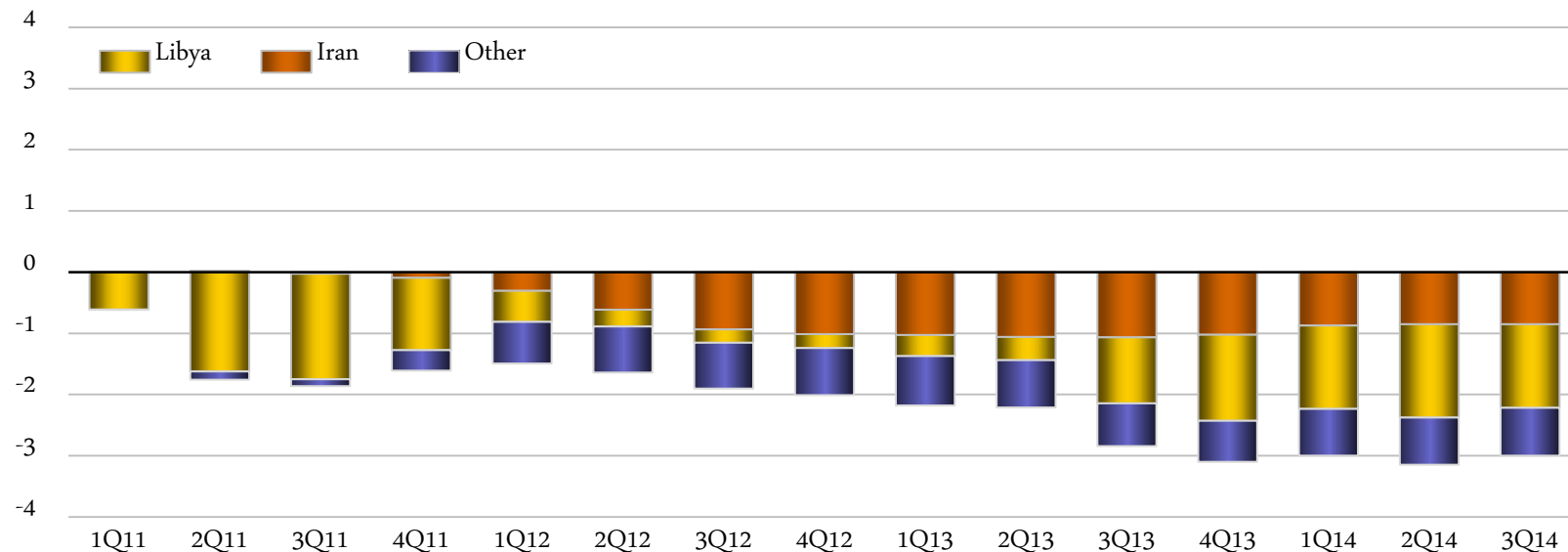
Largest oil production increases





Oil supply disruptions

Cumulative change since 4Q10, Mb/d



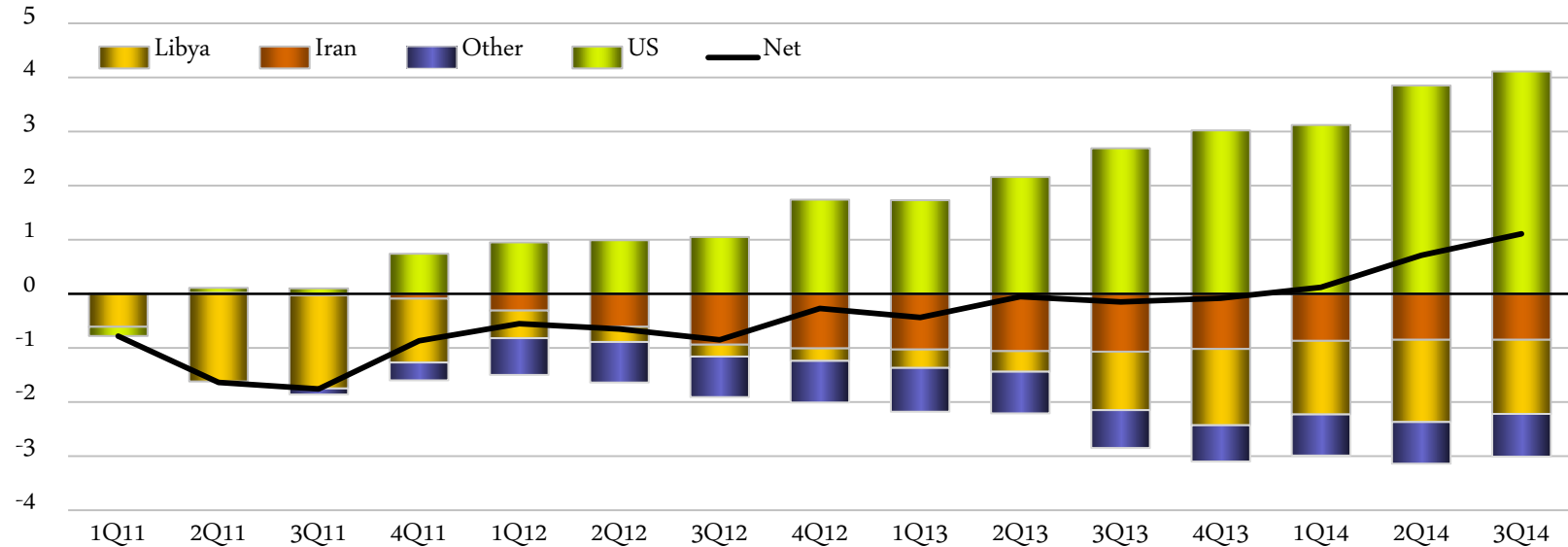
Source: includes data from US Energy Information Administration

Note: Other includes Sudan/S Sudan, Syria & Yemen

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Oil supply disruptions and US production growth

Cumulative change since 4Q10, Mb/d



Source: includes data from US Energy Information Administration

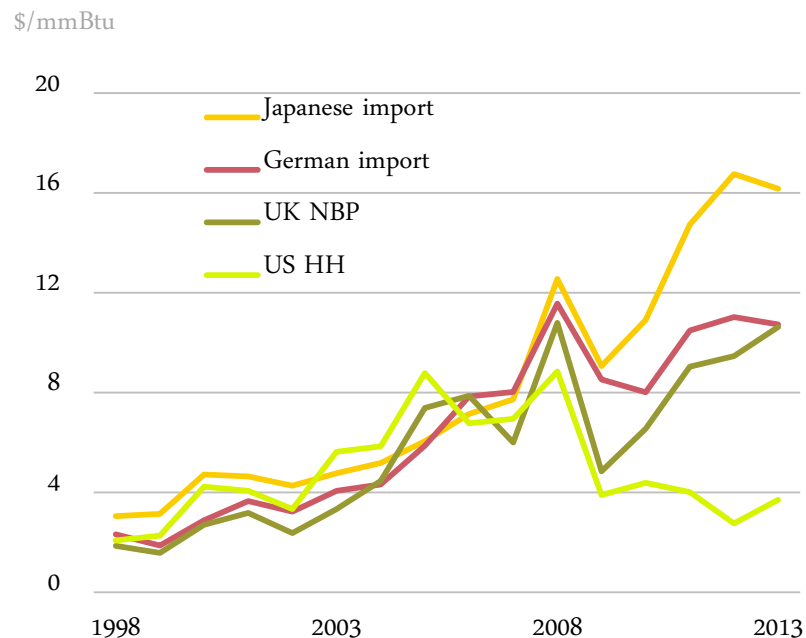
Note: Other includes Sudan/S Sudan, Syria & Yemen

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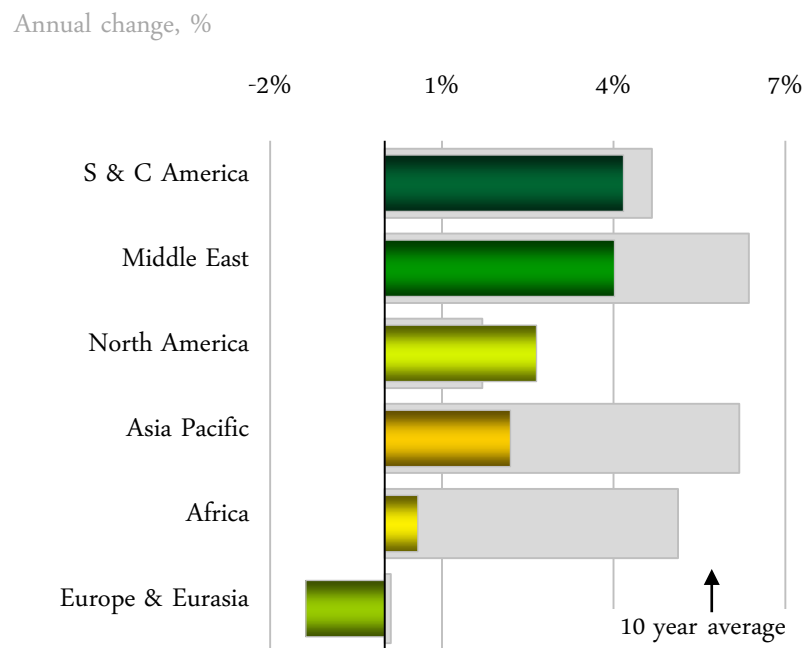
Global natural gas markets



Natural gas prices



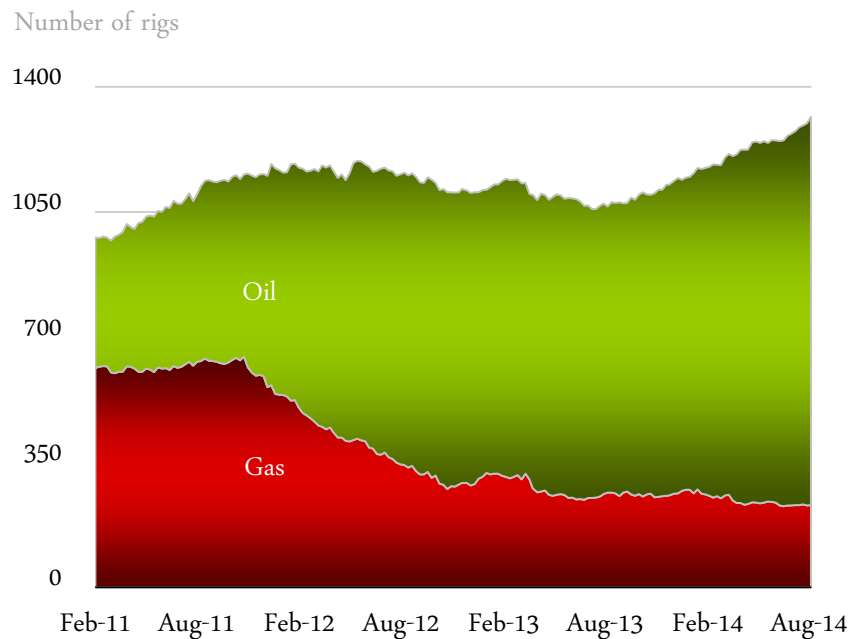
Gas consumption growth in 2013



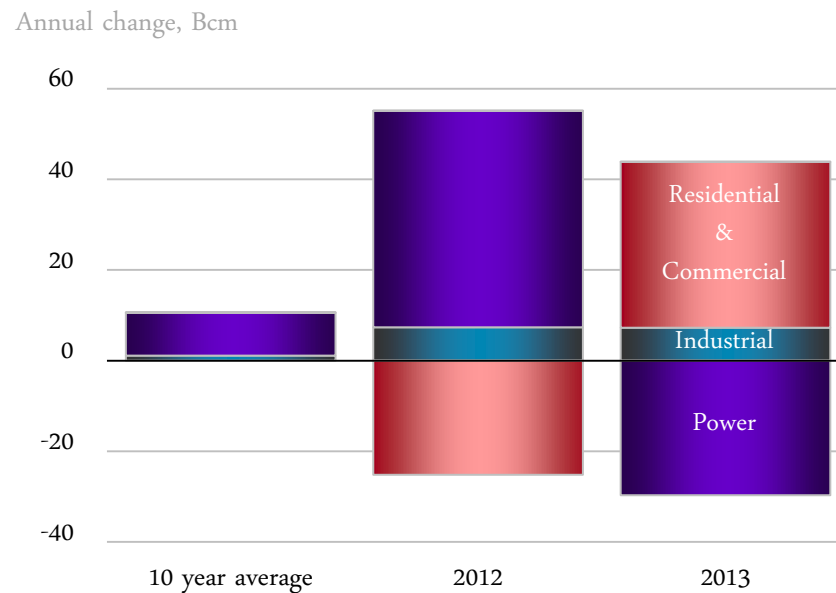


US natural gas market

Horizontal drilling rigs



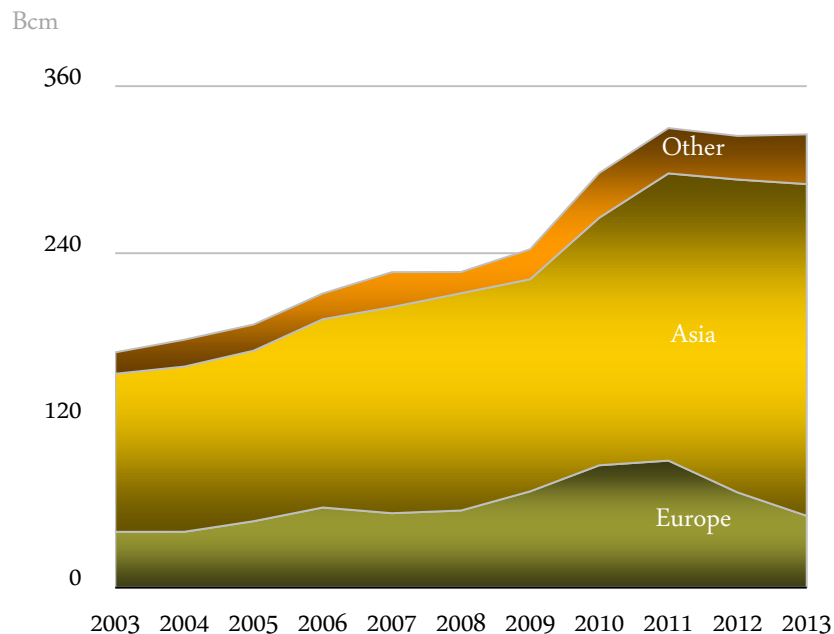
Consumption growth in 2013



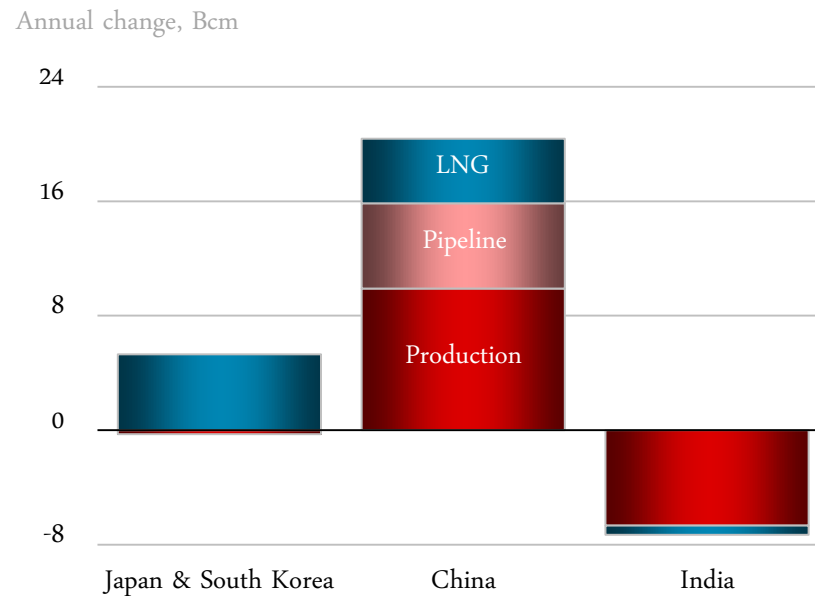
Global LNG and Asian supply



Global LNG imports



Asian supply growth in 2013

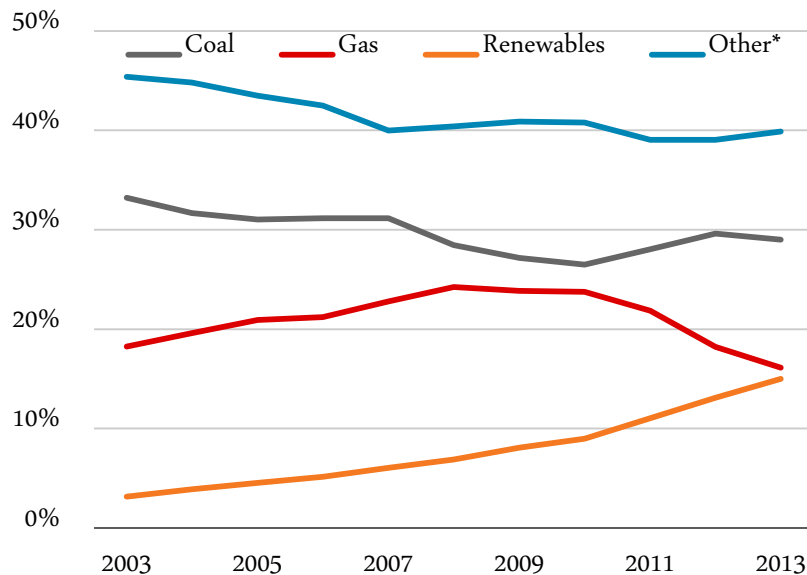




EU natural gas market

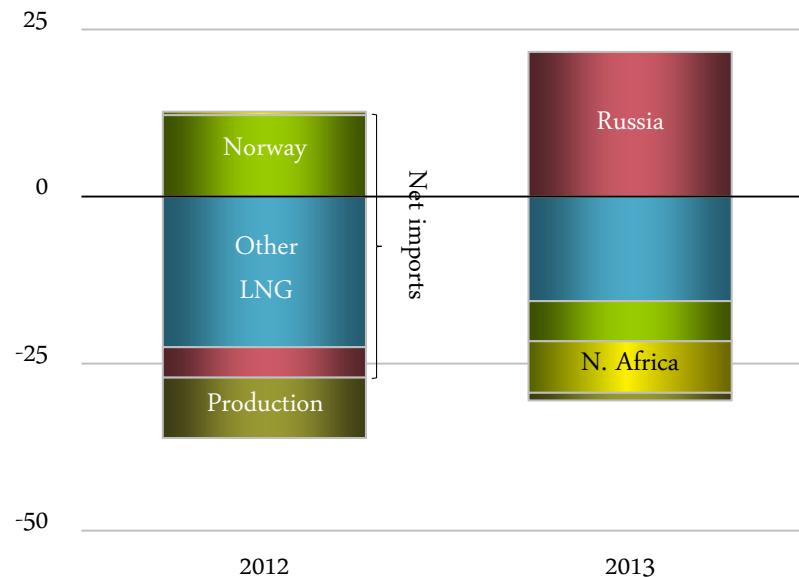
Power generation mix

Share of total generation, %



Natural gas supply

Annual change, Bcm



Source: includes data from ENTSOE and IHS CERA

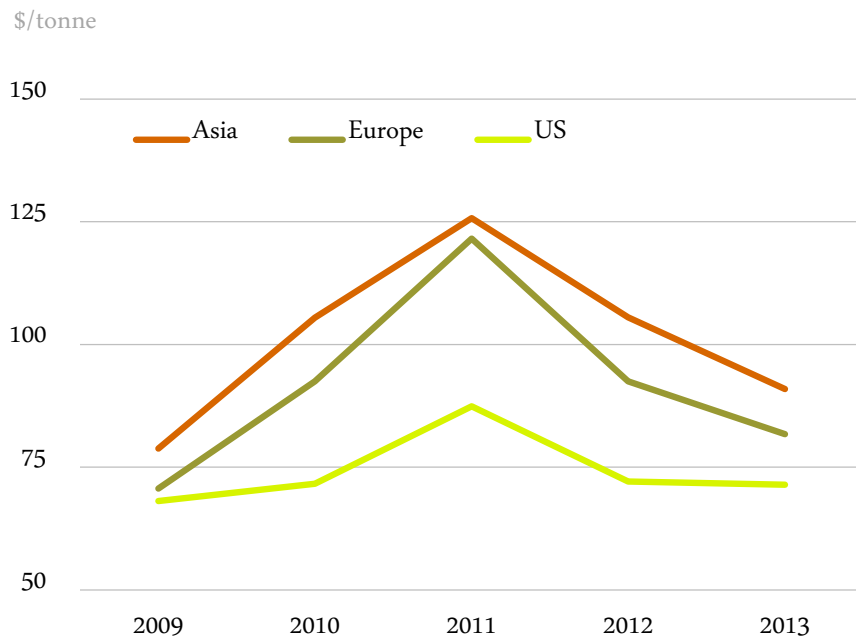
* Includes hydro, nuclear and oil

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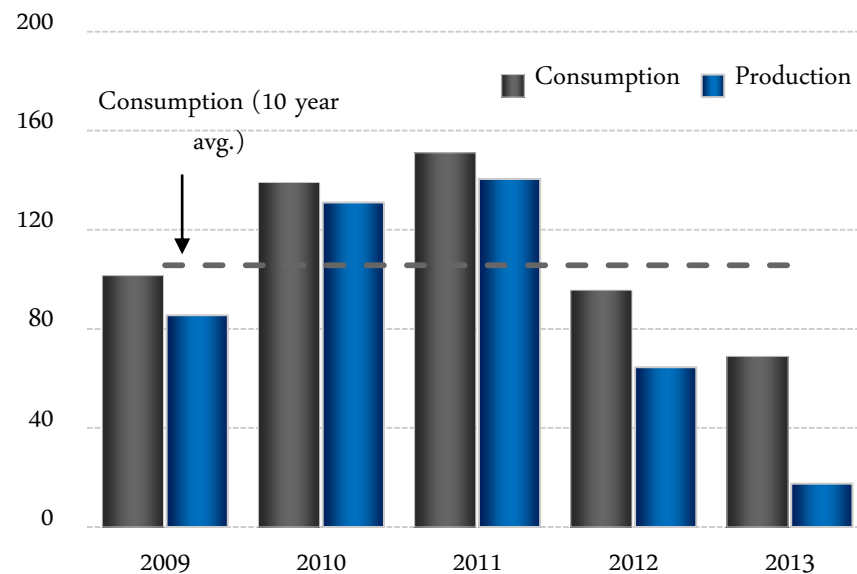
The coal market

Coal prices



Growth in China

Annual change, Mtoe

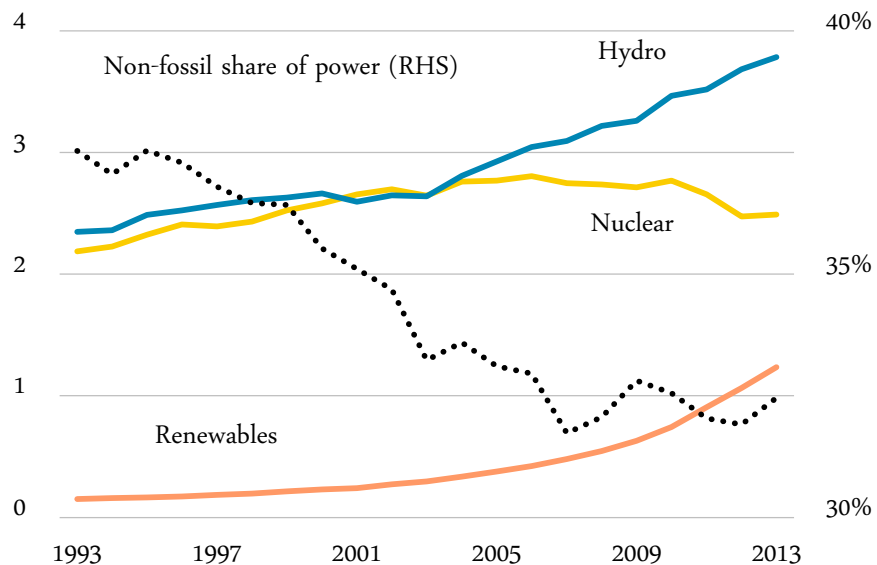




Hydro, renewables and nuclear

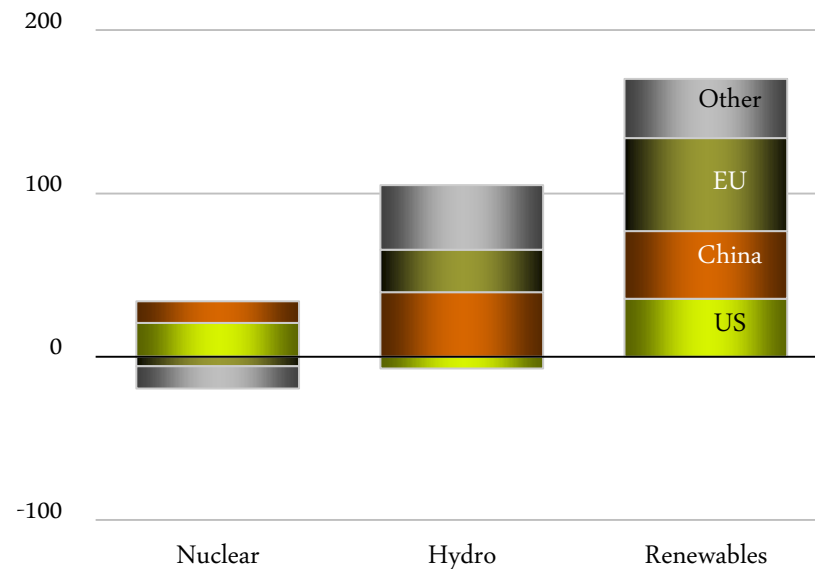
Power generation

Thousand TWh



Output changes in 2013

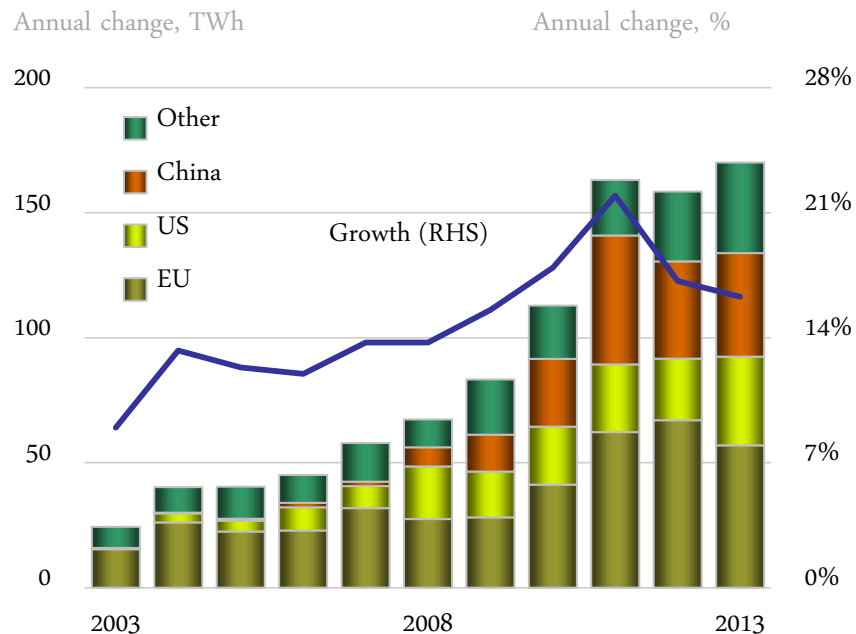
Annual change, TWh



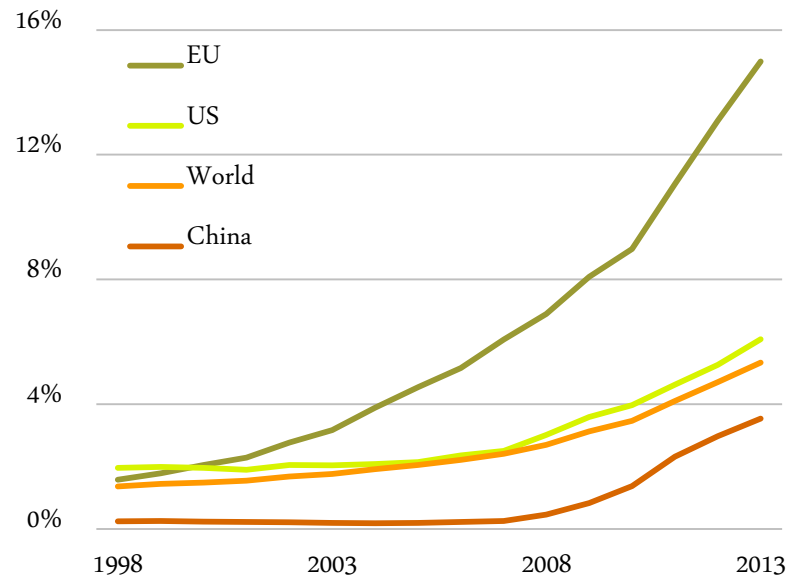


Renewables in power generation

Growth by region



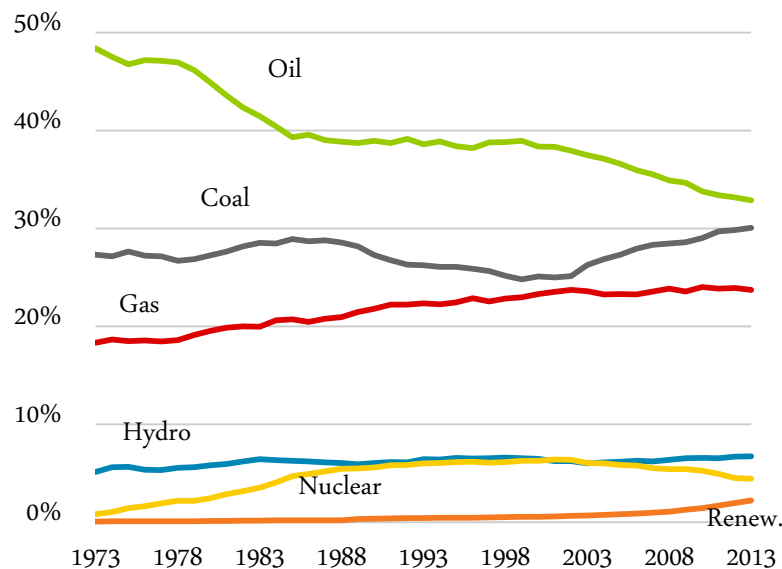
Renewables share of power



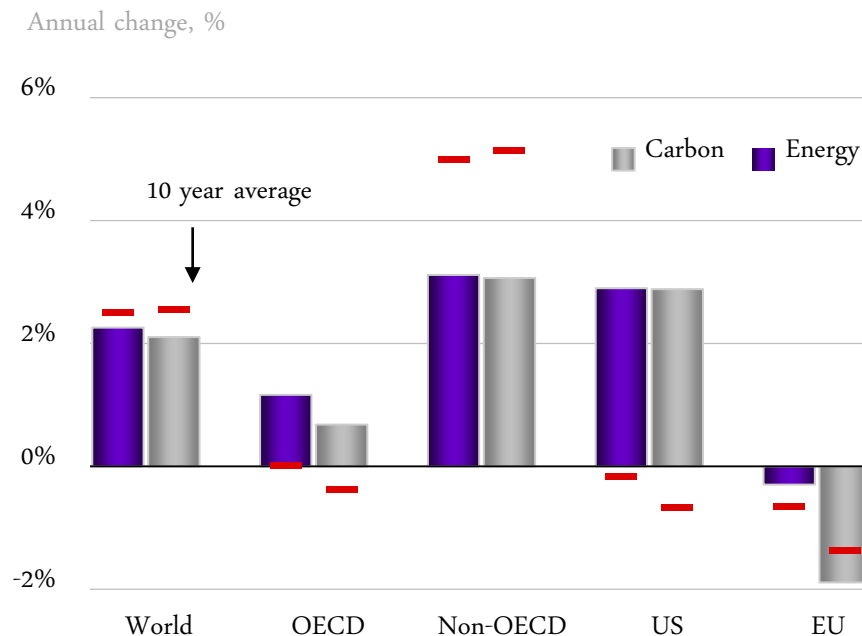


Fuel shares and carbon emissions

Shares of global primary energy



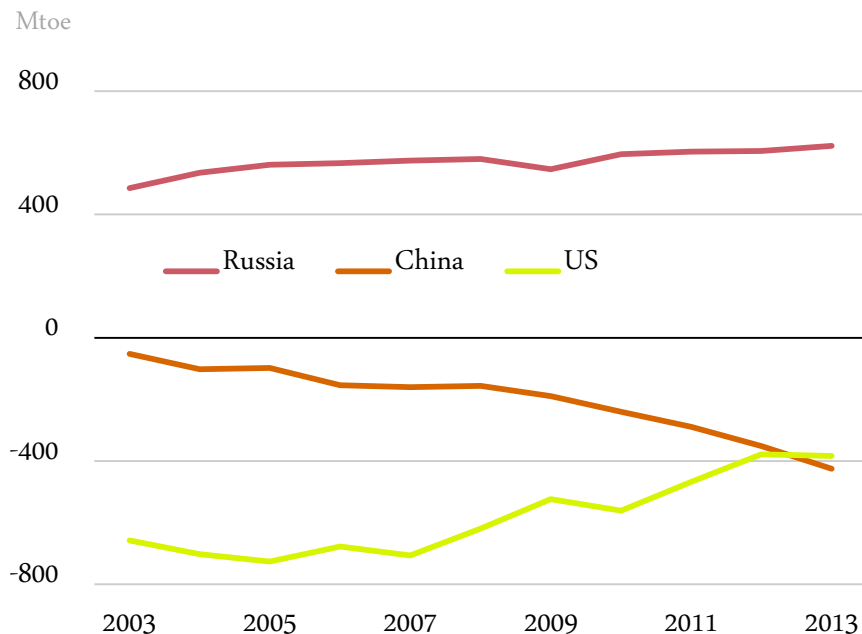
Energy and emissions growth in 2013



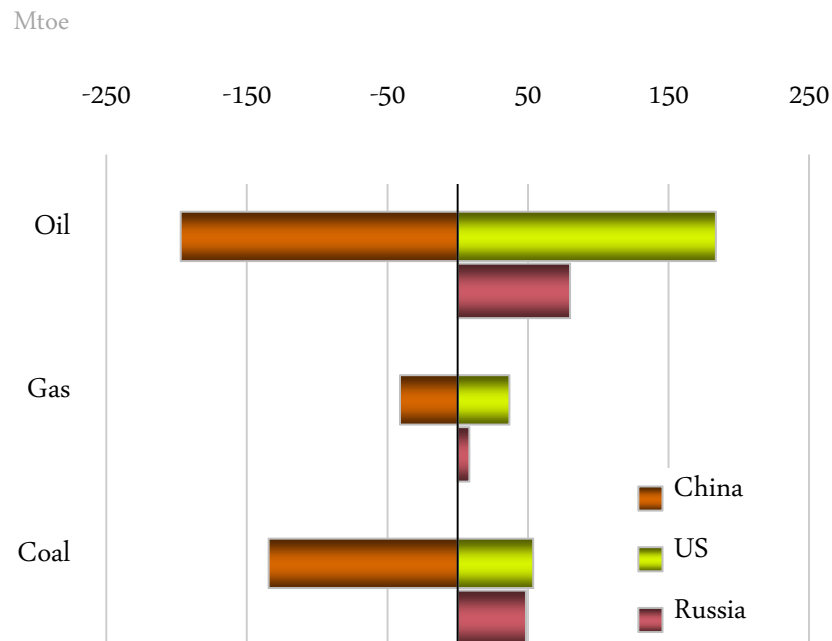


Changes in energy balances

Fossil fuel imbalances



Change in imbalances, 2003-2013



Note: imbalances defined as production minus consumption

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BP Energy Outlook 2035

January 2014

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Introduction

Outlook 2035: Global energy trends

Liquid fuels

Natural gas

Coal and non-fossil fuels

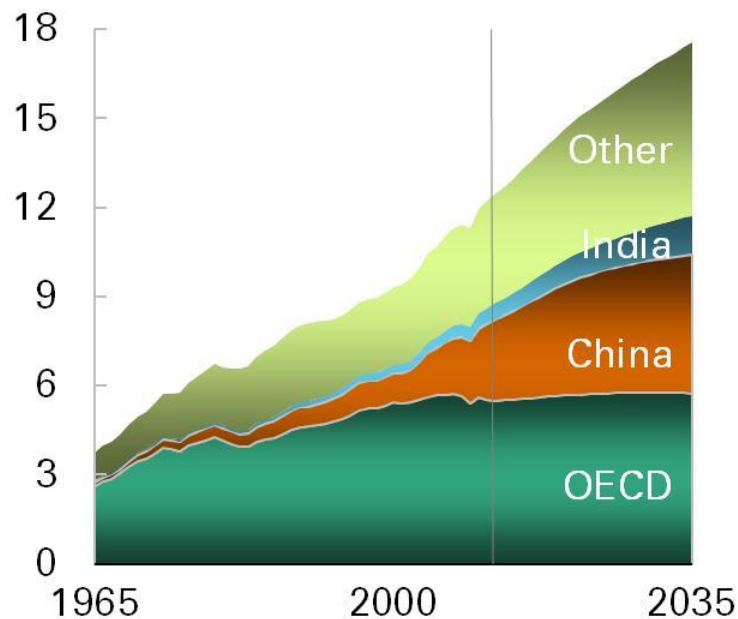
Carbon emissions and the fuel mix

Conclusion

Primary energy consumption growth slows

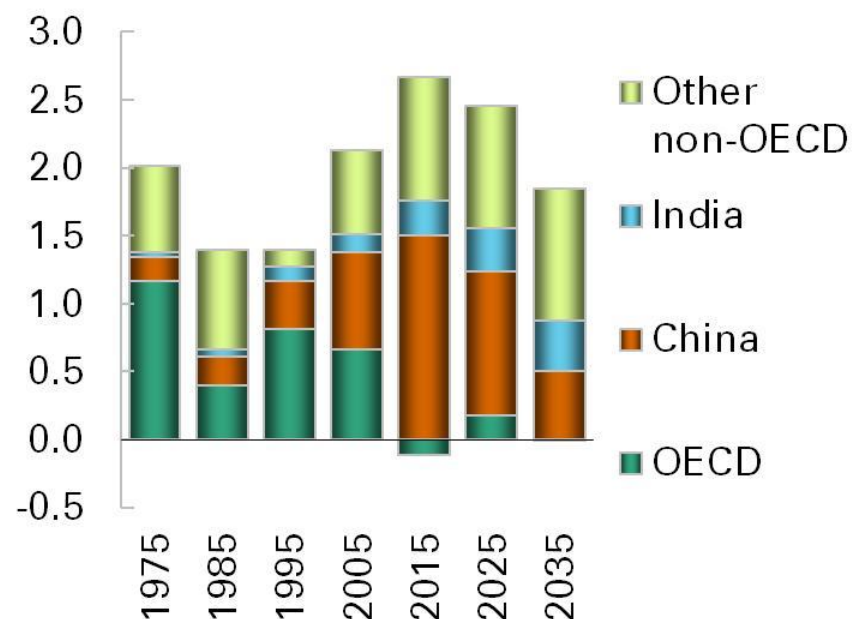
Consumption by region

Billion toe



Ten year increments by region

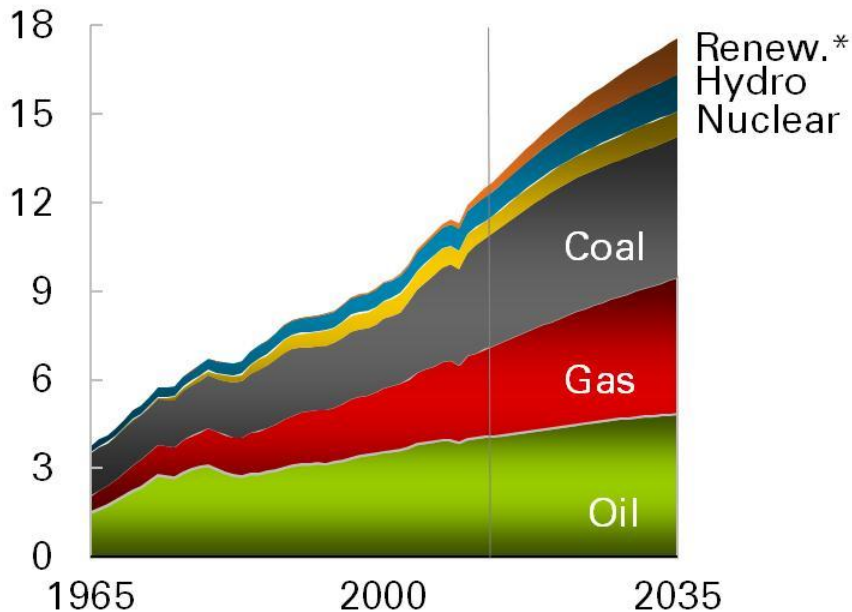
Billion toe



The slowdown in China and industry is reflected in coal

Consumption by fuel

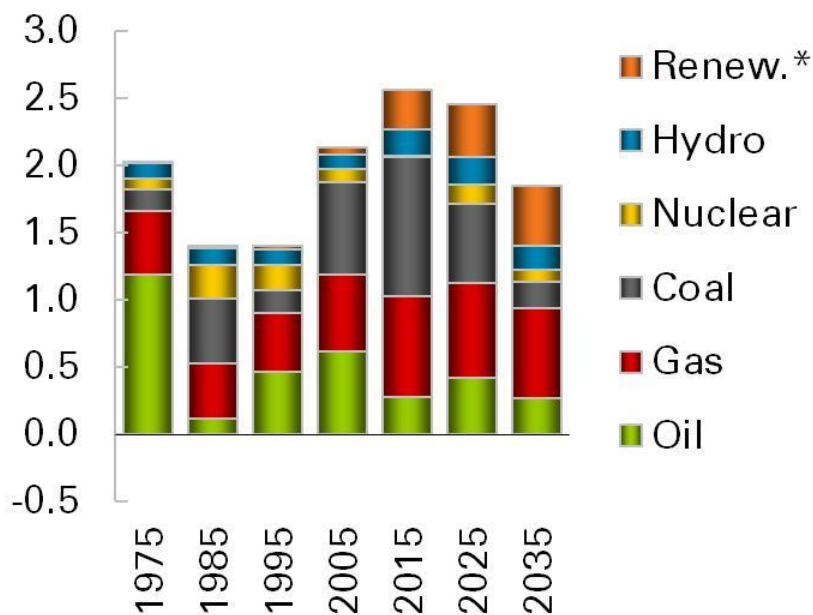
Billion toe



*Includes biofuels

Ten year increments by fuel

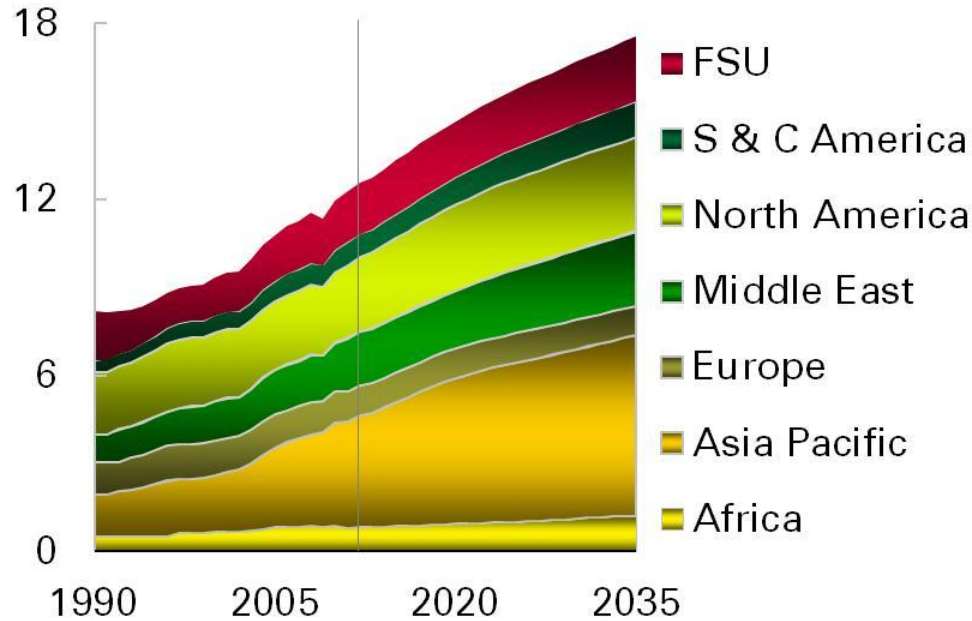
Billion toe



New sources help to supply sufficient energy

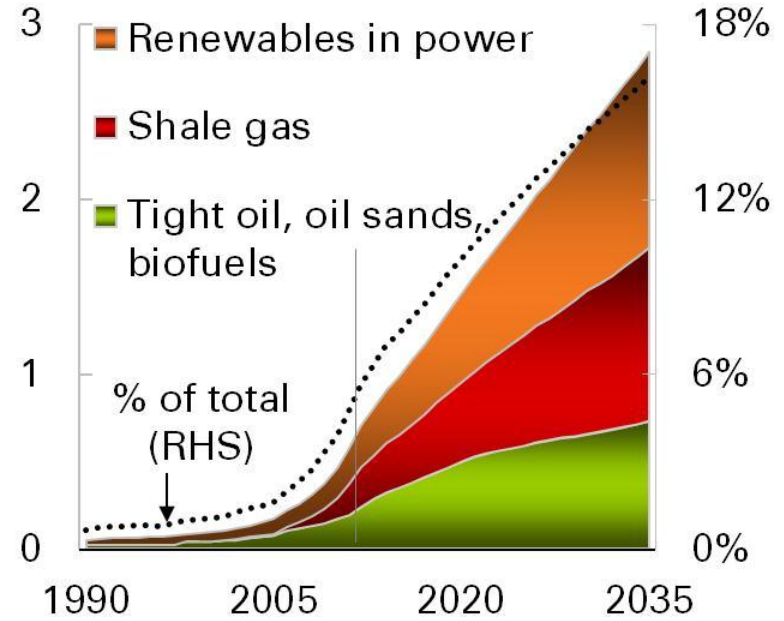
Primary energy production

Billion toe



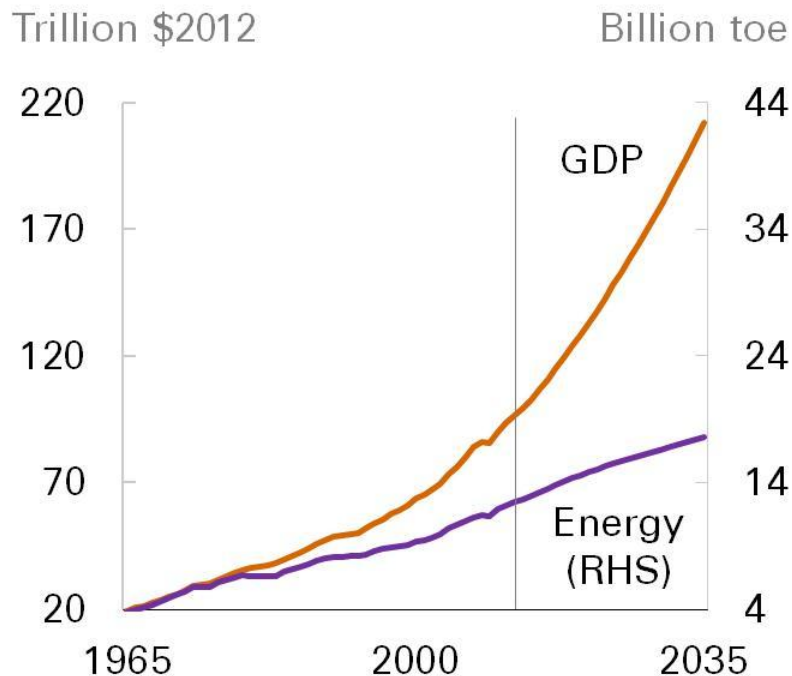
New energy forms

Billion toe

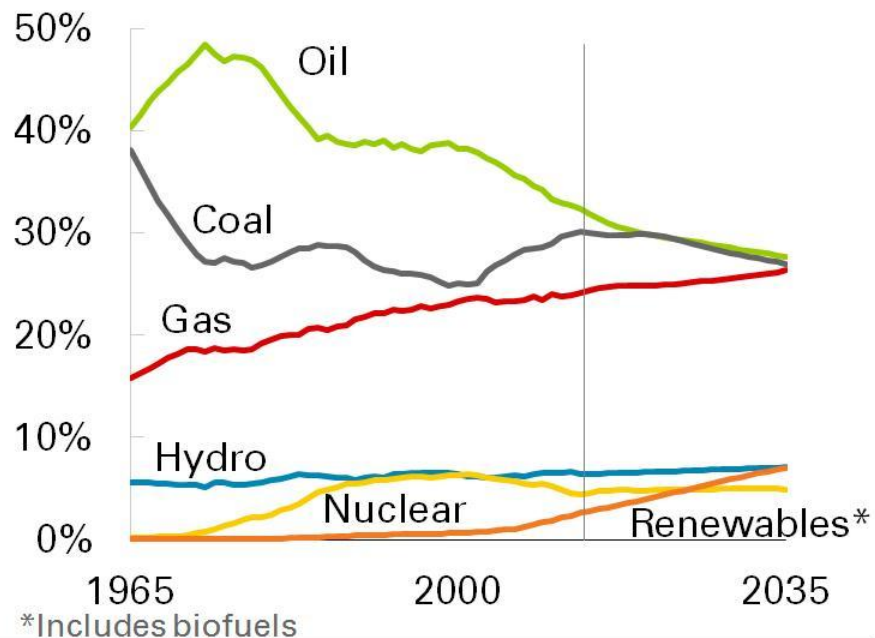


Energy decouples from GDP and fuel mix evolves

GDP and energy



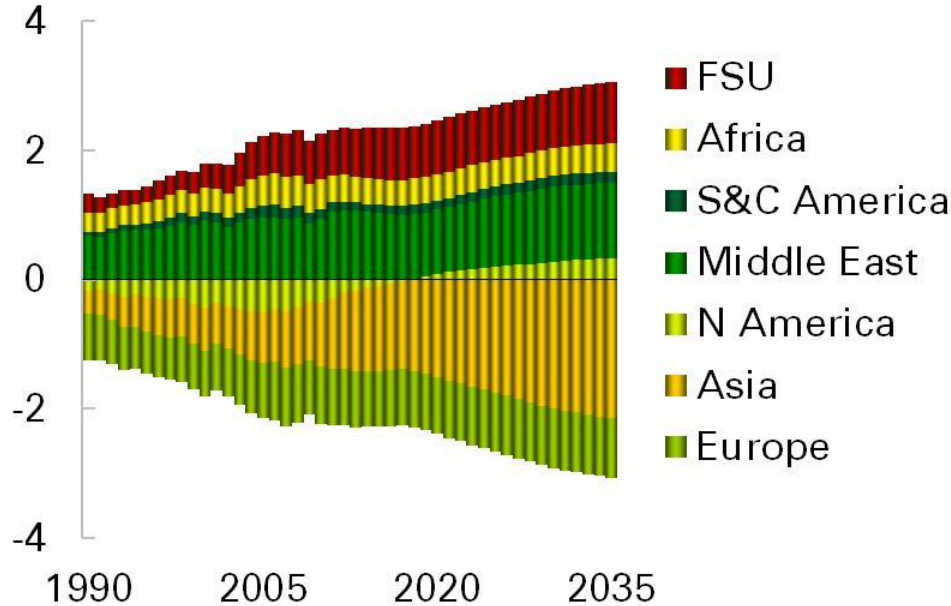
Shares of primary energy



Energy security and sustainability pose challenges

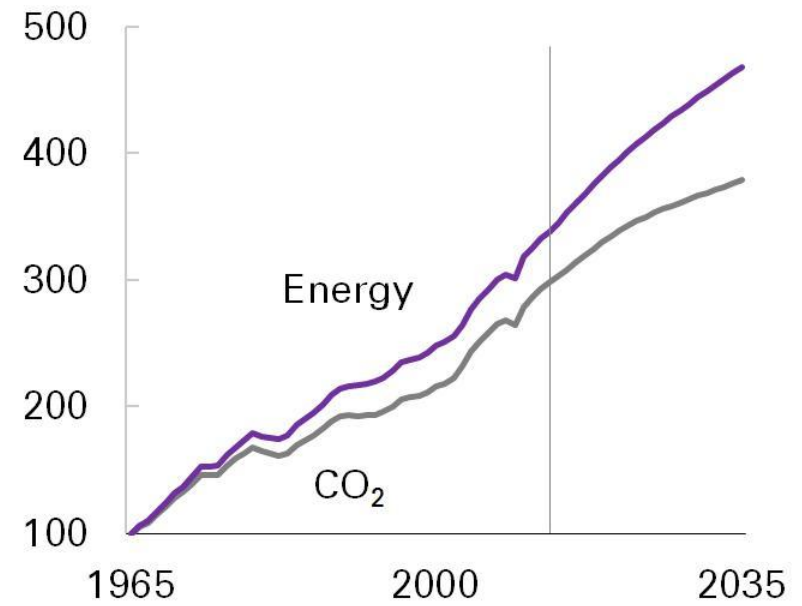
Primary energy net balances

Billion toe



Energy and CO₂ emissions

Index: 1965 = 100



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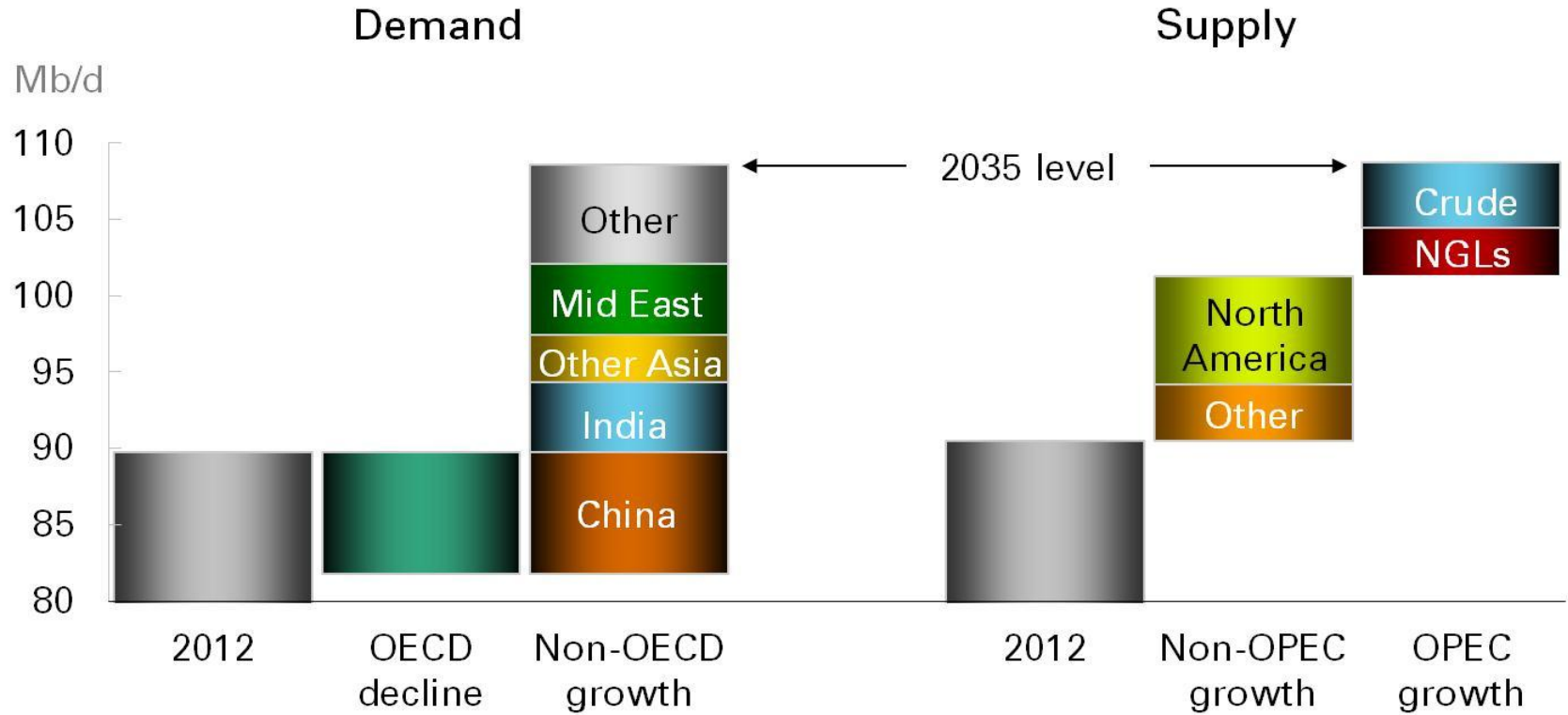
Natural gas

Coal and non-fossil fuels

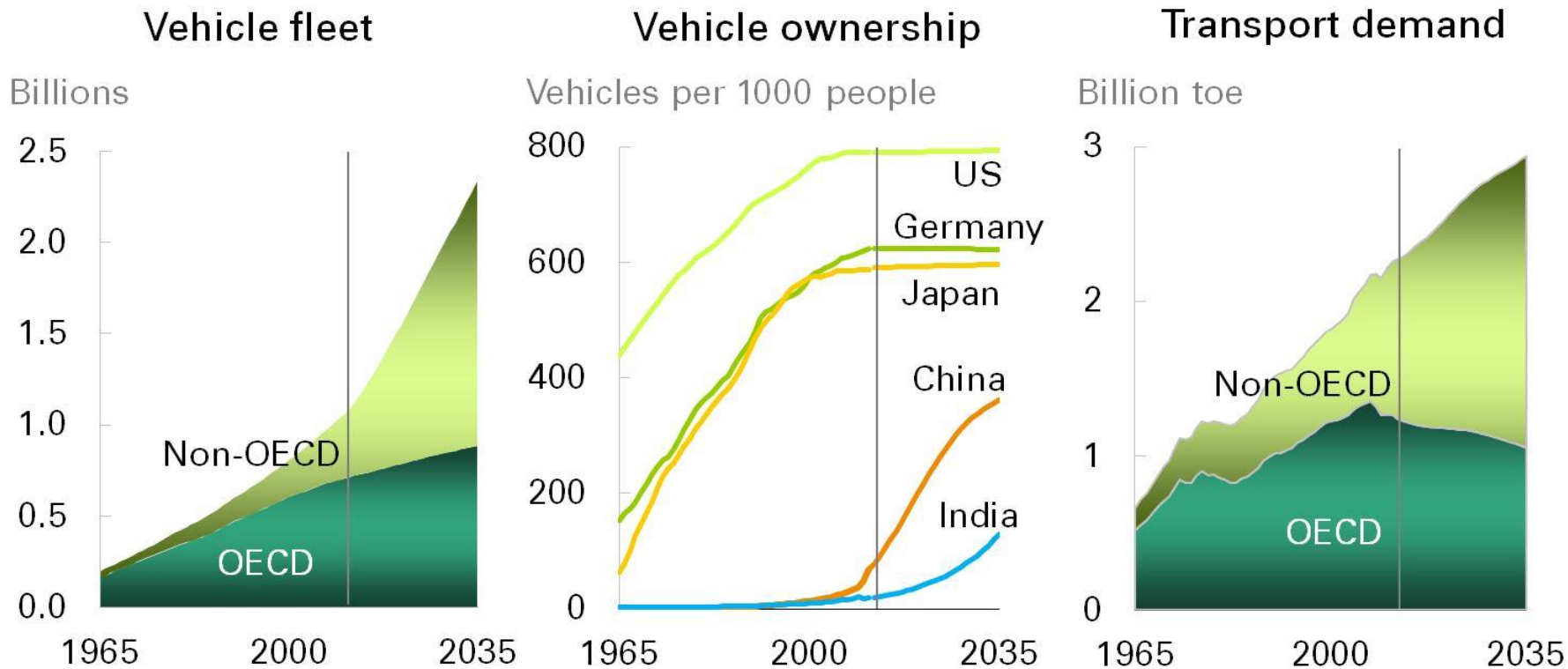
Carbon emissions and the fuel mix

Conclusion

The global liquids balance



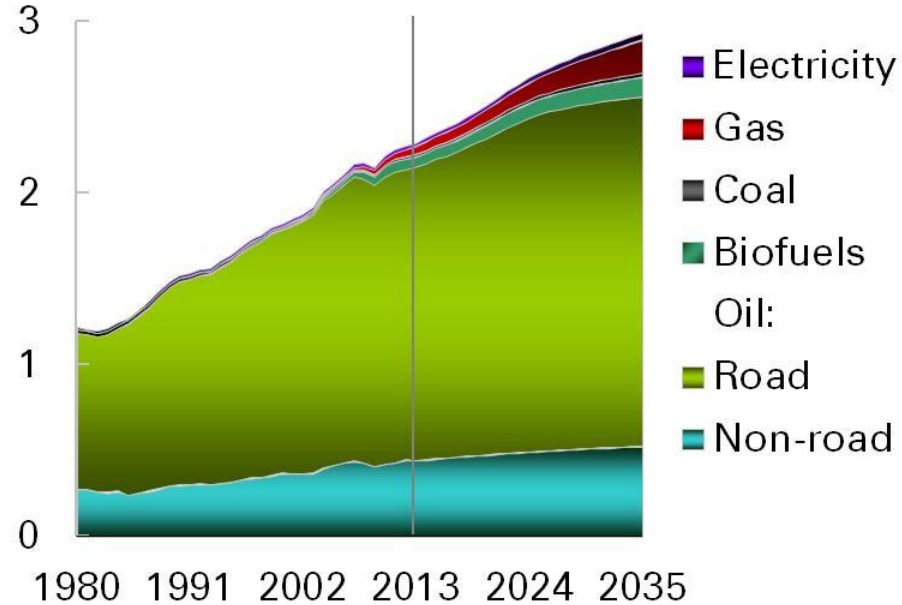
Vehicle numbers are set to grow rapidly in the non-OECD



Global transport demand growth slows

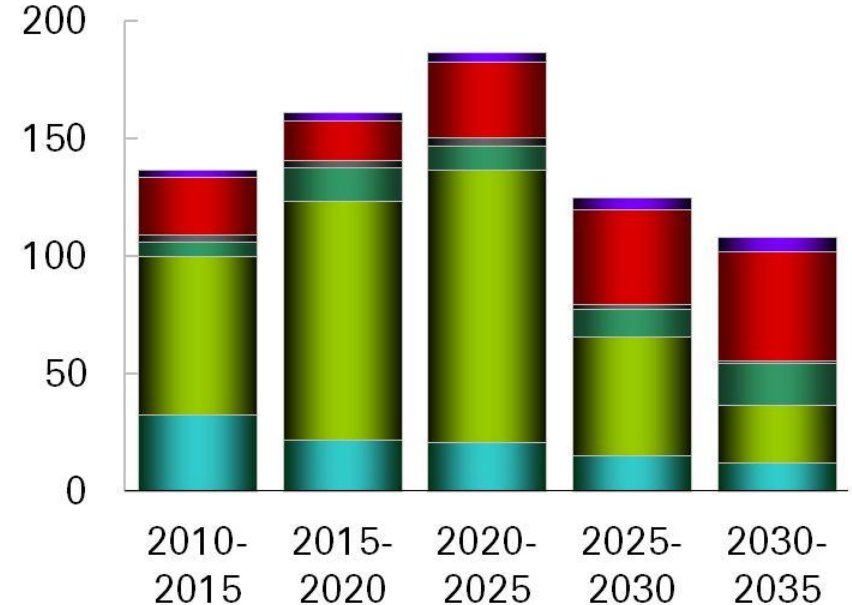
Transport demand by fuel

Billion toe



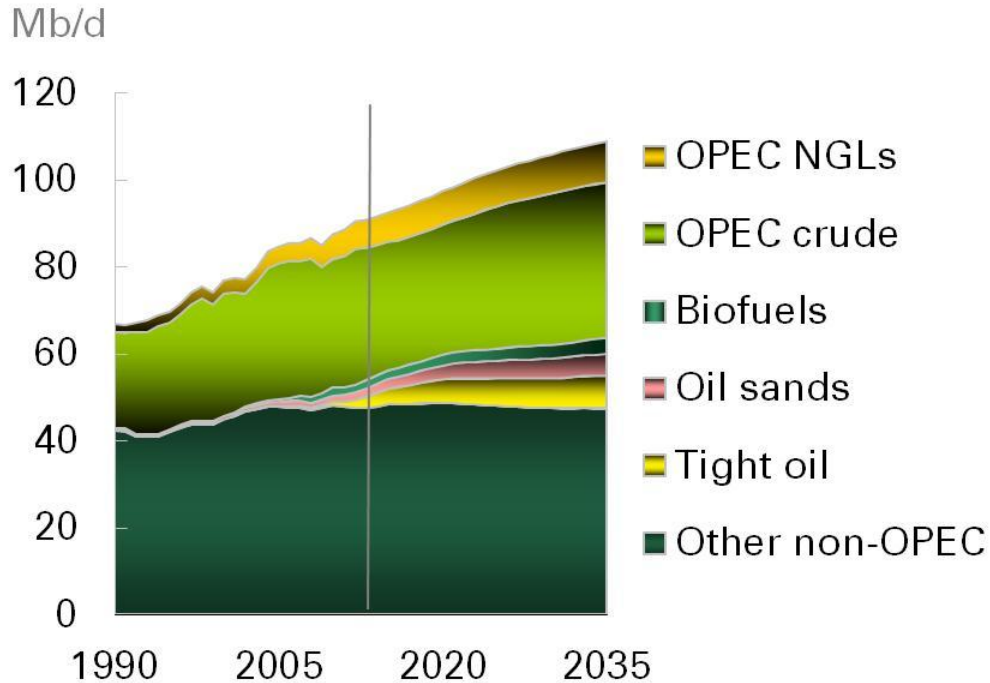
Five year increments by fuel

Mtoe

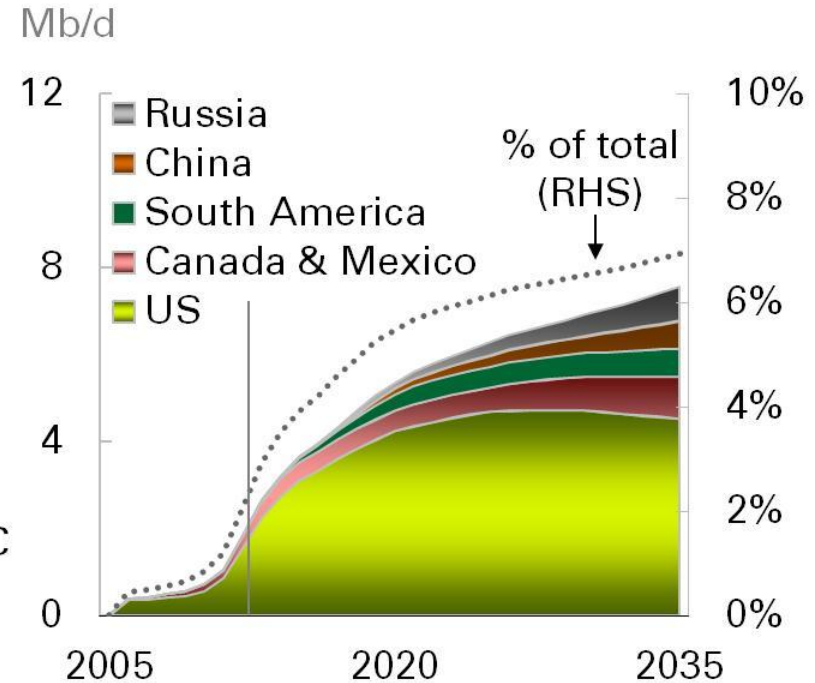


Supply growth is supported initially by unconventional

Liquids supply by type

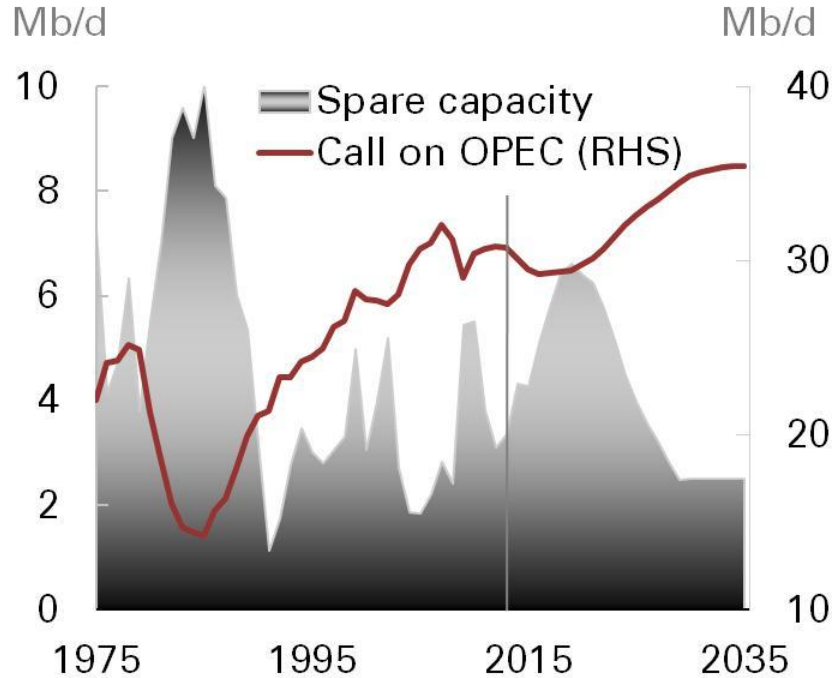


Tight oil supply

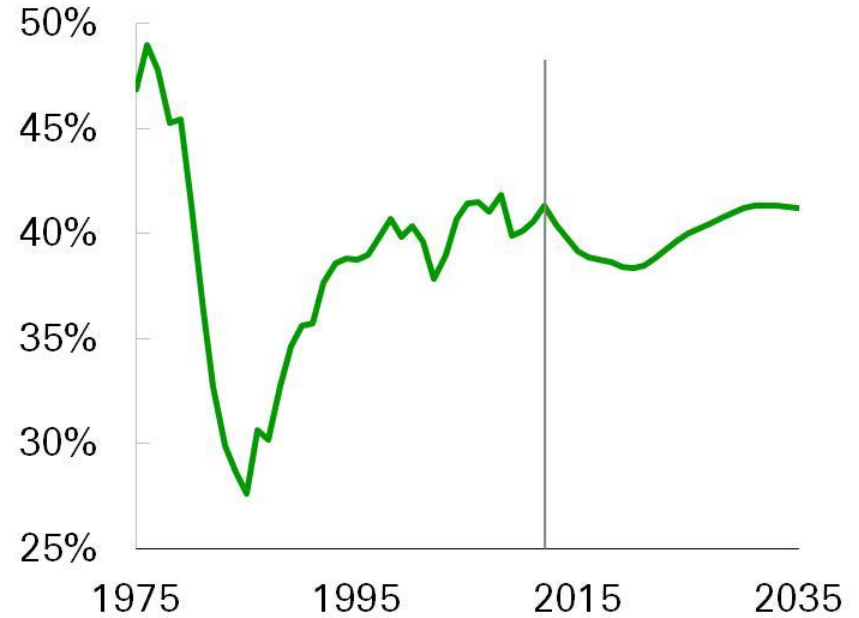


Oil balances suggest OPEC will be challenged

OPEC spare capacity



OPEC share of global supply



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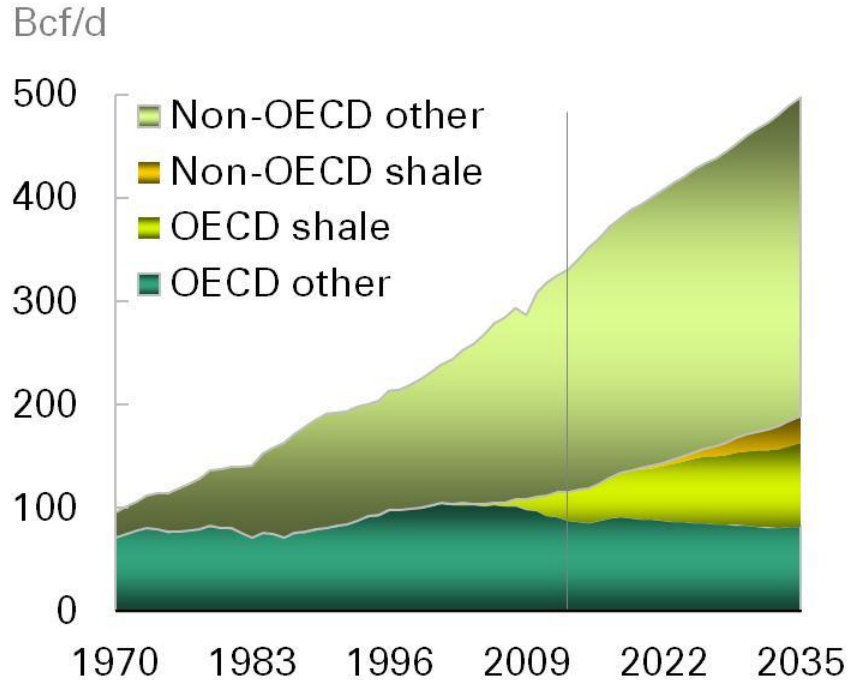
Coal and non-fossil fuels

Carbon emissions and the fuel mix

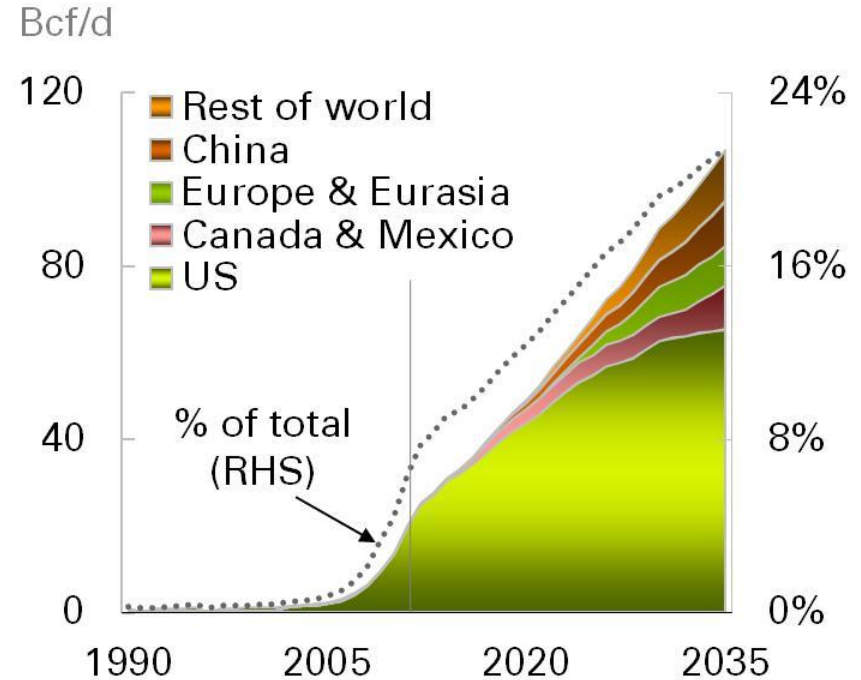
Conclusion

Shale gas shows the fastest production growth

Gas production by type and region

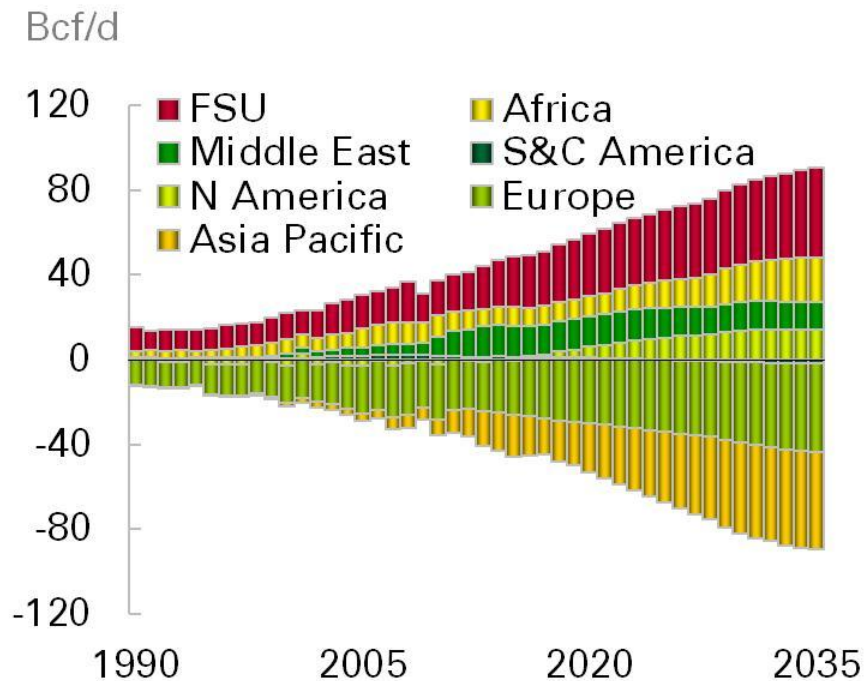


Shale gas production

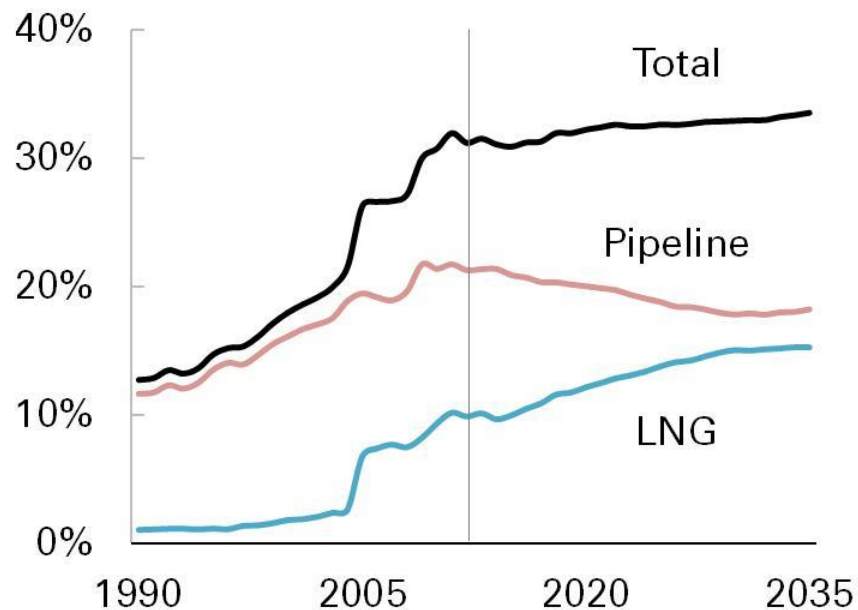


Gas trade continues to expand

Regional net exports

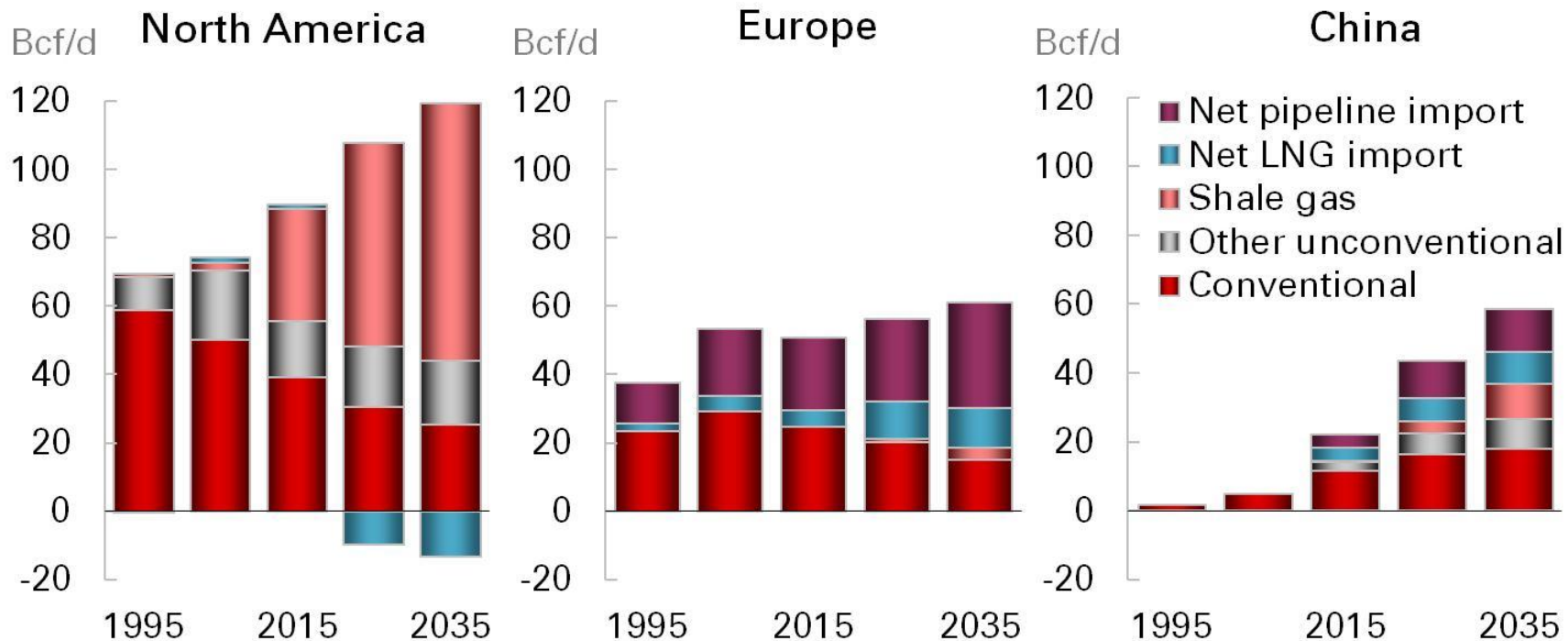


Imports share of consumption



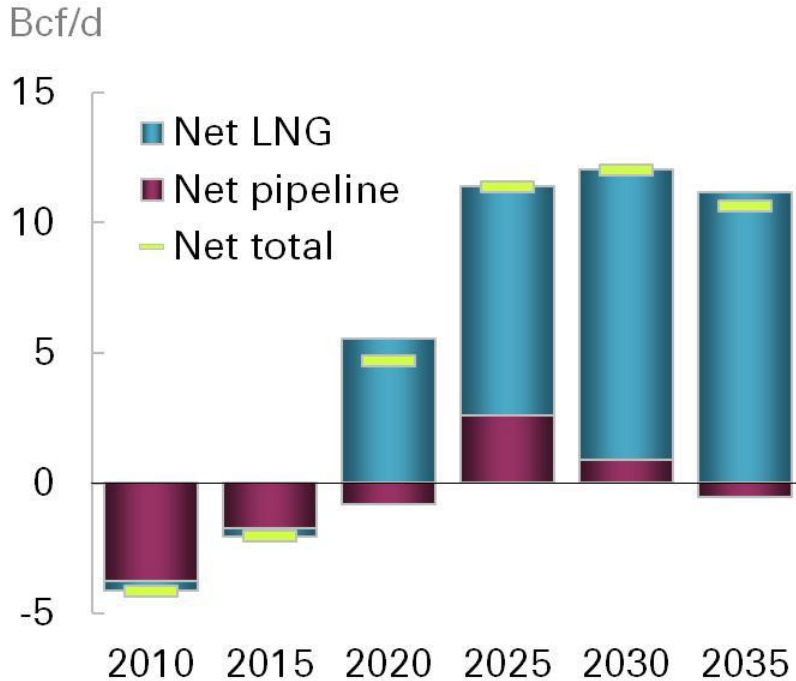
Regional supply patterns differ

Sources of gas supply by region

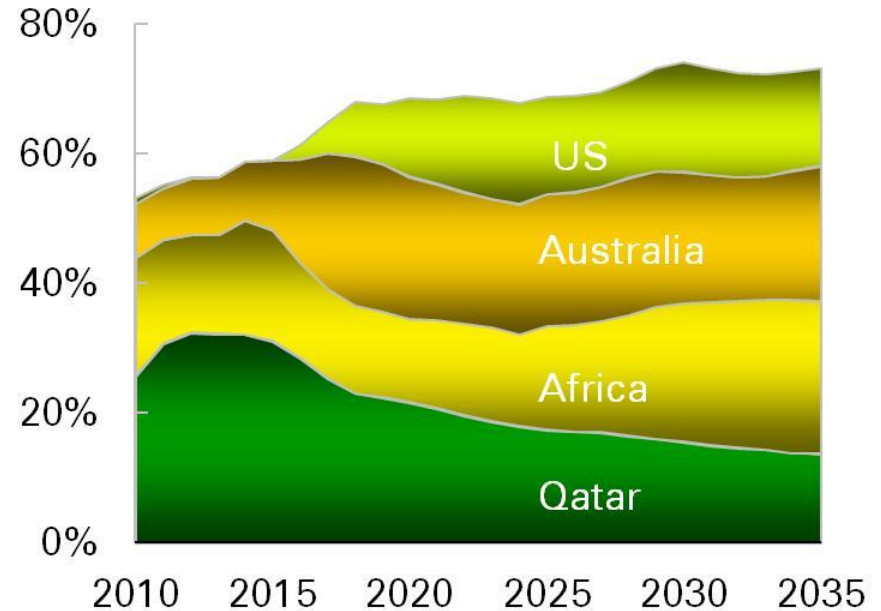


Shale gas changes the US and global gas trade picture

US natural gas exports



Share of global LNG trade



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Coal and non-fossil fuels

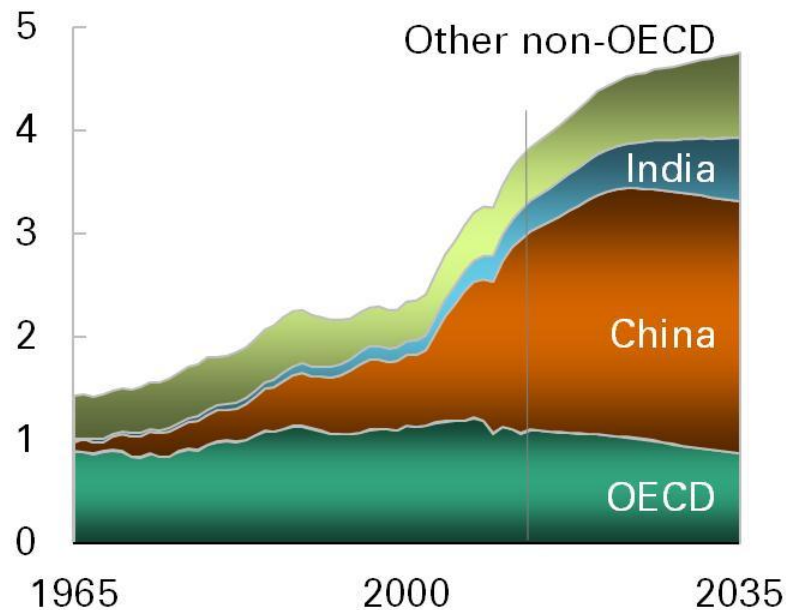
Carbon emissions and the fuel mix

Conclusion

Coal consumption growth slows in the non-OECD

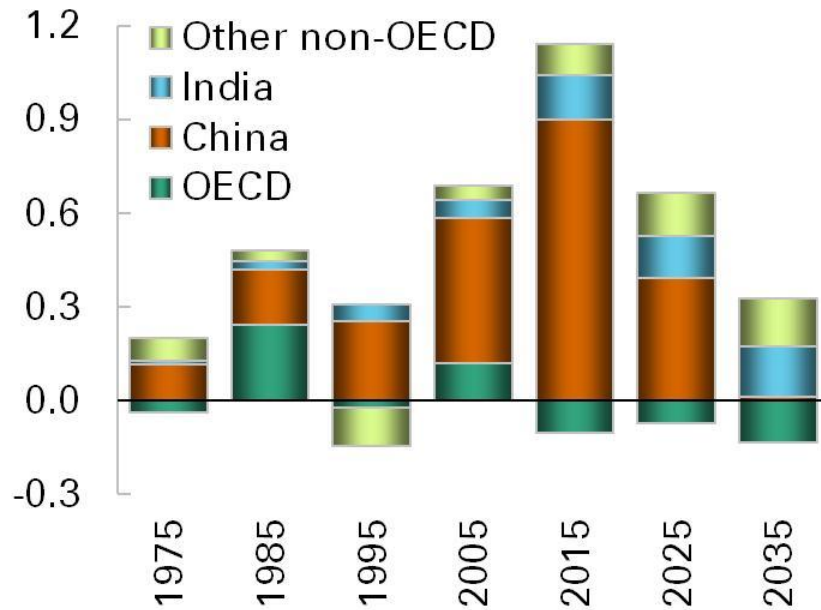
Consumption by region

Billion toe



Ten year increments by region

Billion toe

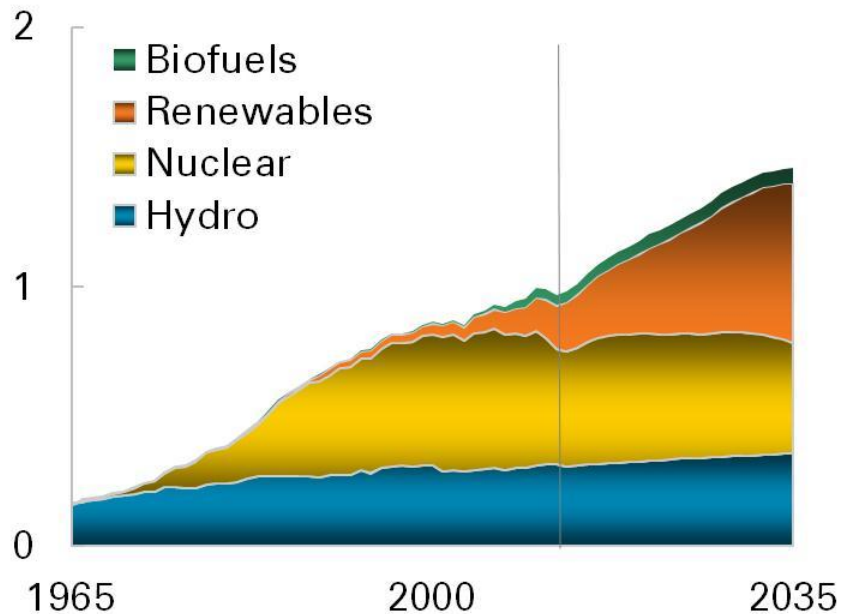


Non-fossil fuels grow rapidly



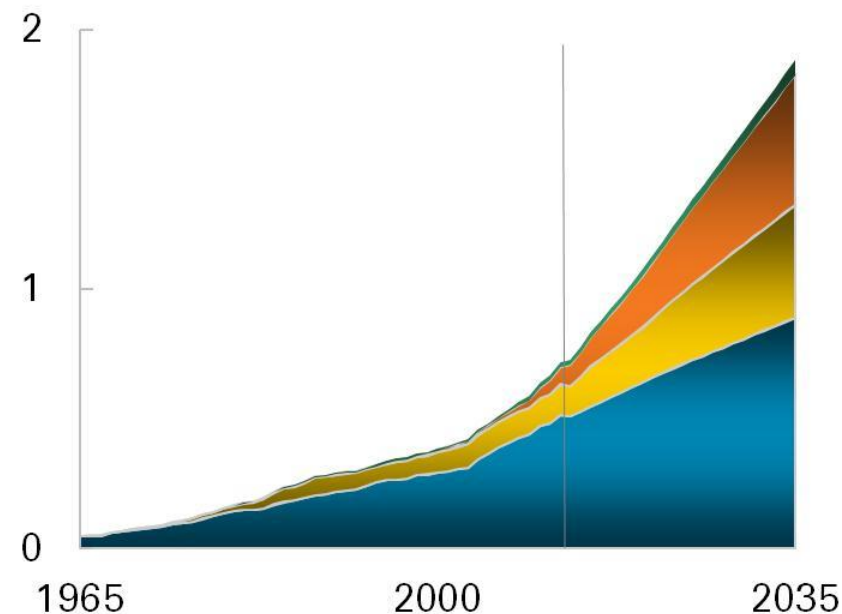
OECD

Billion toe



Non-OECD

Billion toe



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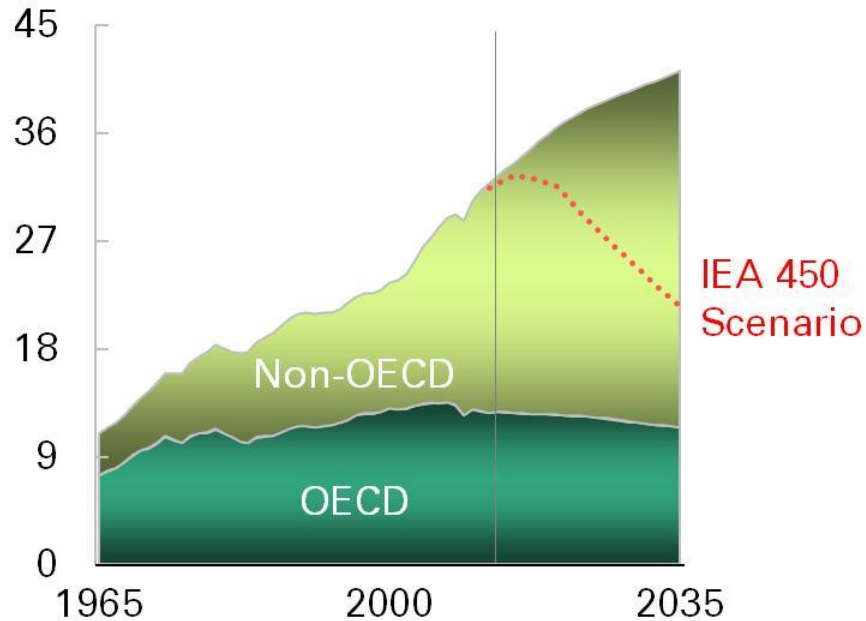
Carbon emissions and the fuel mix

Conclusion

CO₂ emissions from energy use continue to rise

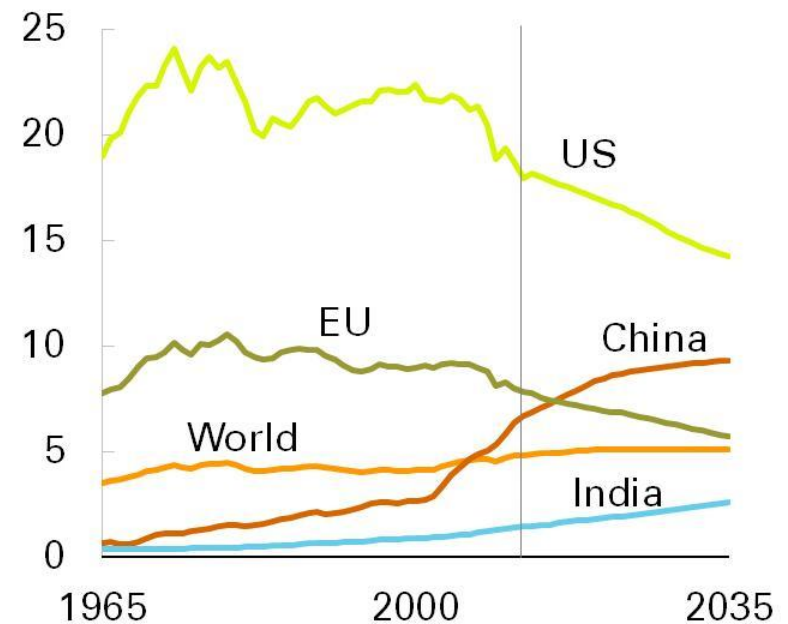
Emissions by region

Billion tonnes CO₂



Emissions per capita

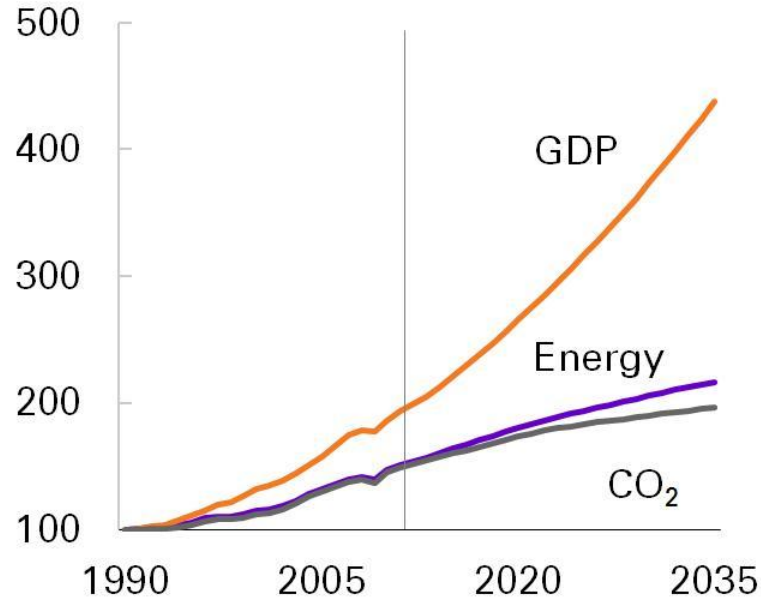
Tonnes CO₂



Energy efficiency and fuel mix restrain emissions growth

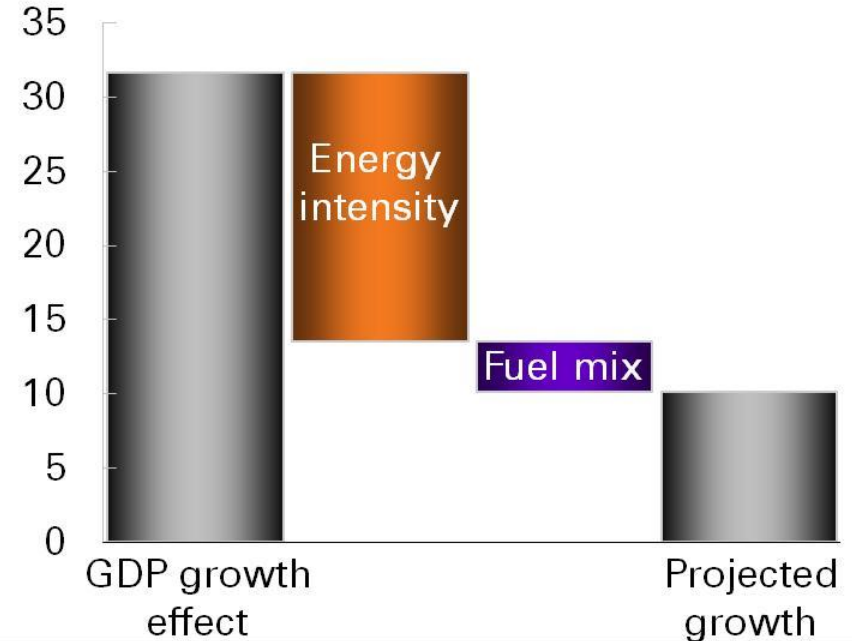
GDP, energy and emissions

Index: 1990 = 100



Emissions growth 2012 to 2035

Billion tonnes CO₂



Meeting the global energy challenge



- Sufficient and available?
 - Yes – new energy sources and efficiency improvements
- Secure and reliable?
 - Mixed – improving for some, a concern for others
- Sustainable?
 - Room for improvement

BP Energy Outlook 2035

January 2014

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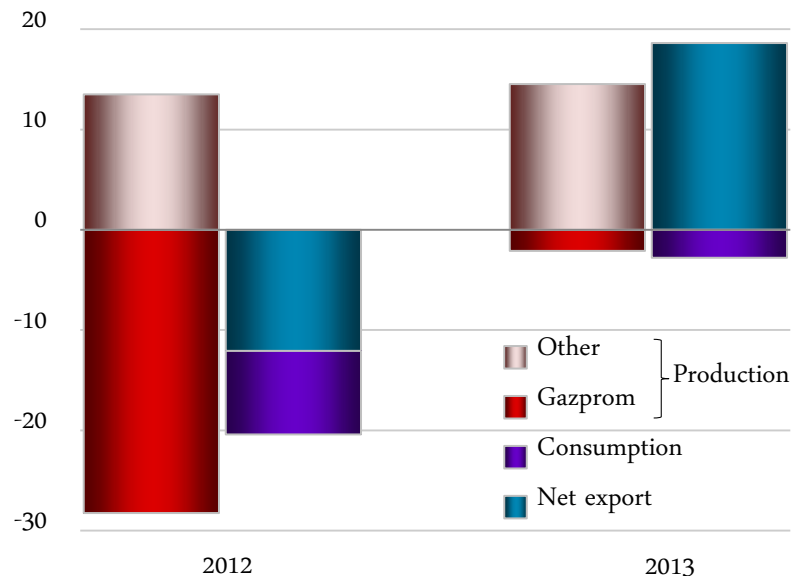




Russian natural gas market and global trade

Russian natural gas

Annual change, Bcm



Trade share of global consumption

Share of consumption, %

