BP Energy Outlook 2035

January 2014

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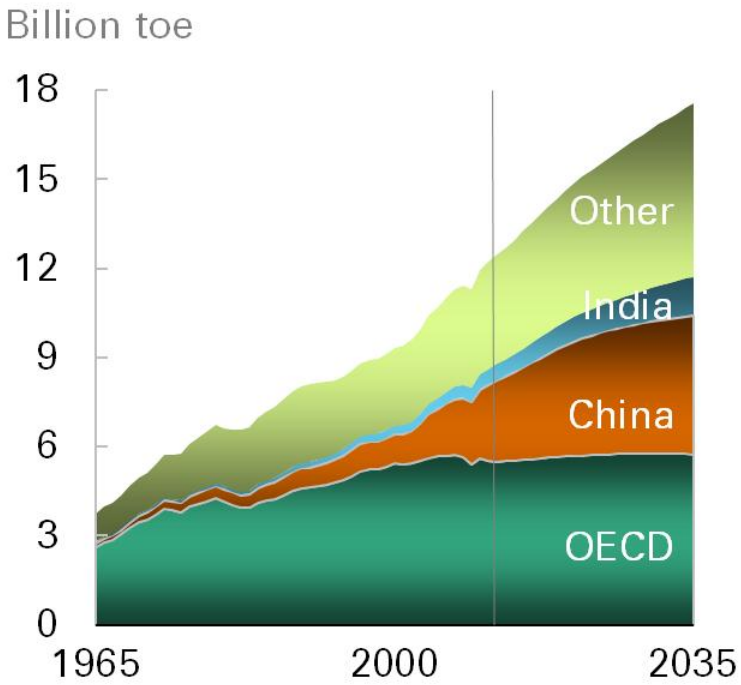
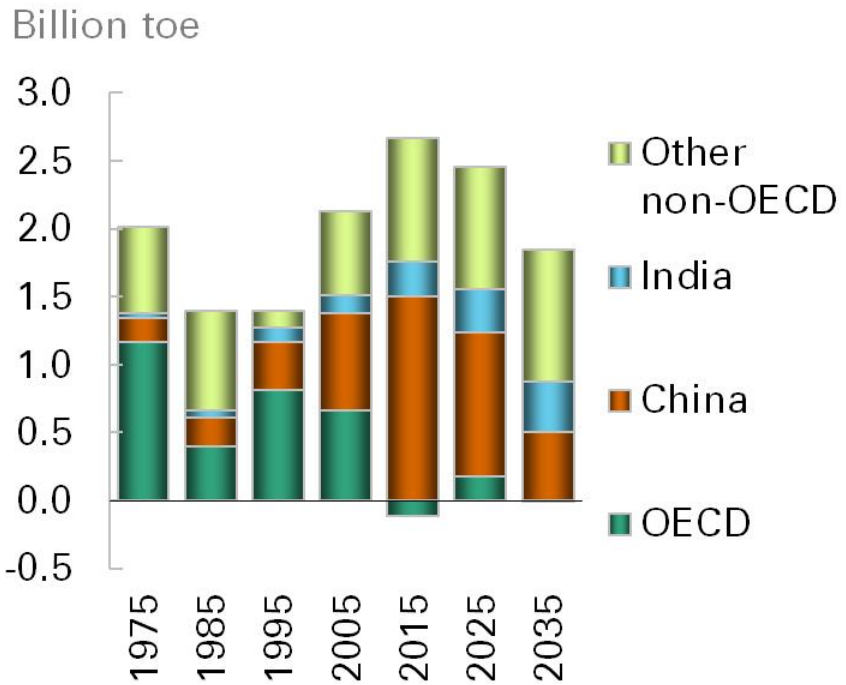
Contents

Primary energy consumption growth slows

Consumption by region



Ten year increments by region



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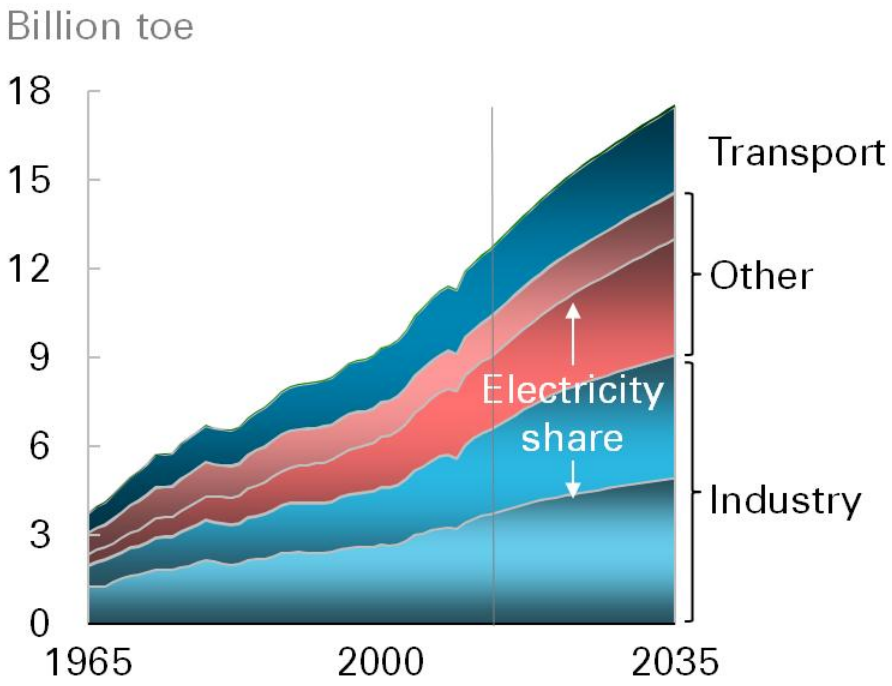
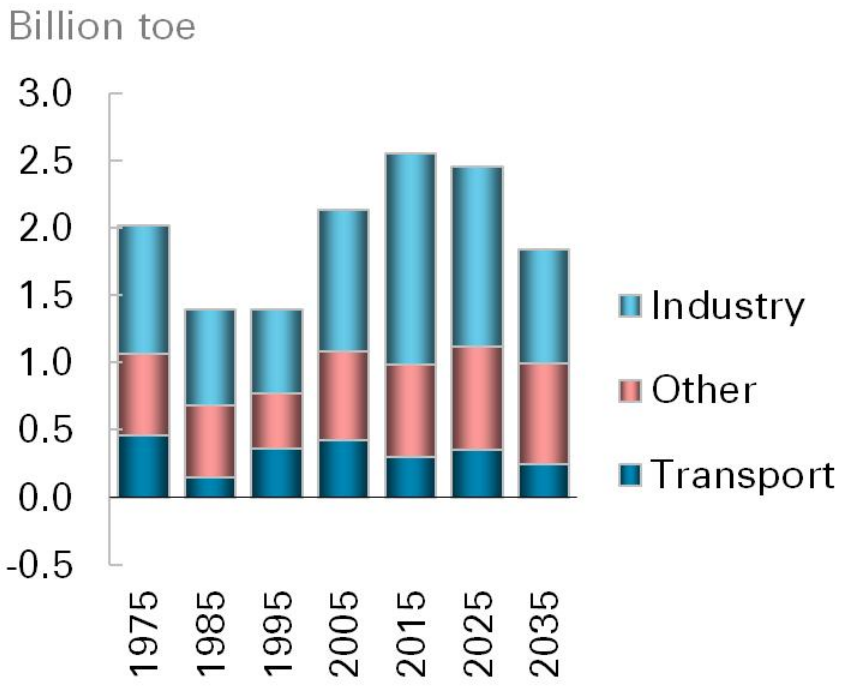
The strong impetus from industrialization starts to fade

Consumption by sector



Ten year increments by sector



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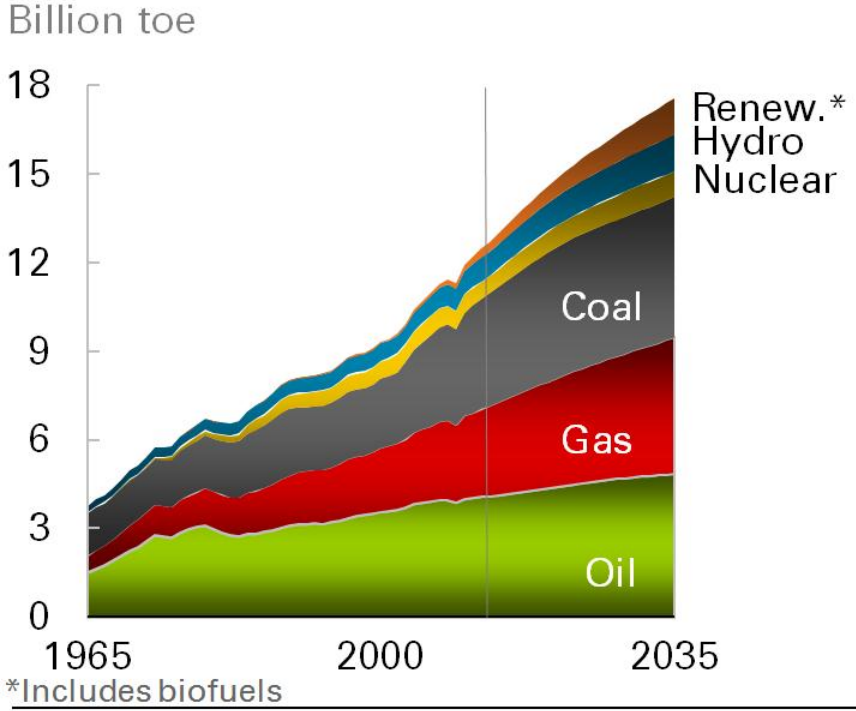
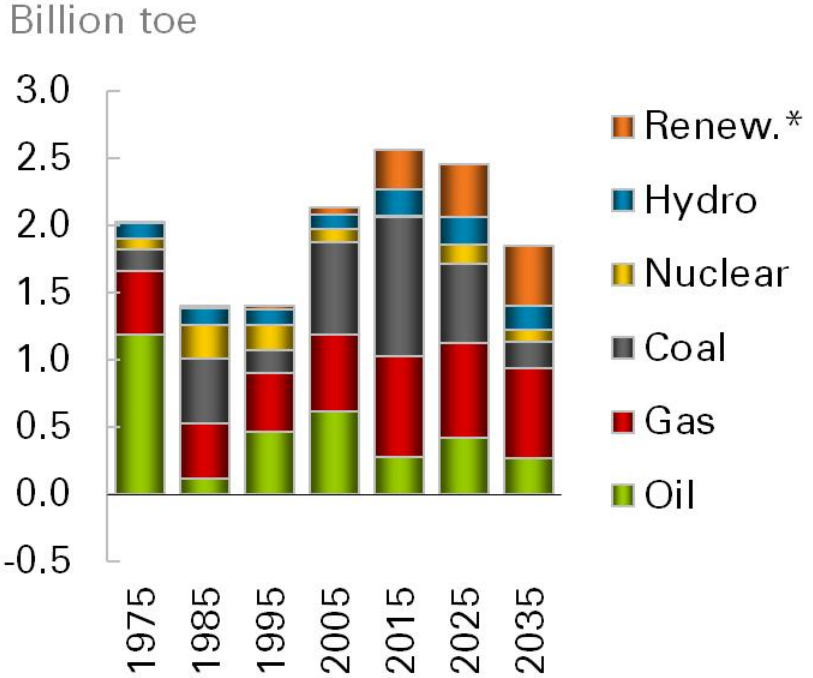
The slowdown in China and industry is reflected in coal

Consumption by fuel



*Includes biofuels

Ten year increments by fuel



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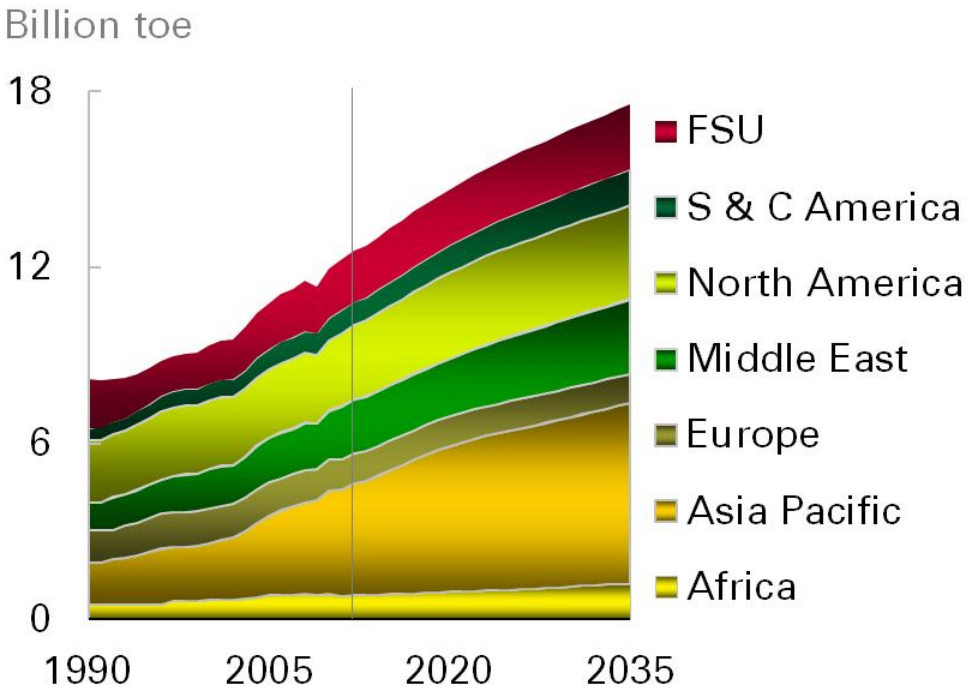
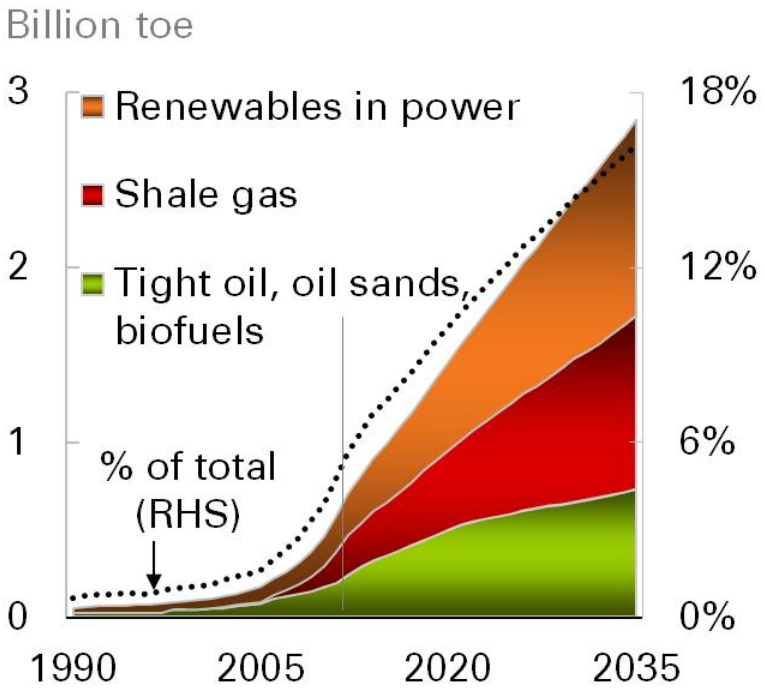
New sources help to supply sufficient energy

Primary energy production



New energy forms



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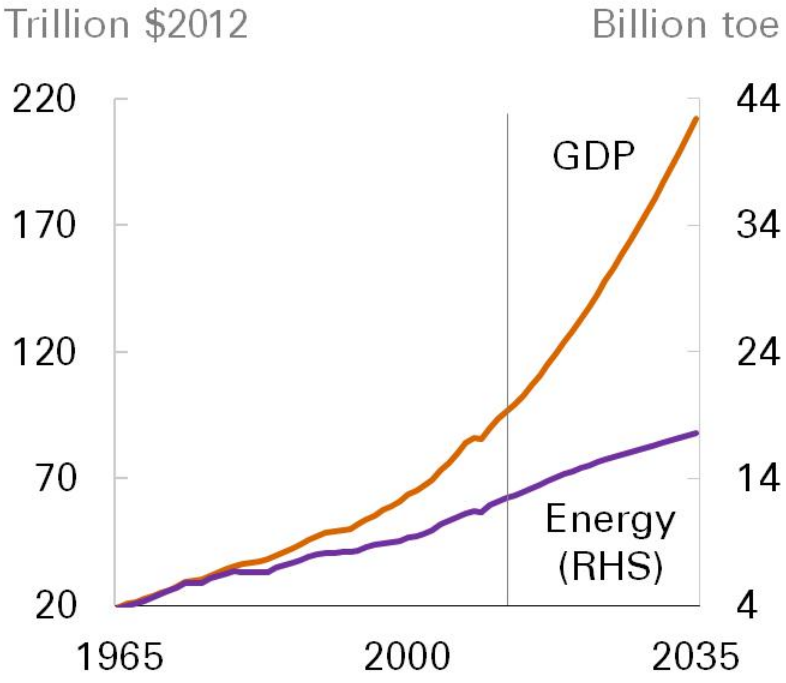
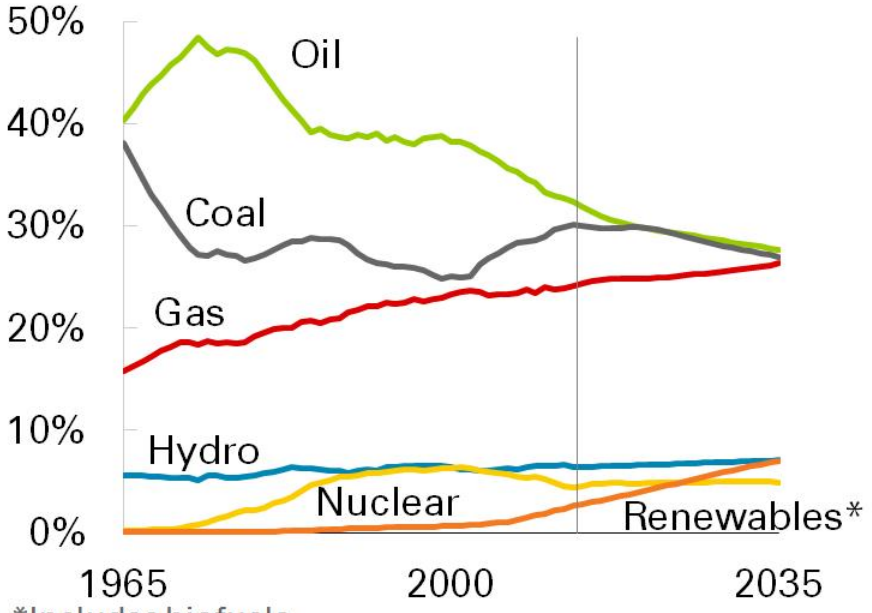
Energy decouples from GDP and fuel mix evolves

GDP and energy



Shares of primary energy



*Includes biofuels

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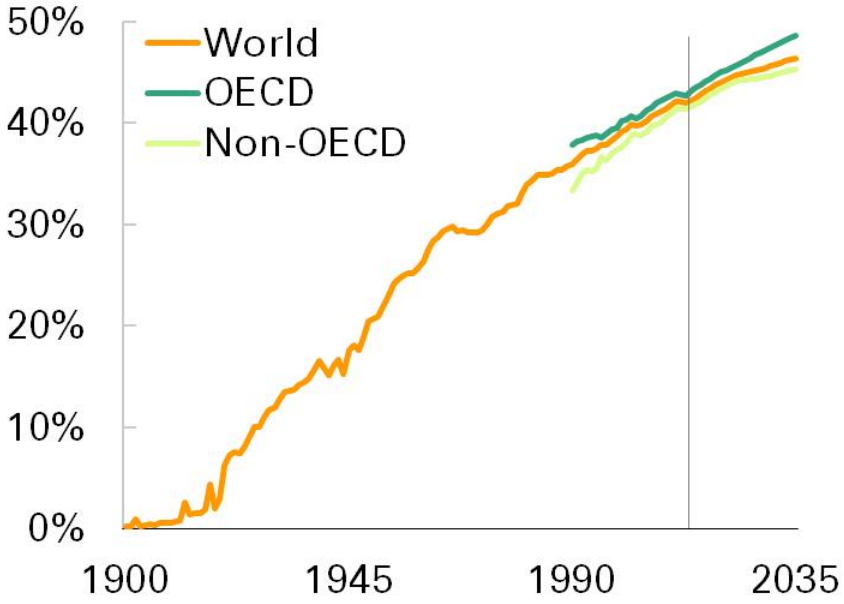
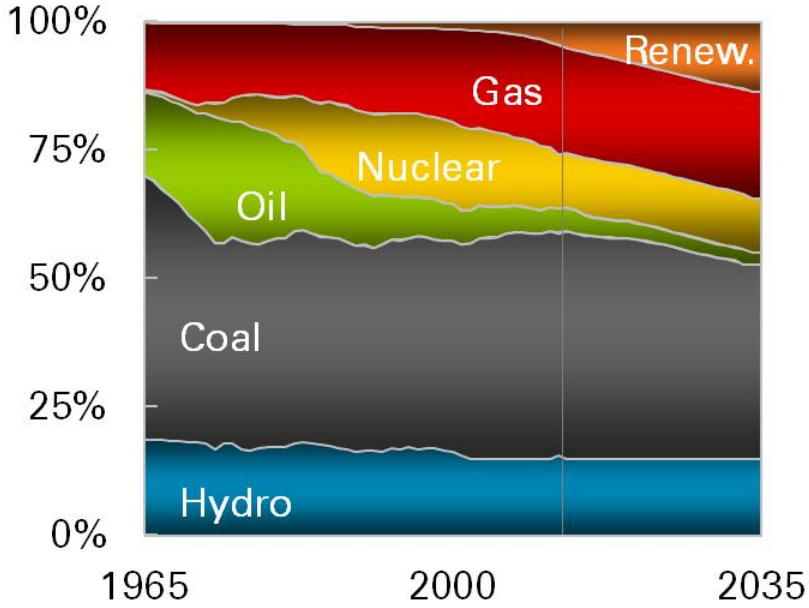
The power sector takes an increasing share of energy

Inputs to power as a share of total primary energy



Primary inputs to power



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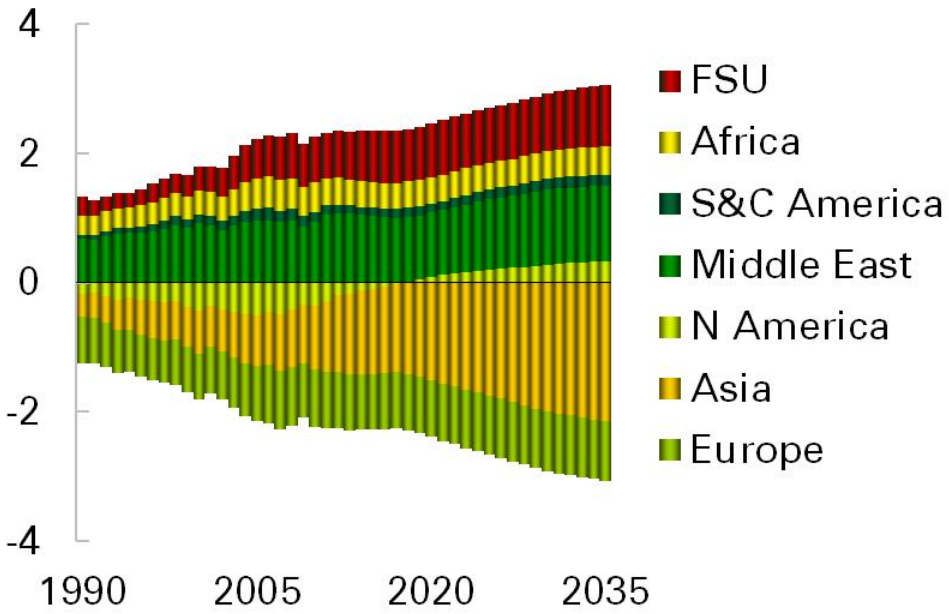
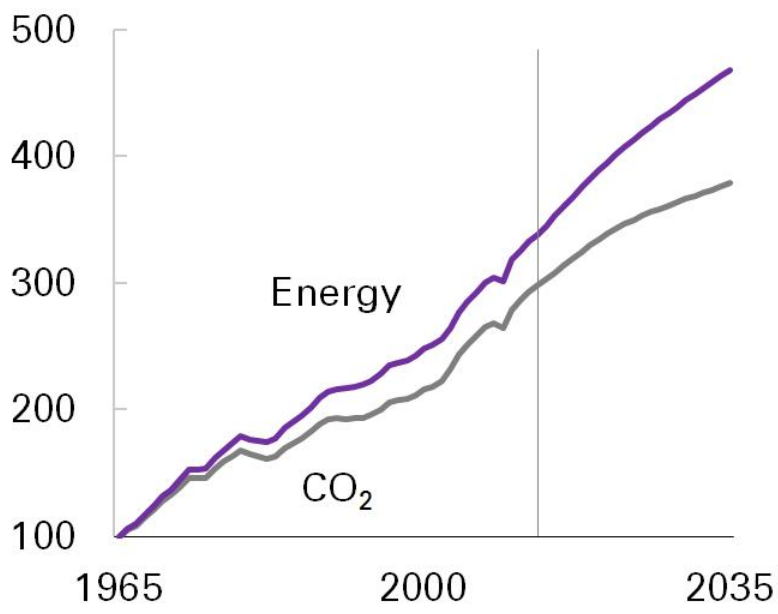
Energy security and sustainability pose challenges

Primary energy net balances



Energy and CO_2 emissions



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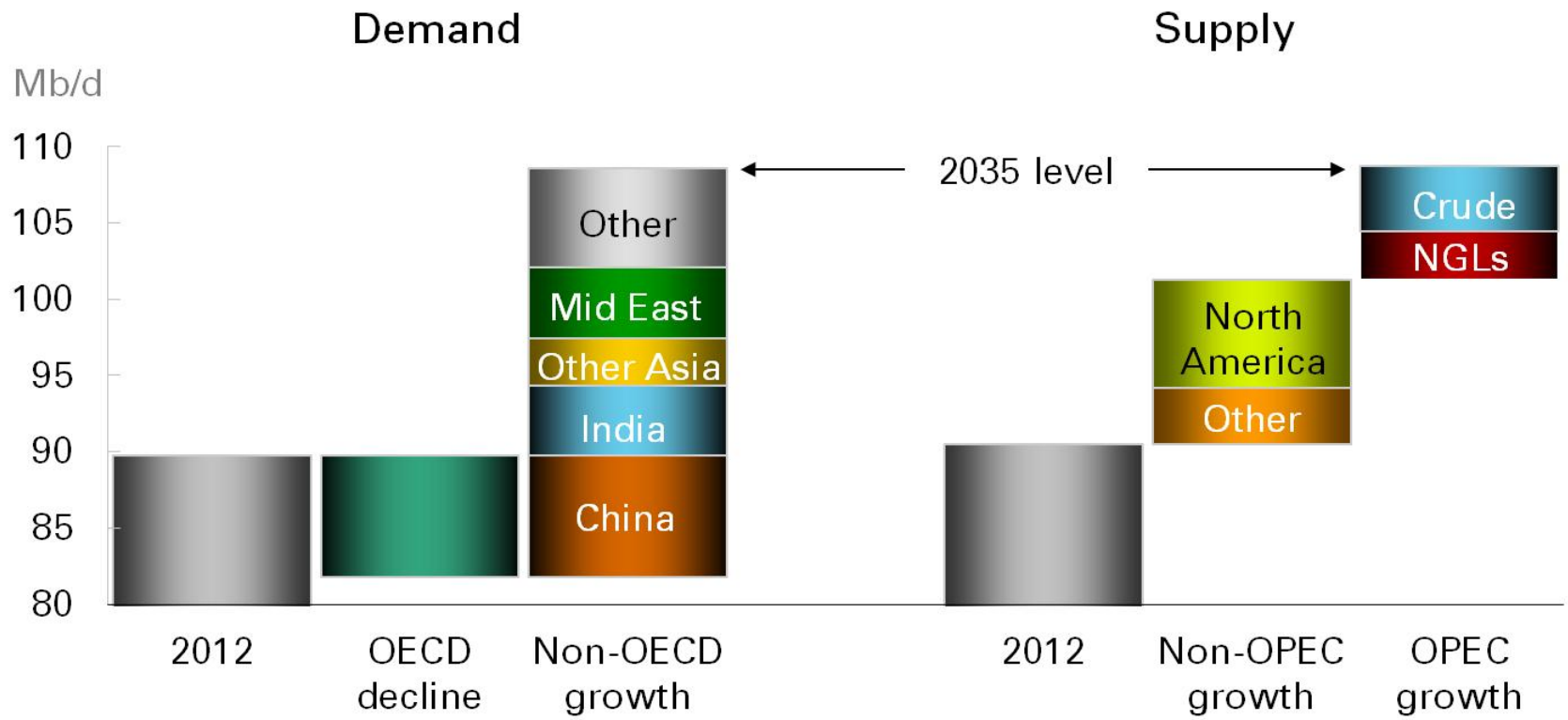
The global liquids balance



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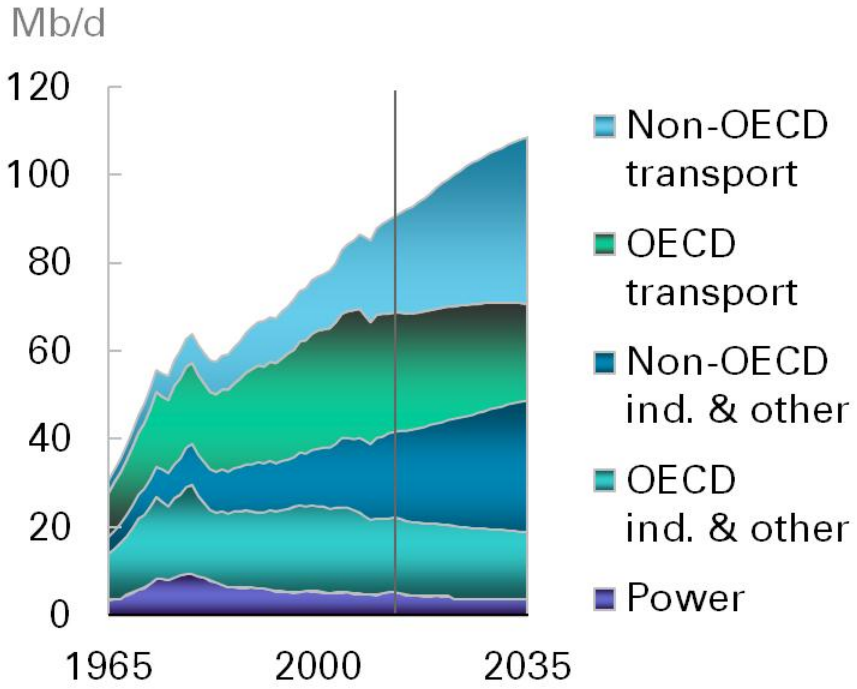
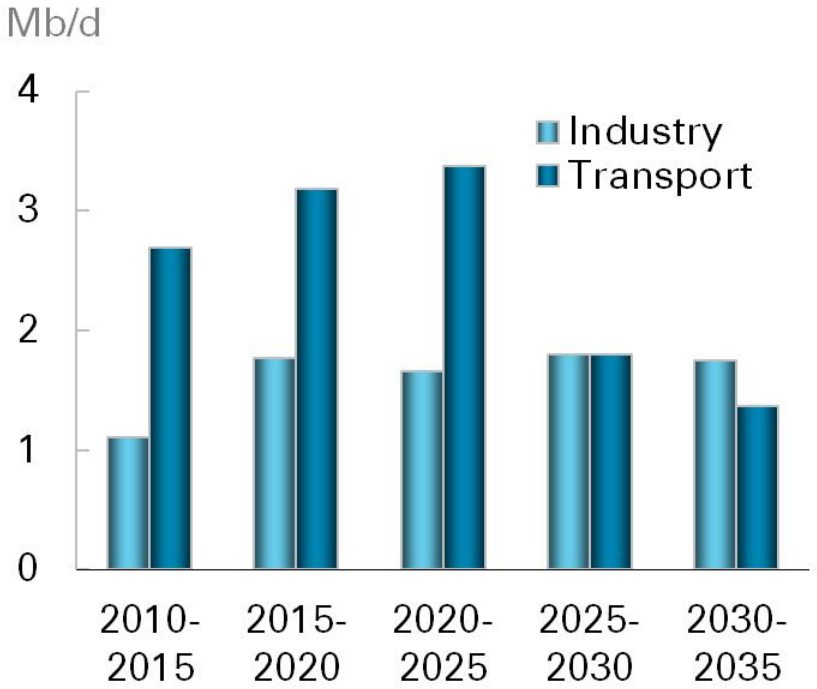
Liquids demand growth is largest in non-OECD transport

Demand by sector



Five year increments



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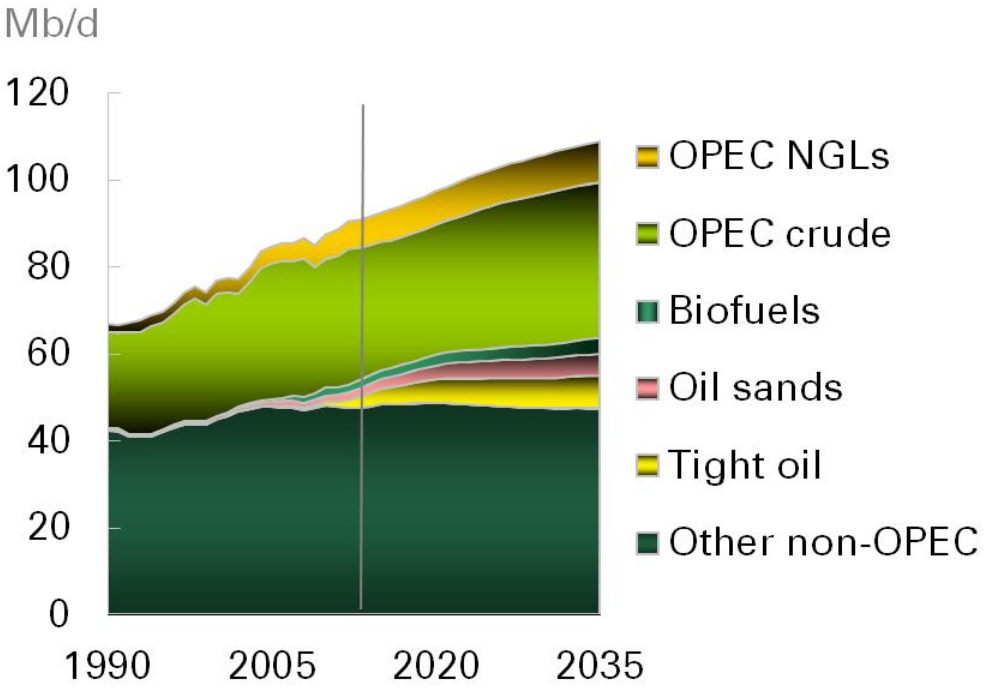
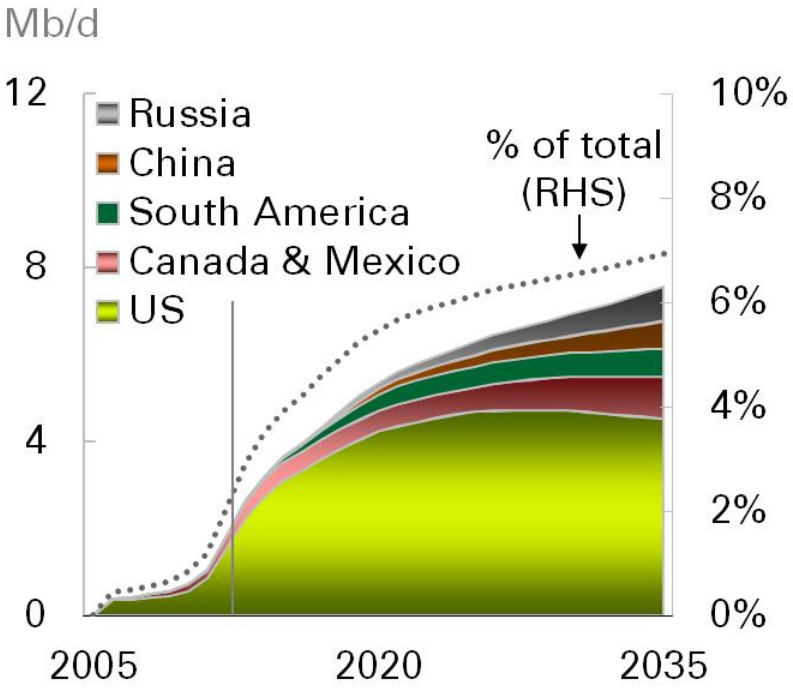
Supply growth is supported initially by unconventionals

Liquids supply by type



Tight oil supply



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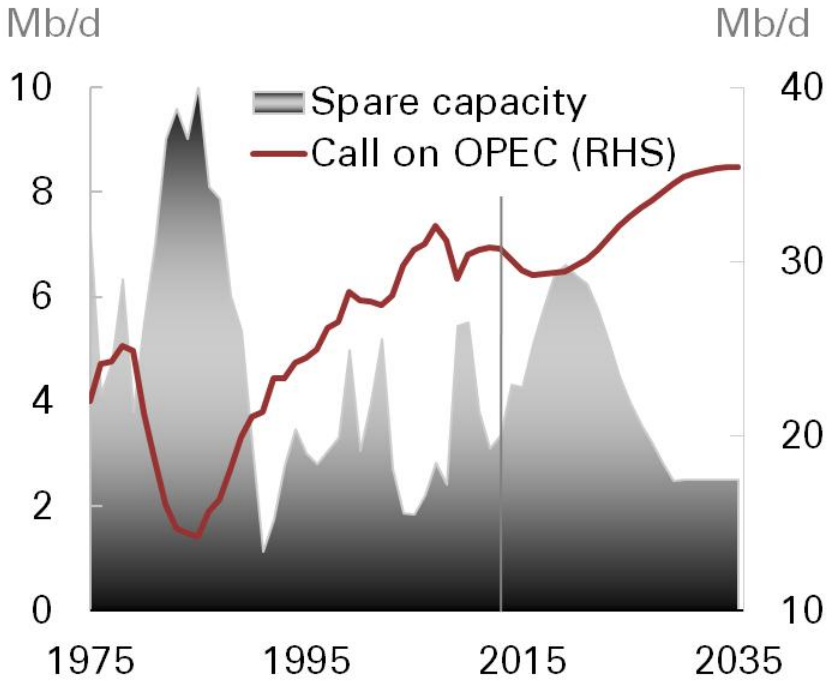
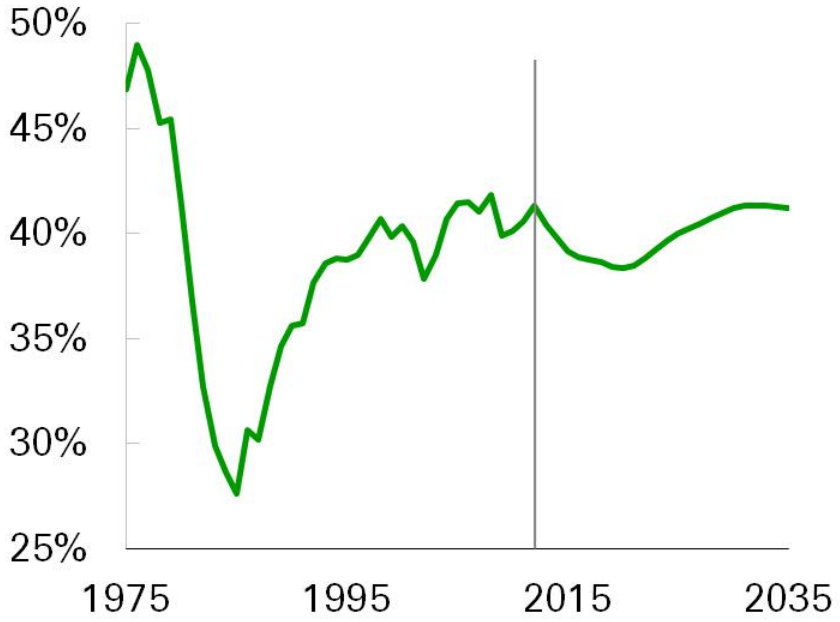
Oil balances suggest OPEC will be challenged

OPEC spare capacity



OPEC share of global supply

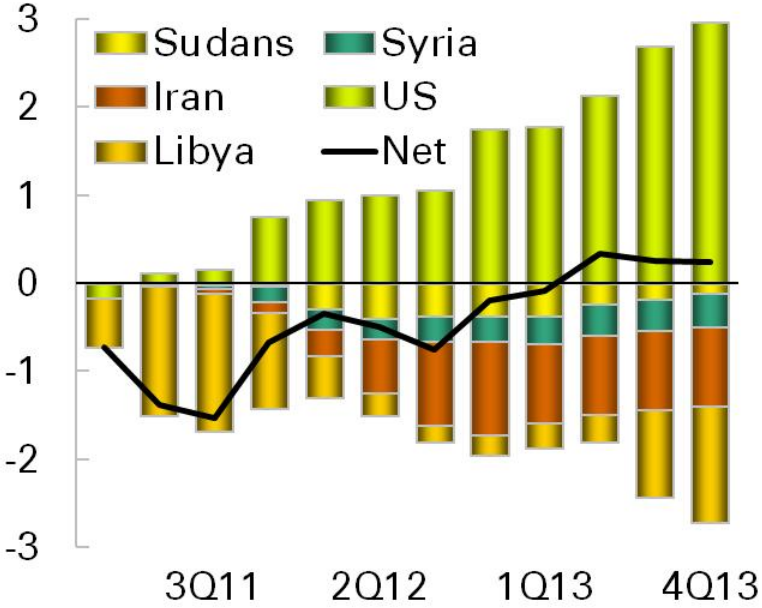


Energy Outlook 2035

Supply disruptions reduce the immediate impact on OPEC

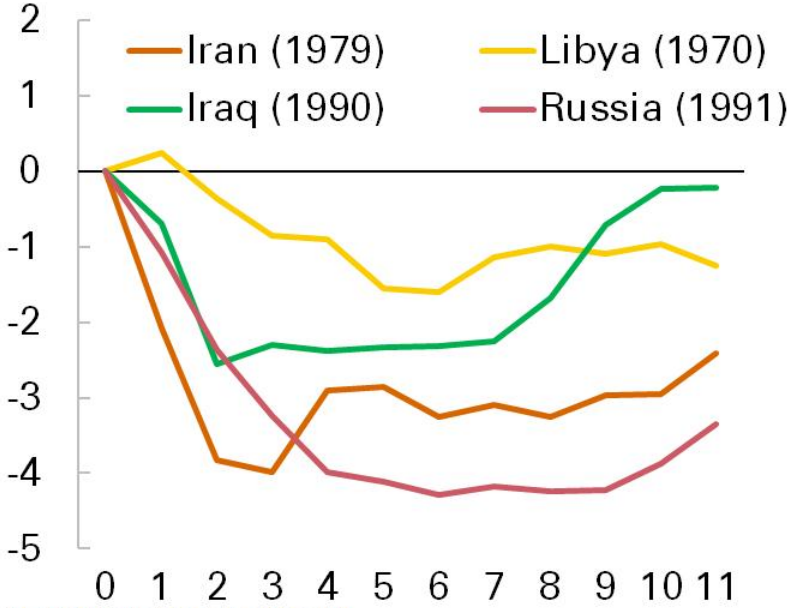
Recent disruptions and US growth

Change since 4Q10, Mb/d



Historical disruptions

Change from pre-disruption level*, Mb/d

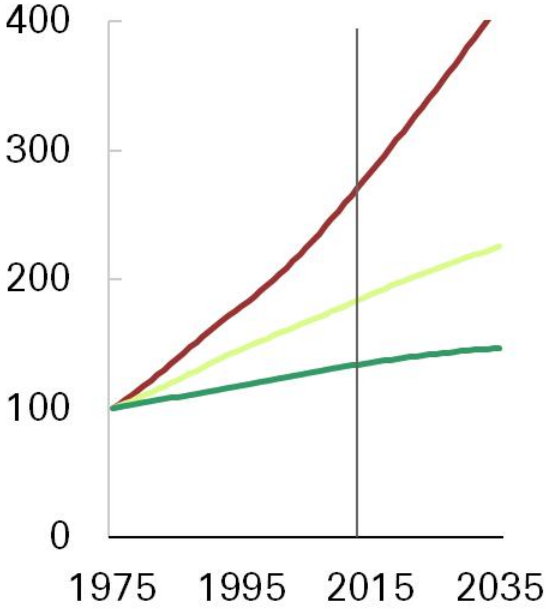


*Event occurs in year 1

OPEC countries face pressure from rising populations

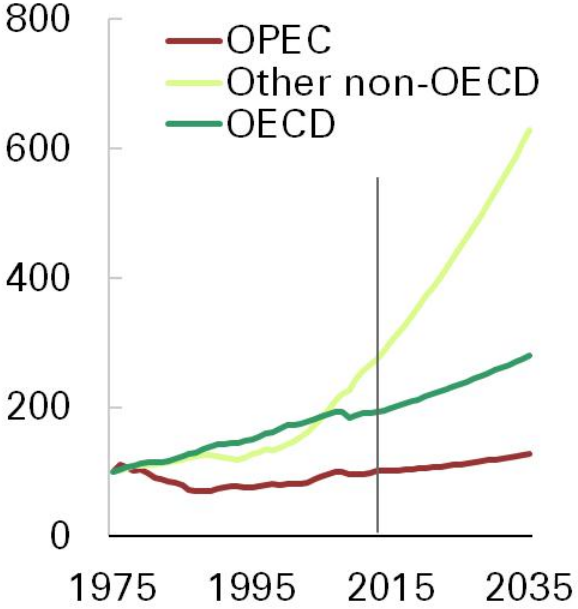
Population

Index: 1975 = 100



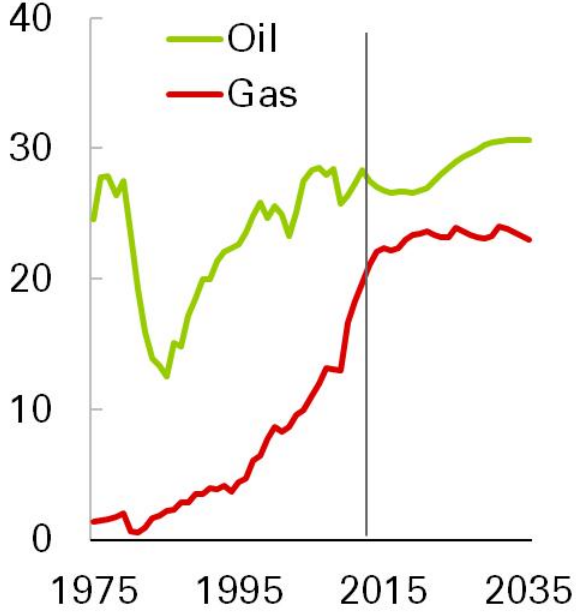
GDP per capita

Index: 1975 = 100



OPEC exports

Mb/d and Bcf/d



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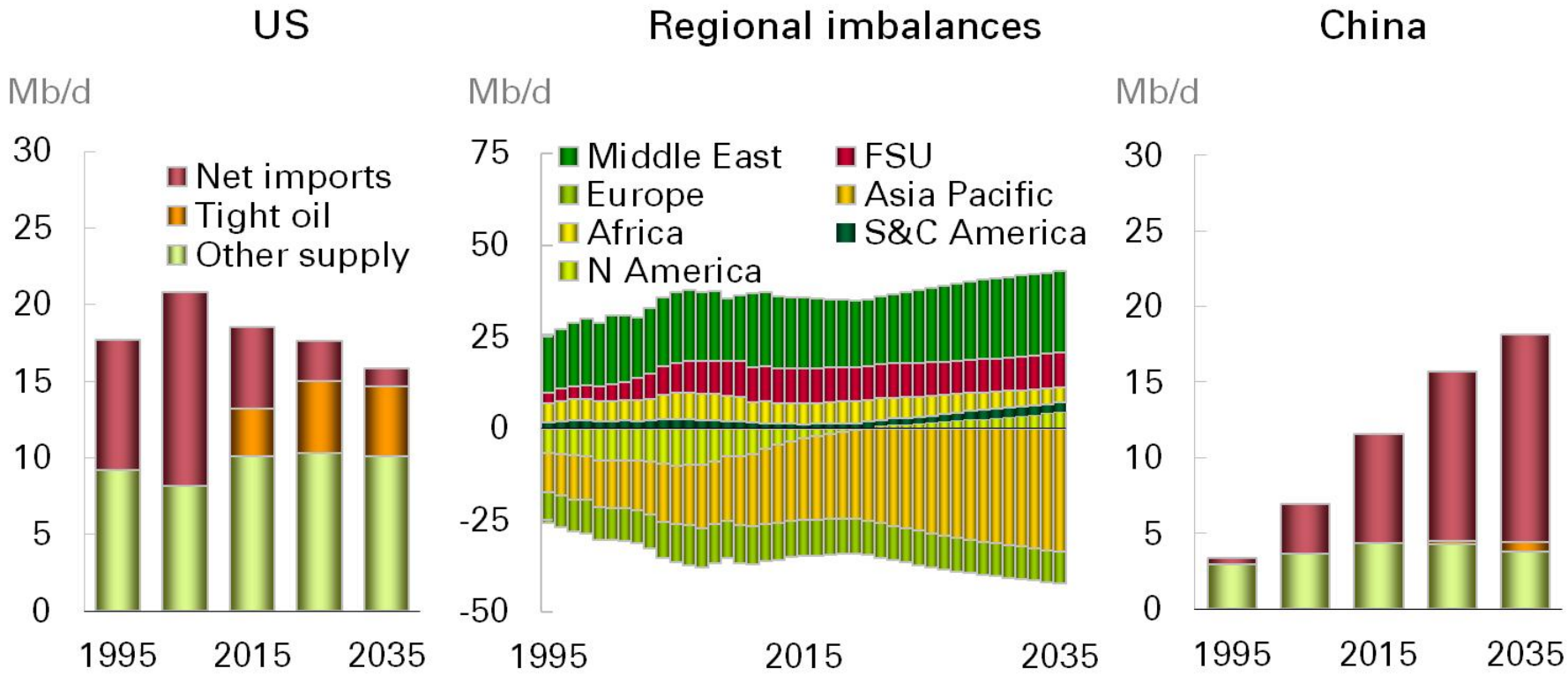
Oil trade continues to shift from West to East



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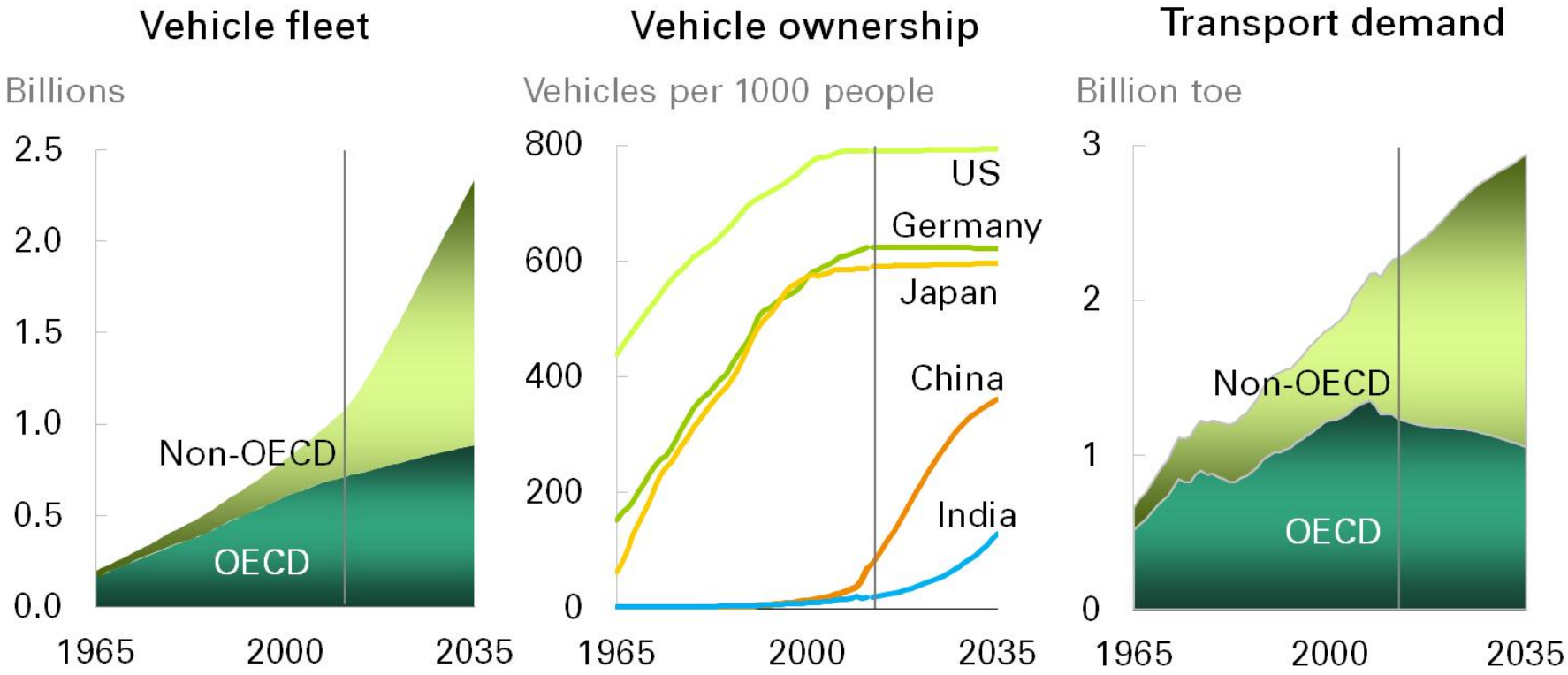
Vehicle numbers are set to grow rapidly in the non-OECD



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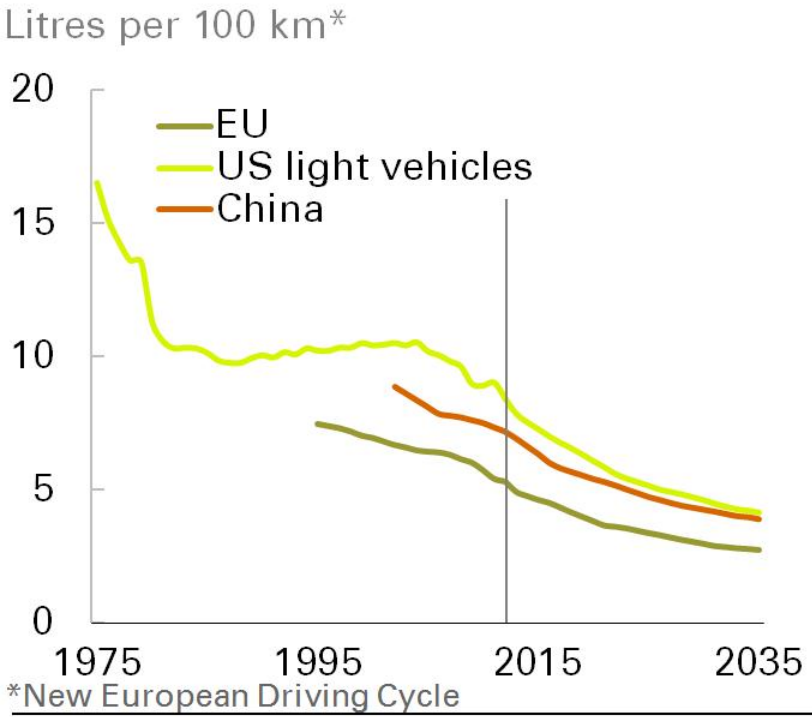
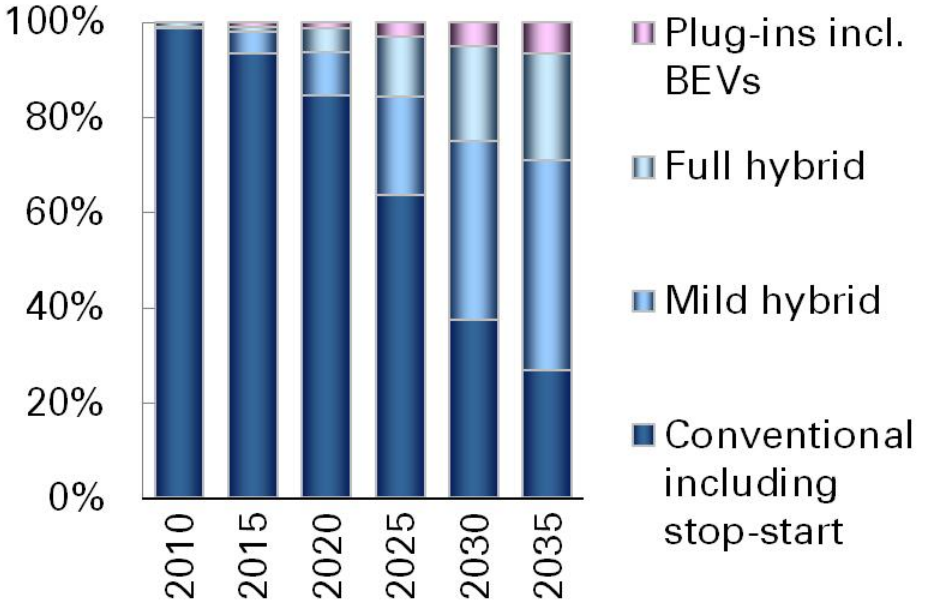
Policy and technology enable efficiency improvements

Fuel economy of new cars



*New European Driving Cycle

Vehicle sales by type



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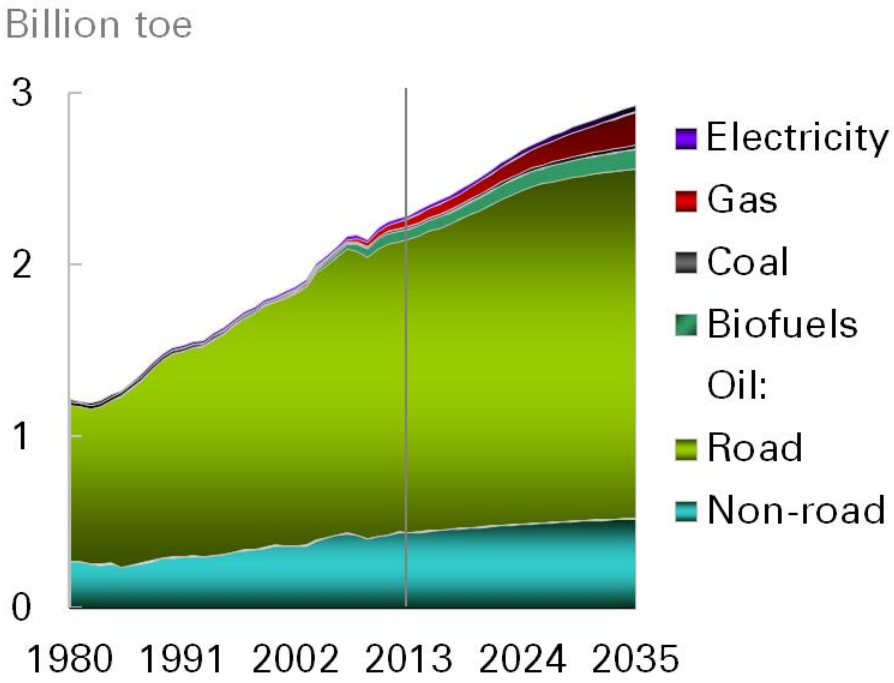
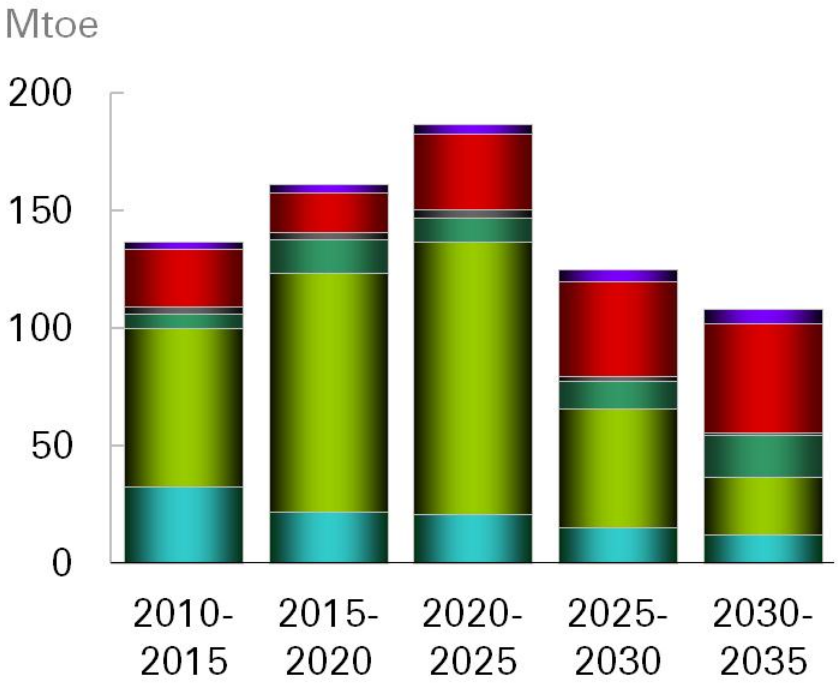
Global transport demand growth slows

Transport demand by fuel



Five year increments by fuel



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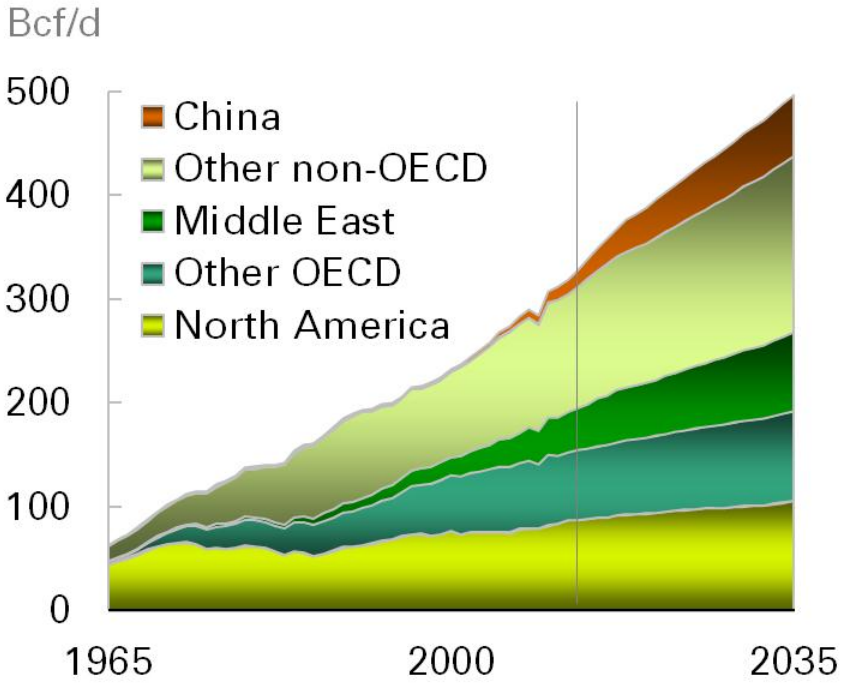
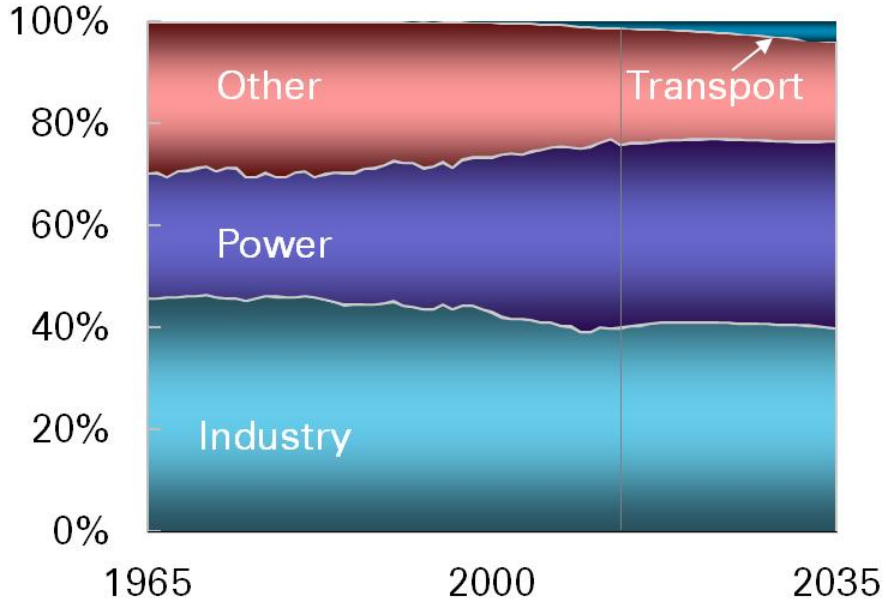
Natural gas demand grows in all regions and sectors

Demand by region



Demand by sector



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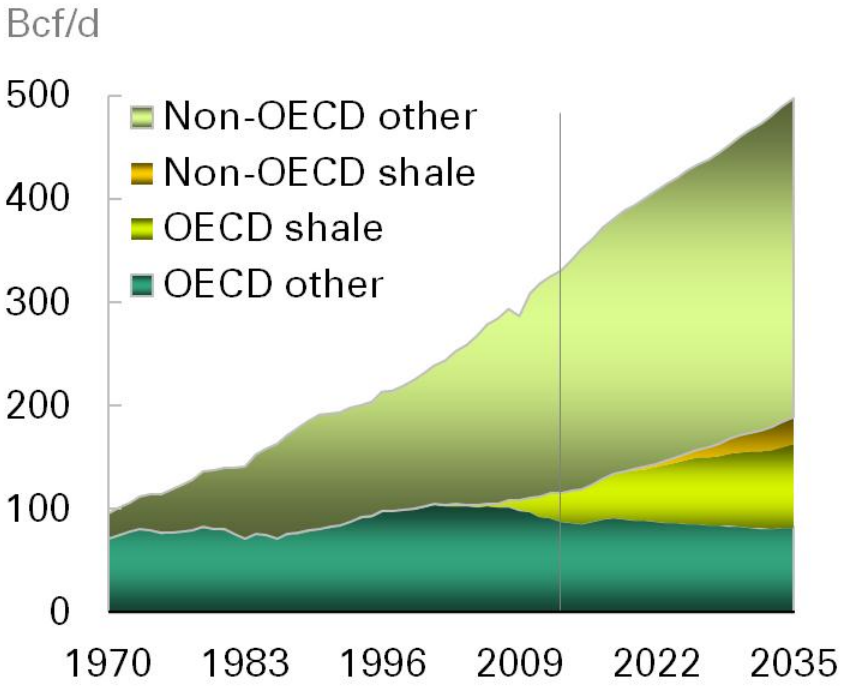
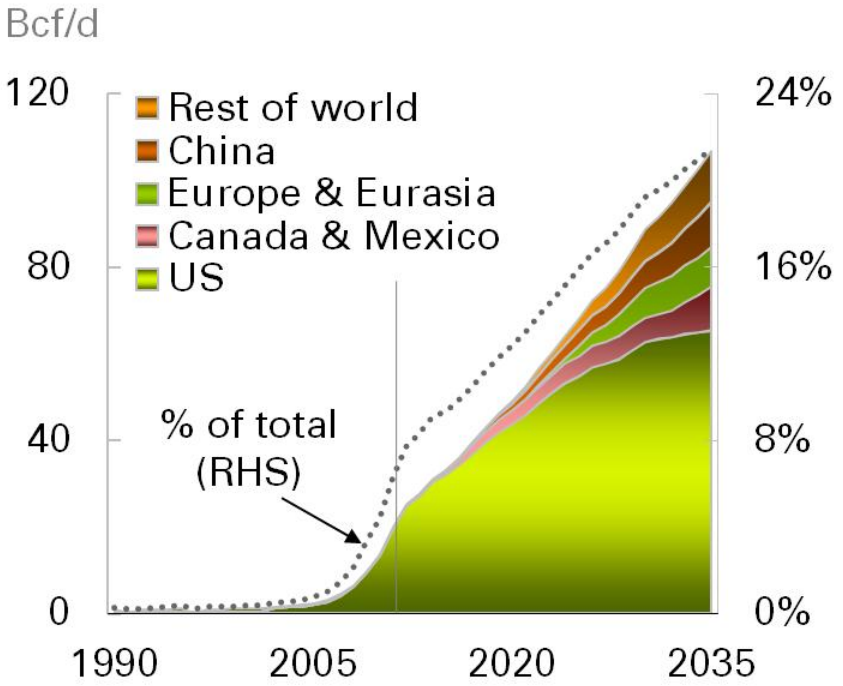
Shale gas shows the fastest production growth

Gas production by type and region



Shale gas production



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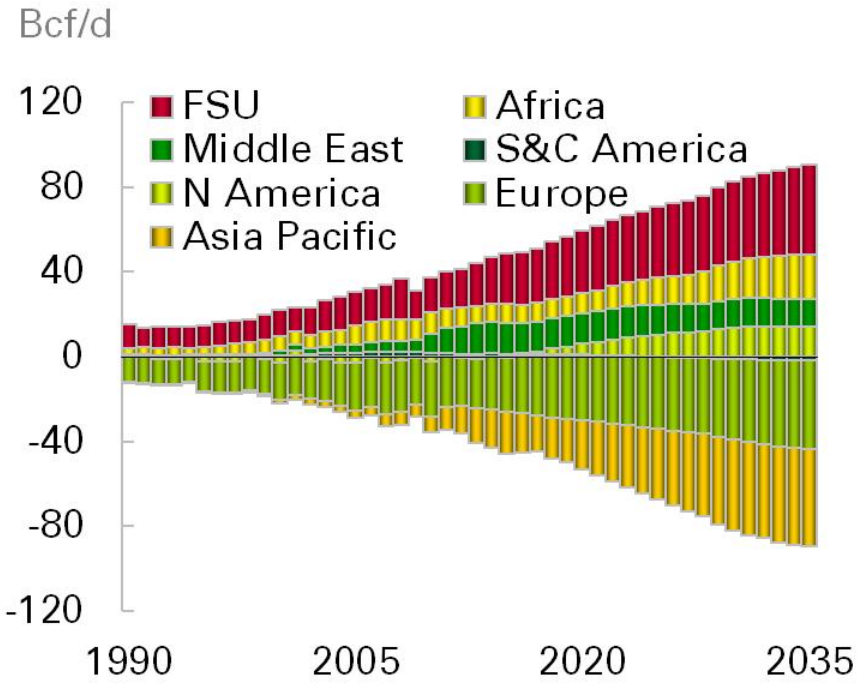
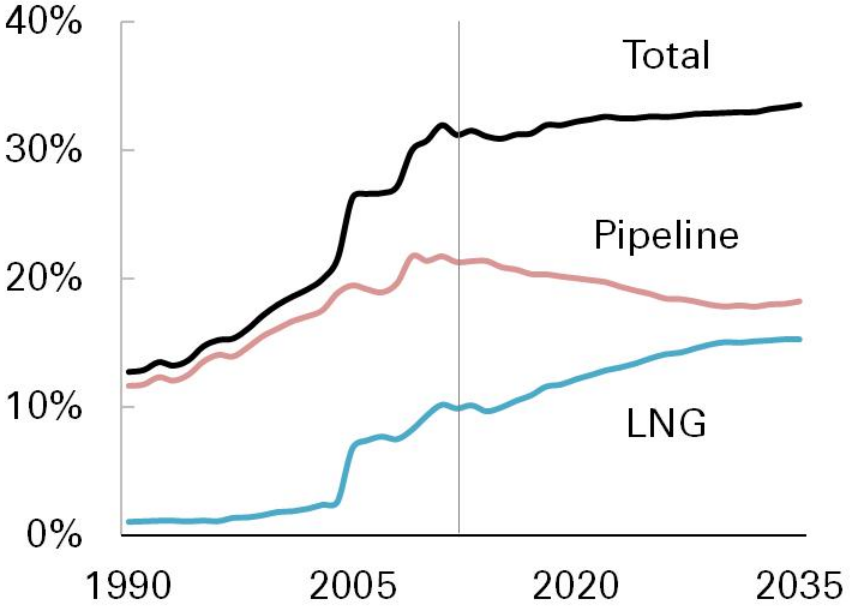
Gas trade continues to expand

Regional net exports



Imports share of consumption



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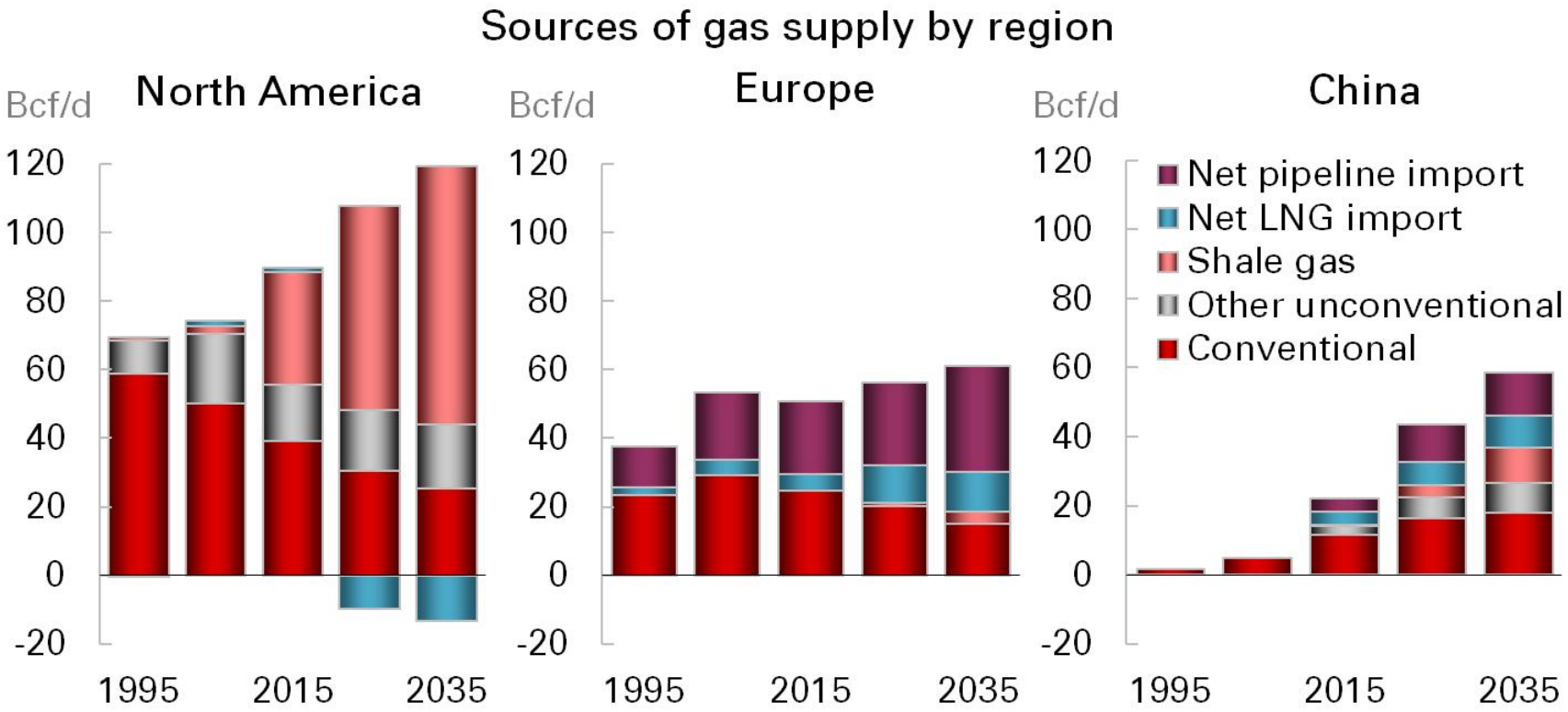
Regional supply patterns differ



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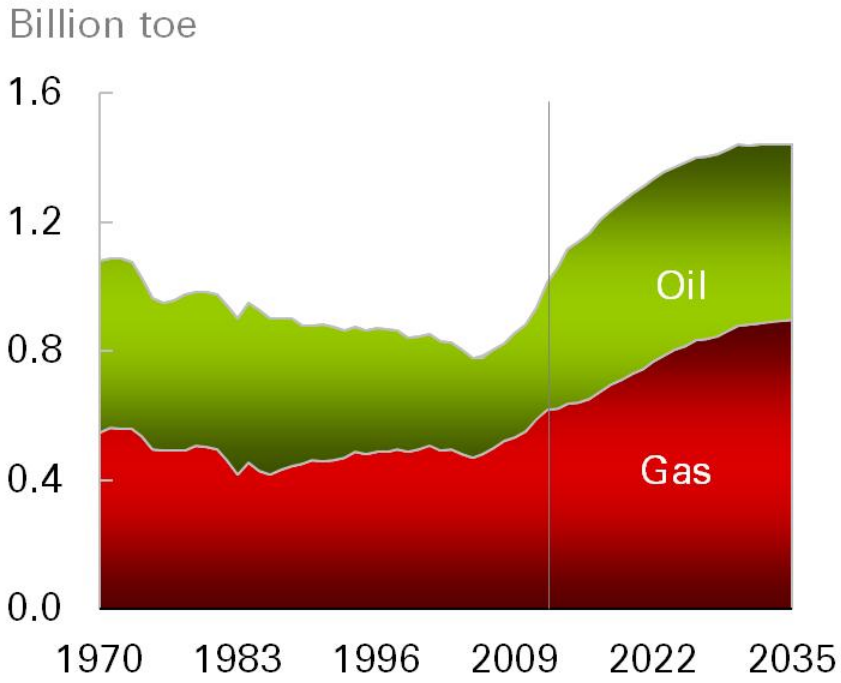
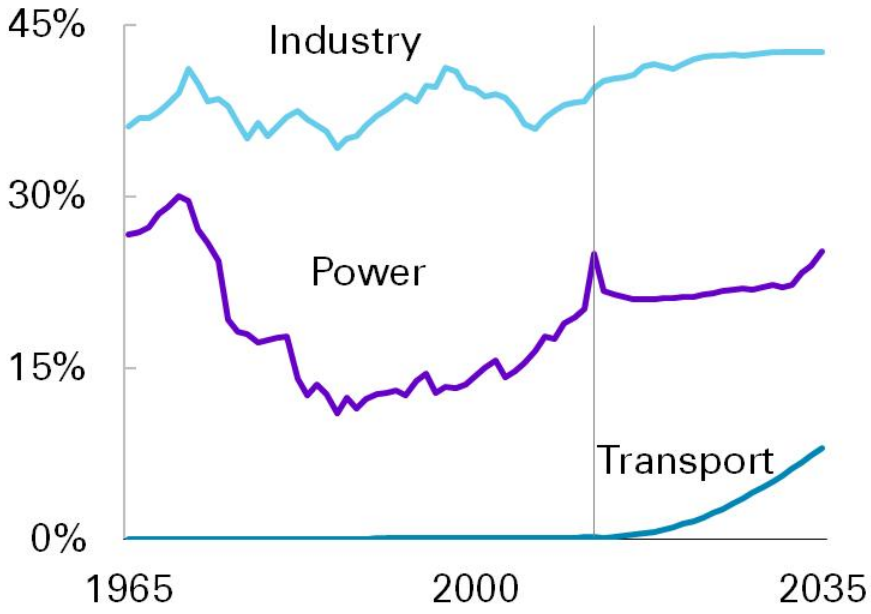
The US shale revolution leads to market adjustments

US oil and gas supply



Gas share of US sector demand



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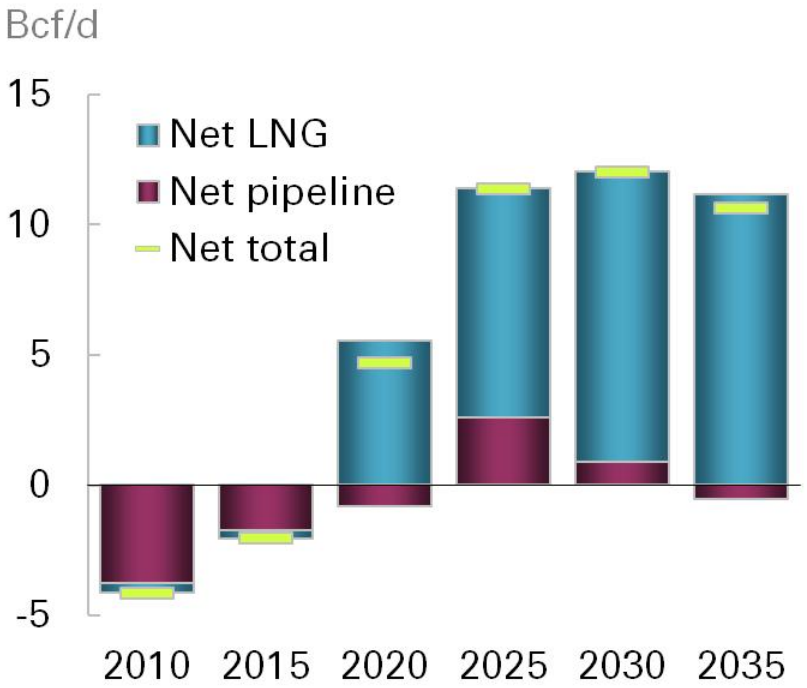
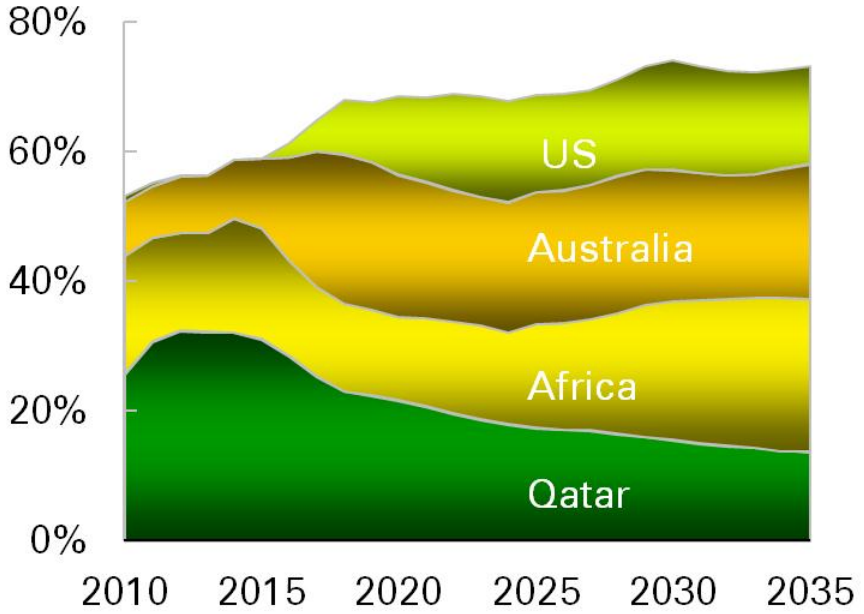
Shale gas changes the US and global gas trade picture

US natural gas exports



Share of global LNG trade



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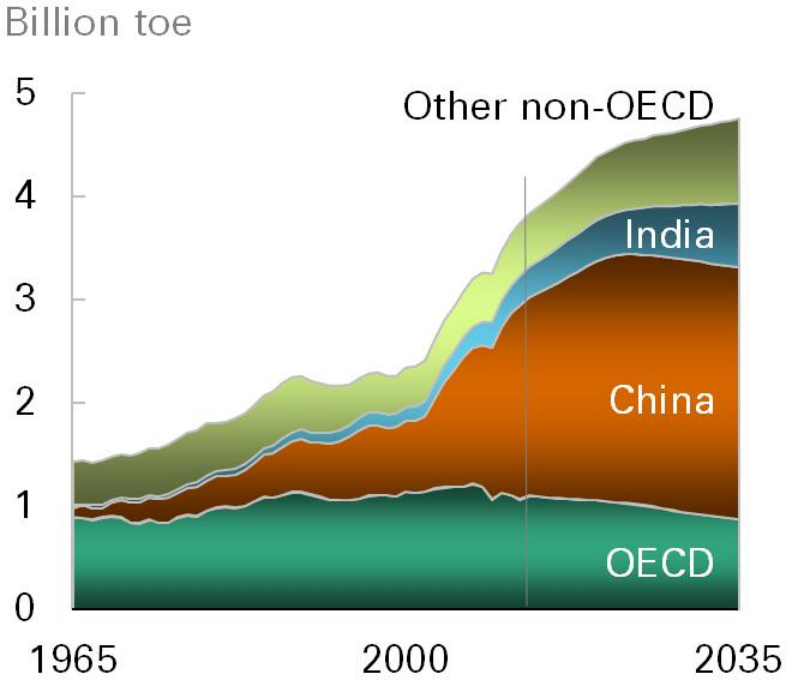
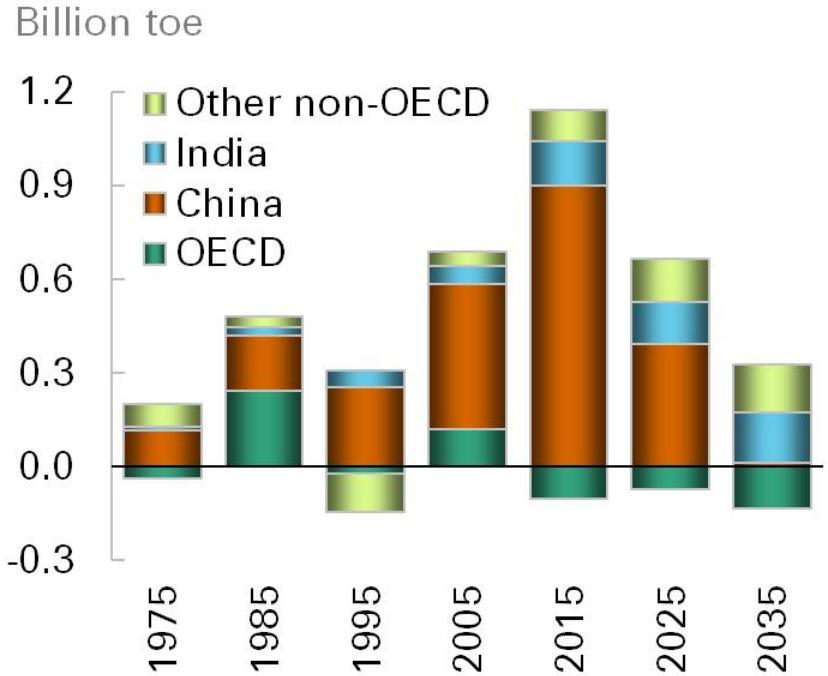
Coal consumption growth slows in the non-OECD

Consumption by region



Ten year increments by region



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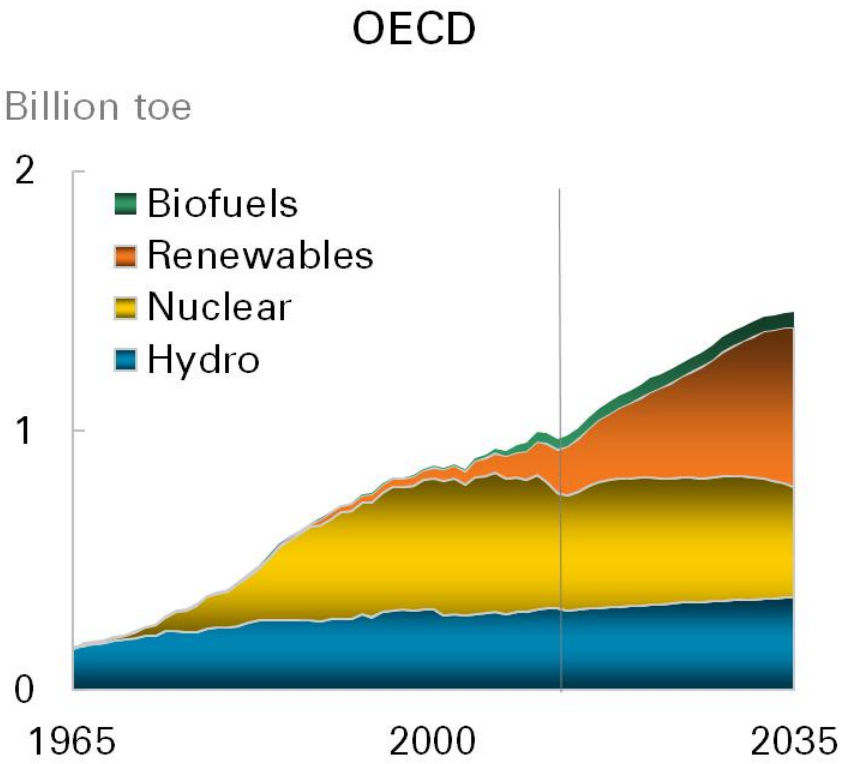
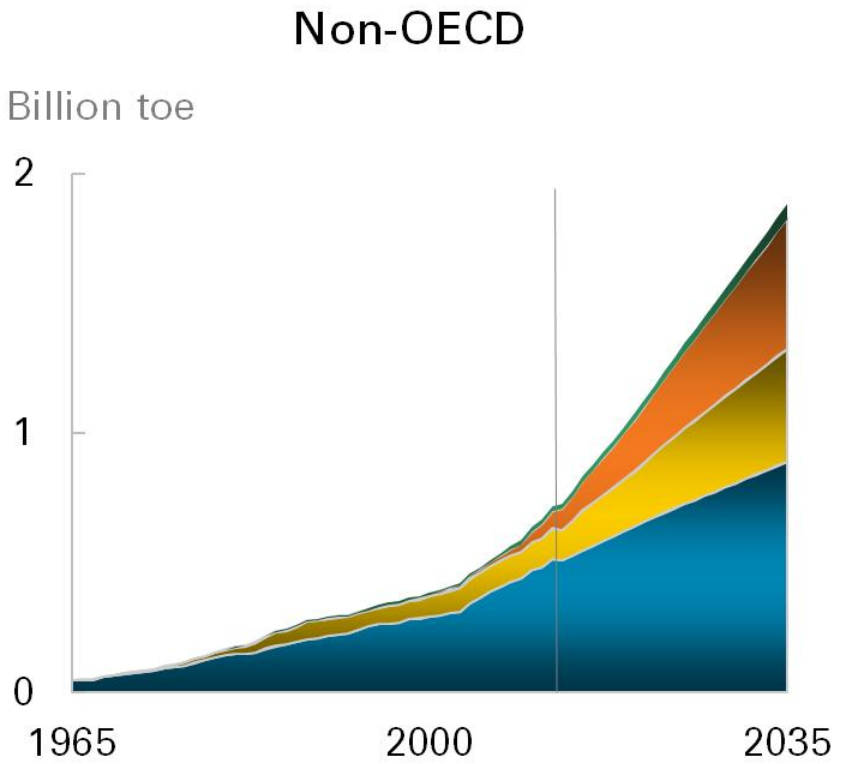
Non-fossil fuels grow rapidly





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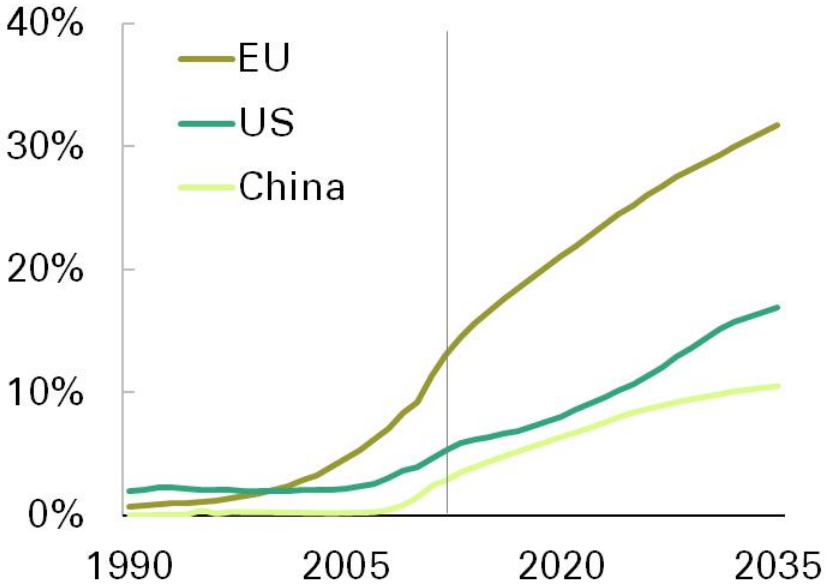
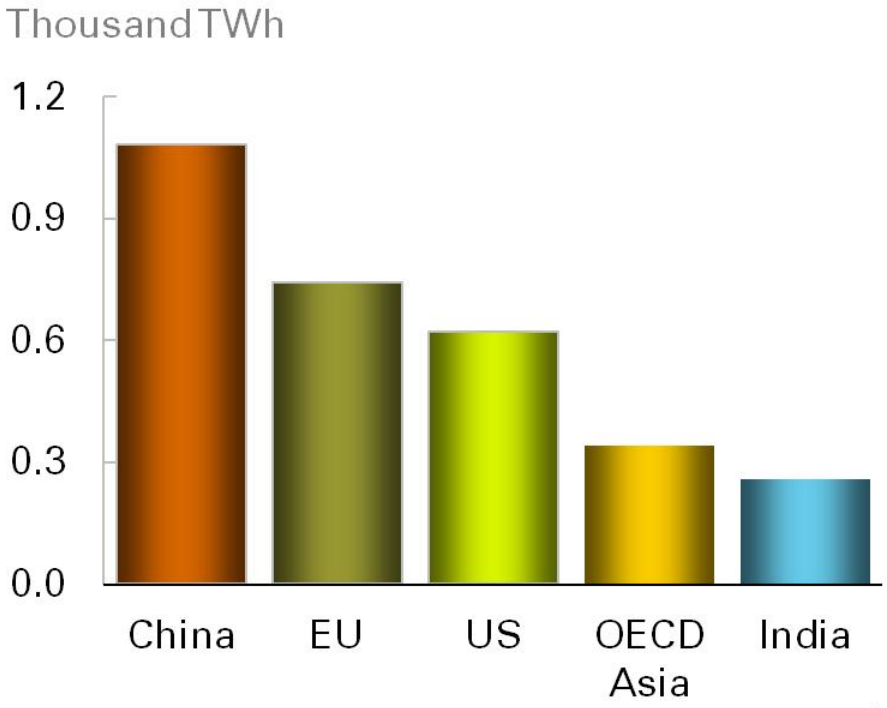
Renewables in power gain share most rapidly in Europe

Renewables share of power



Renewables growth 2012-35



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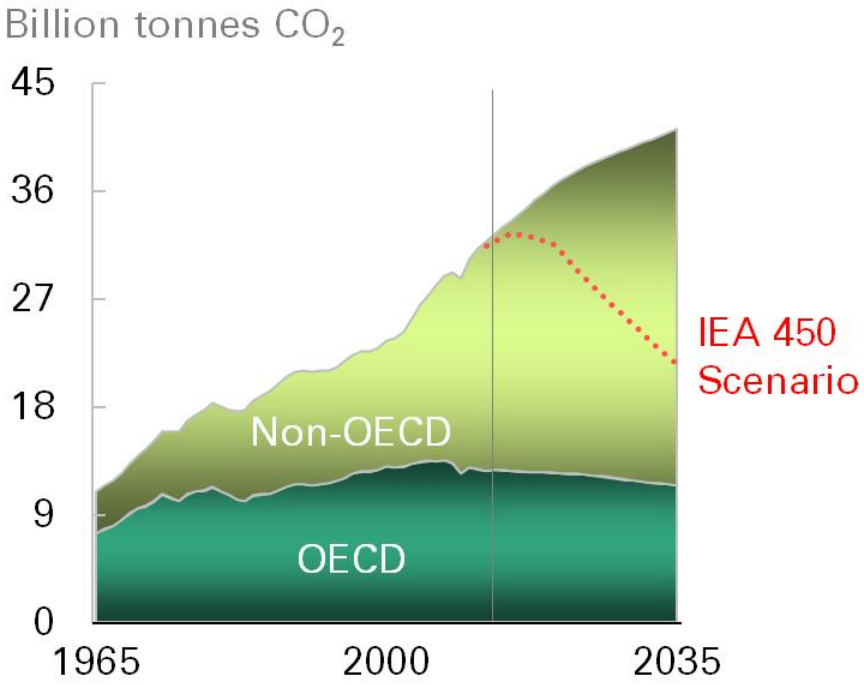
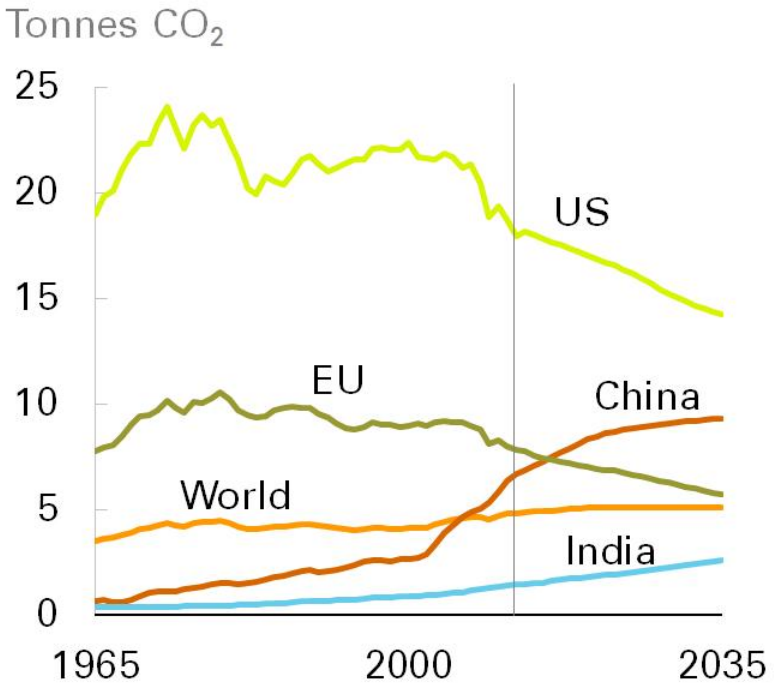
CO_2 emissions from energy use continue to rise

Emissions by region



Emissions per capita



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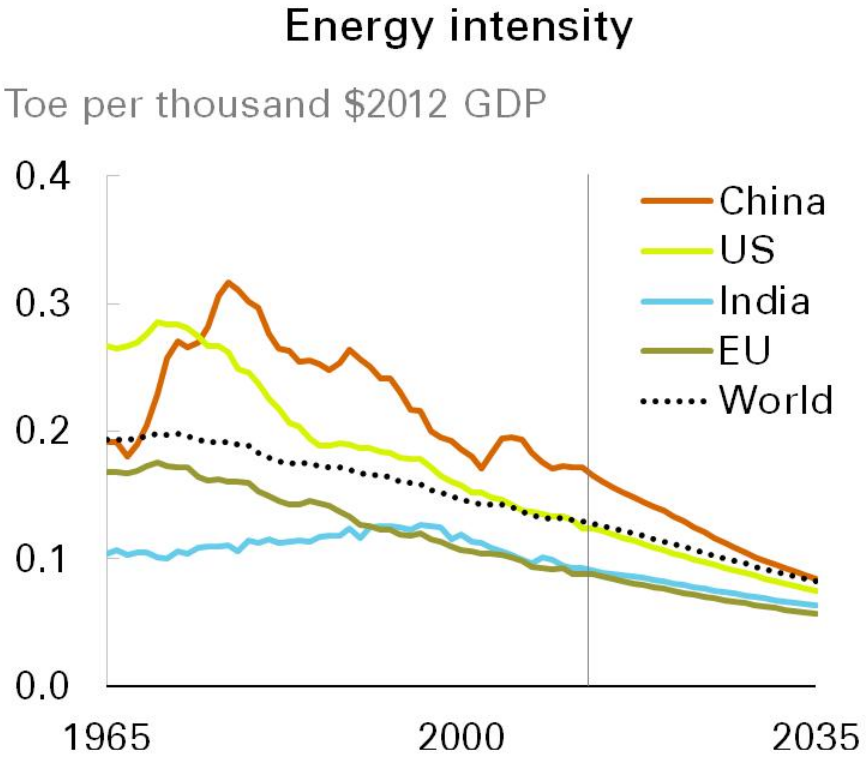
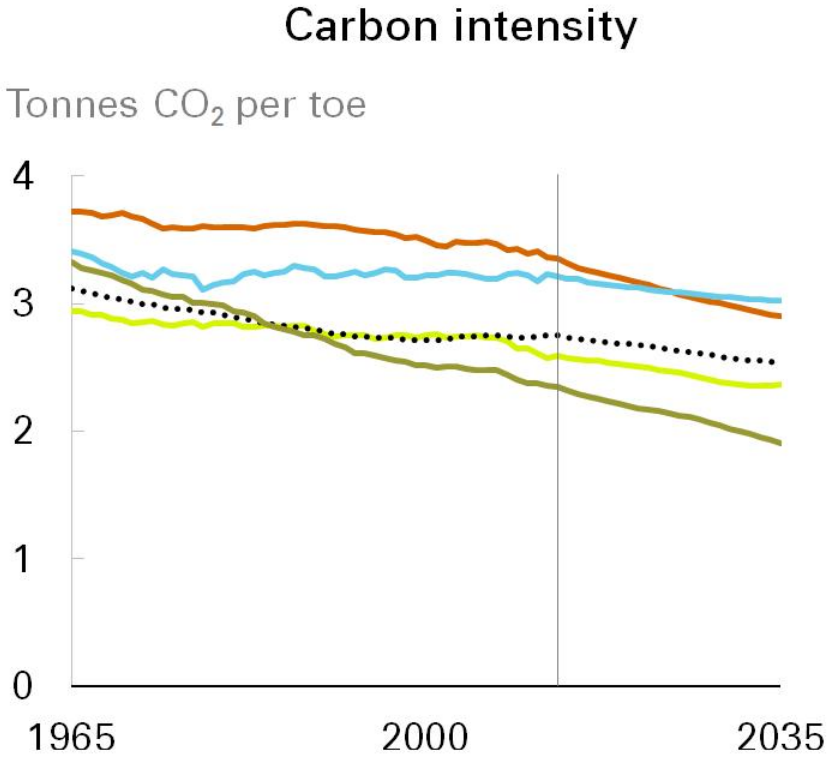
Energy intensity and carbon intensity follow different patterns





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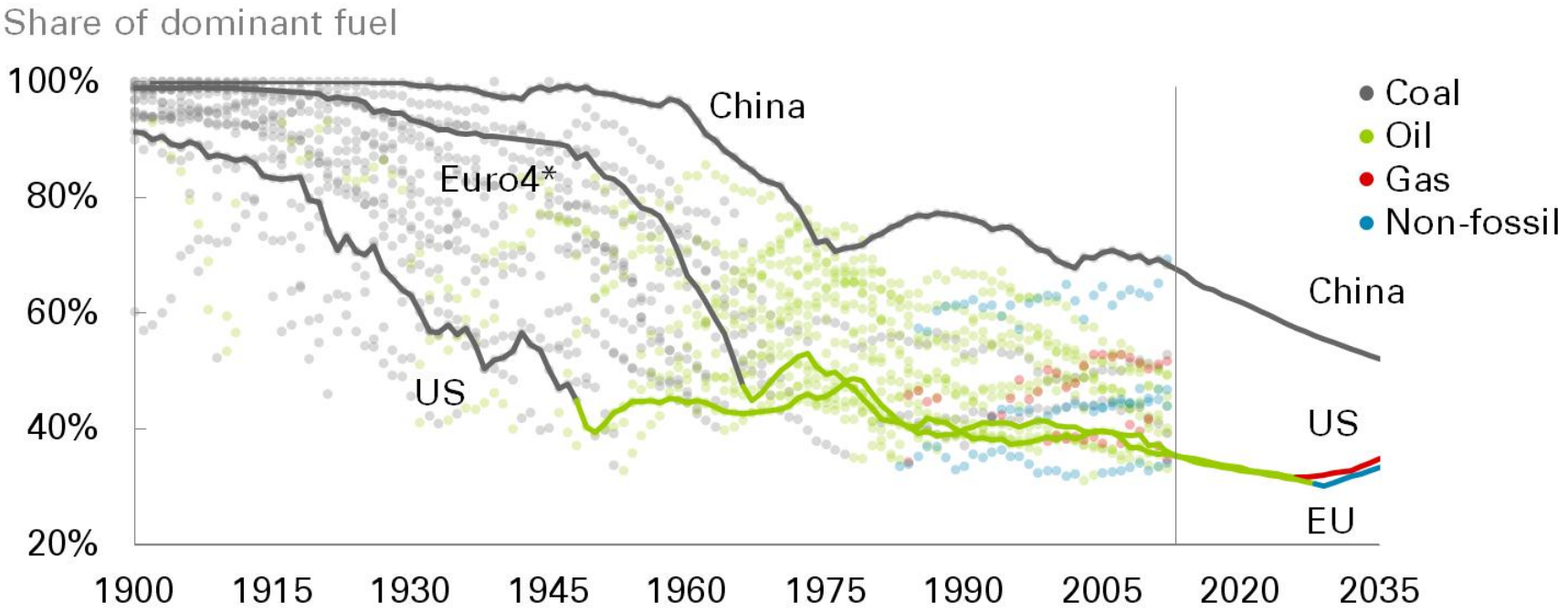
The fuel mix diversifies over time

Evolution of the fuel mix in 20 major countries



*France, Germany, Italy and United Kingdom pre-1965

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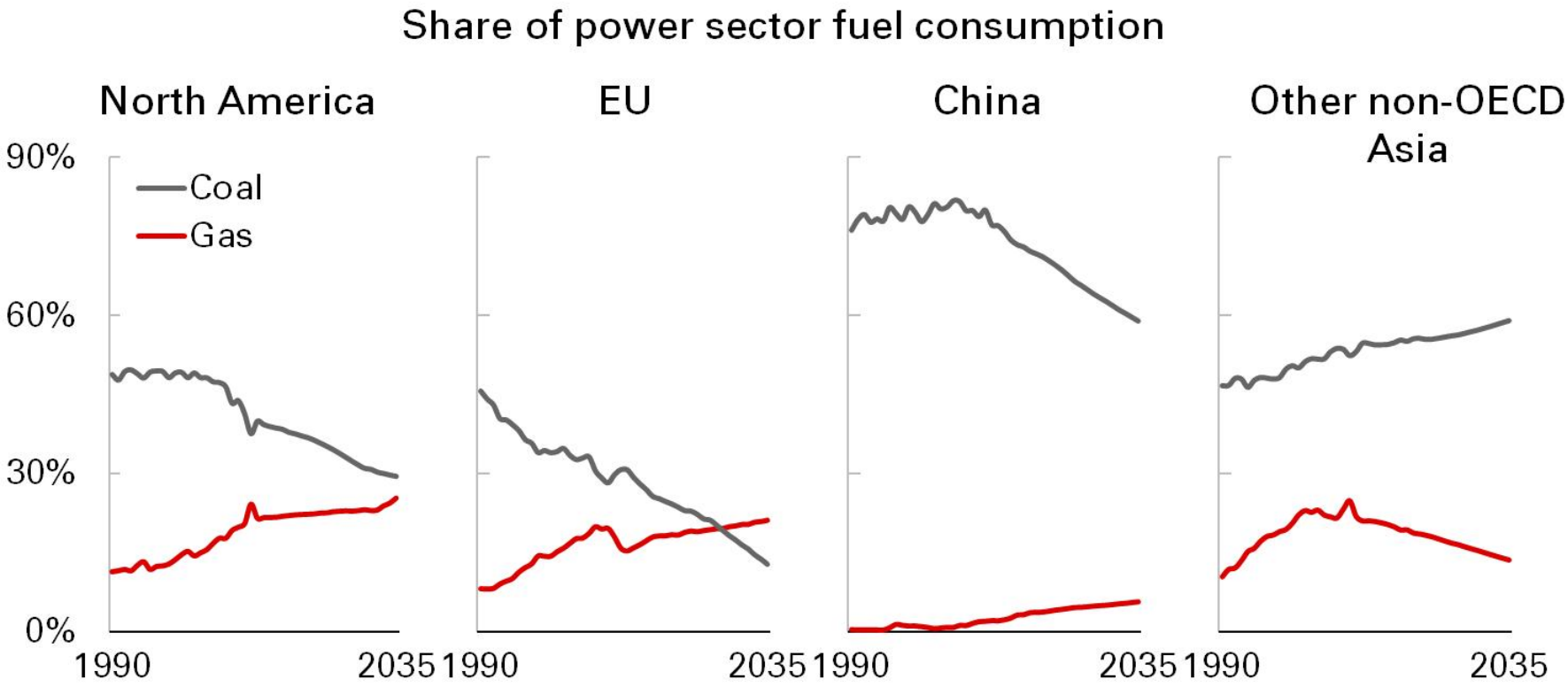
The power sector is the main driver of fuel mix changes



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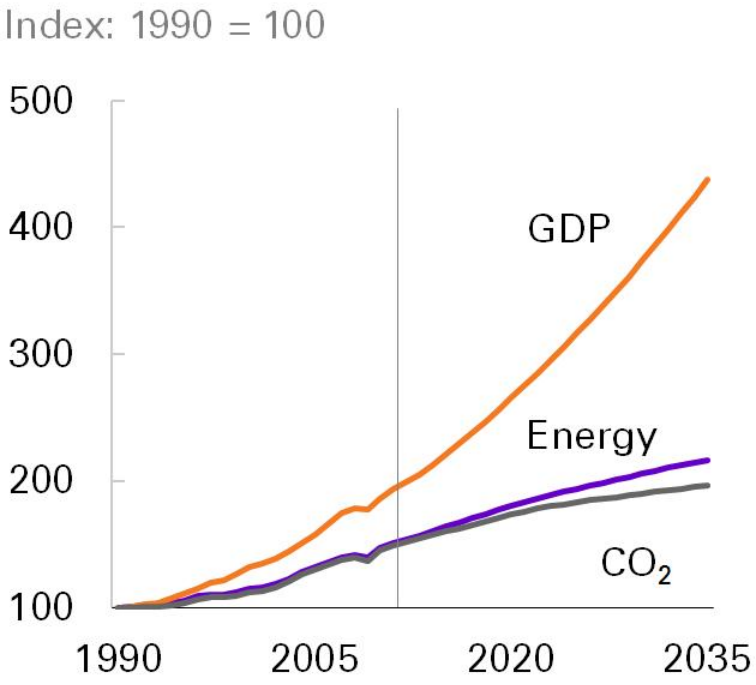
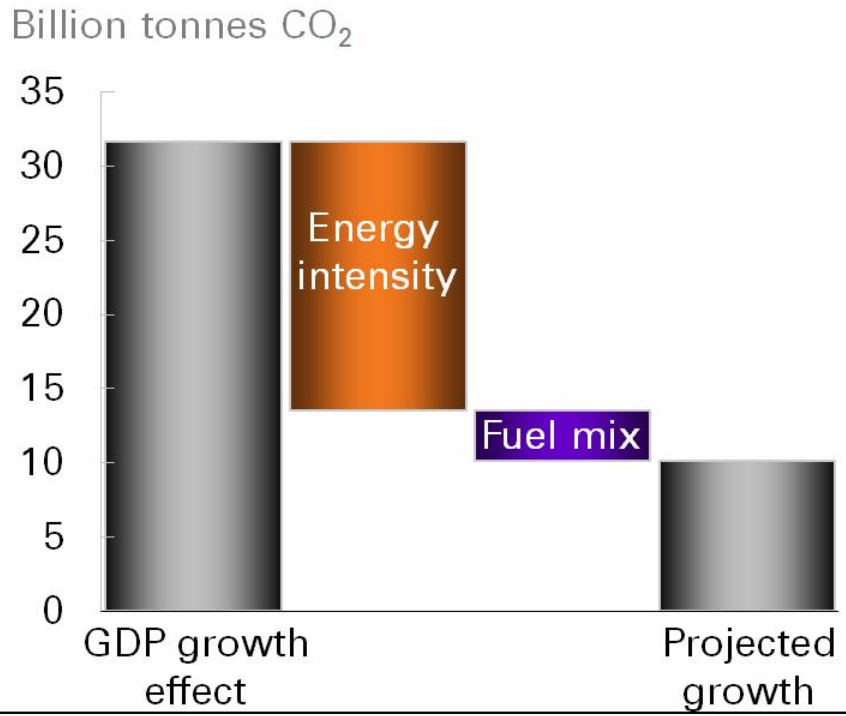
Energy efficiency and fuel mix restrain emissions growth

GDP, energy and emissions



Emissions growth 2012 to 2035



Energy Outlook 2035

Conclusion

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

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