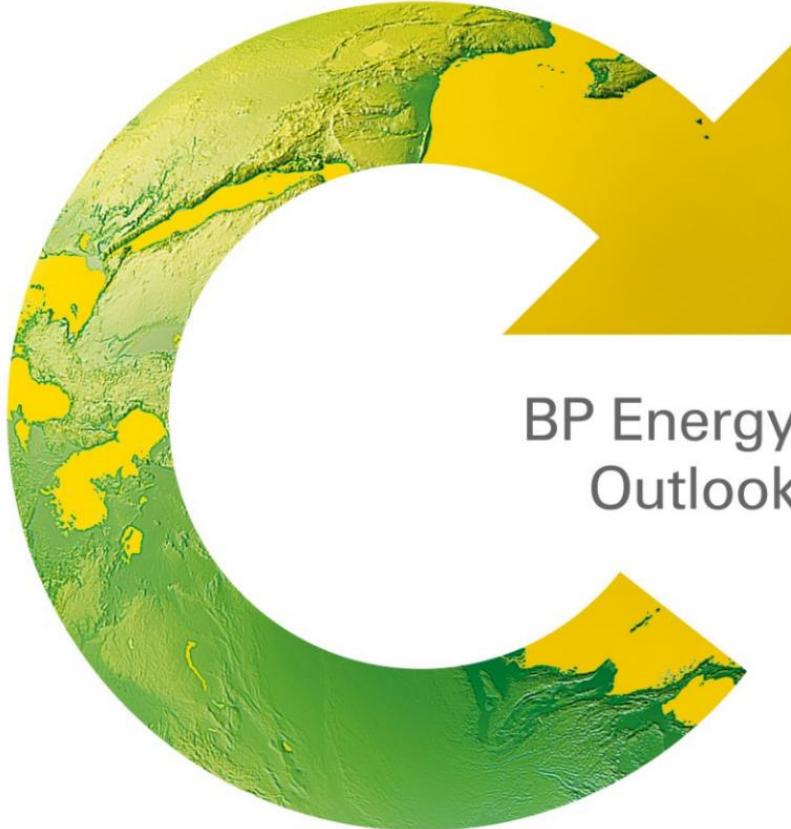




BP Energy Outlook

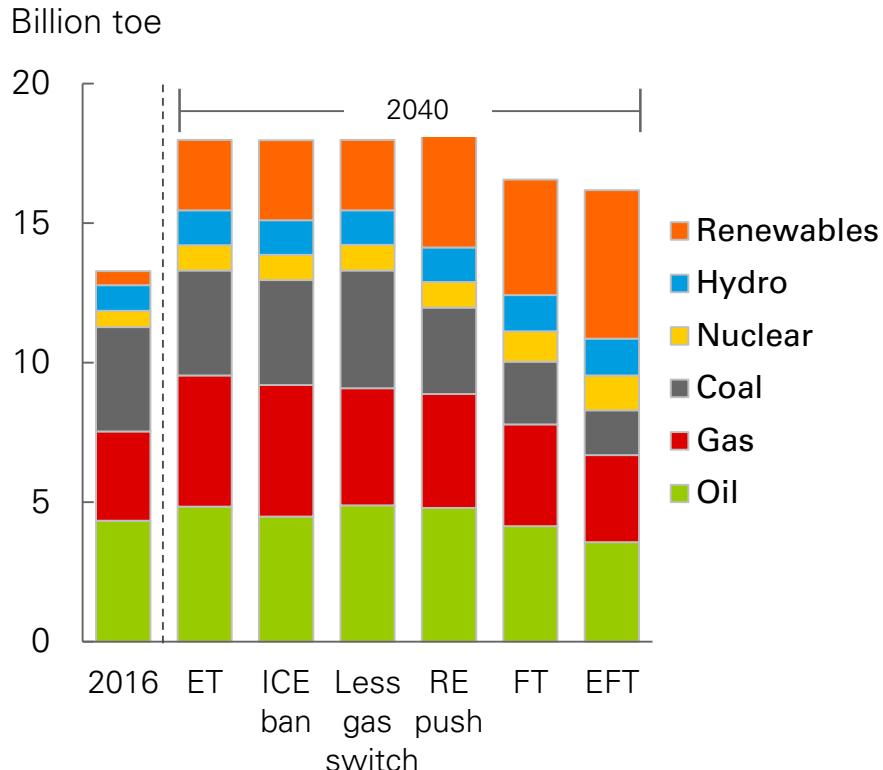
2018 edition



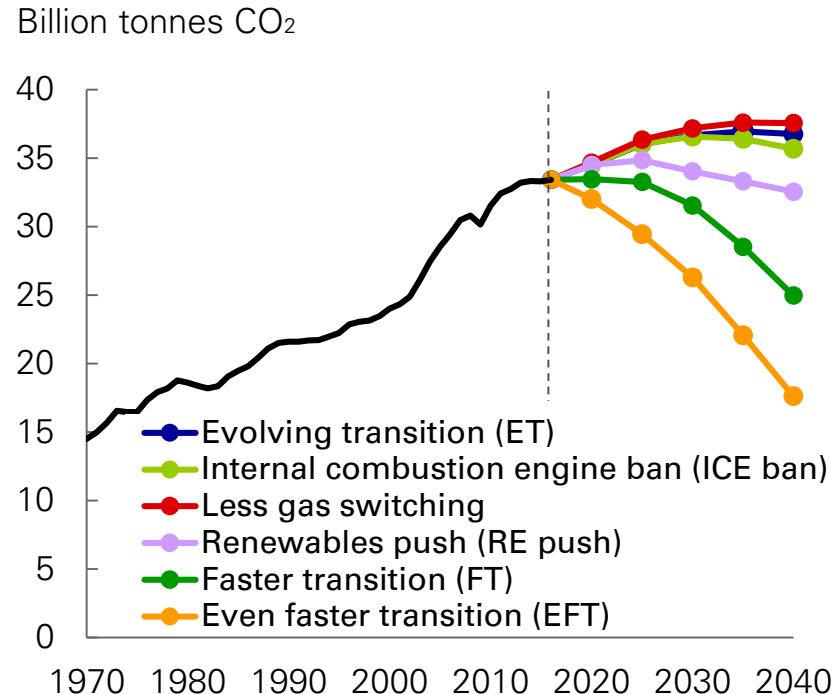
Mark Finley
General Manager

Alternative scenarios

Primary energy consumption by fuel

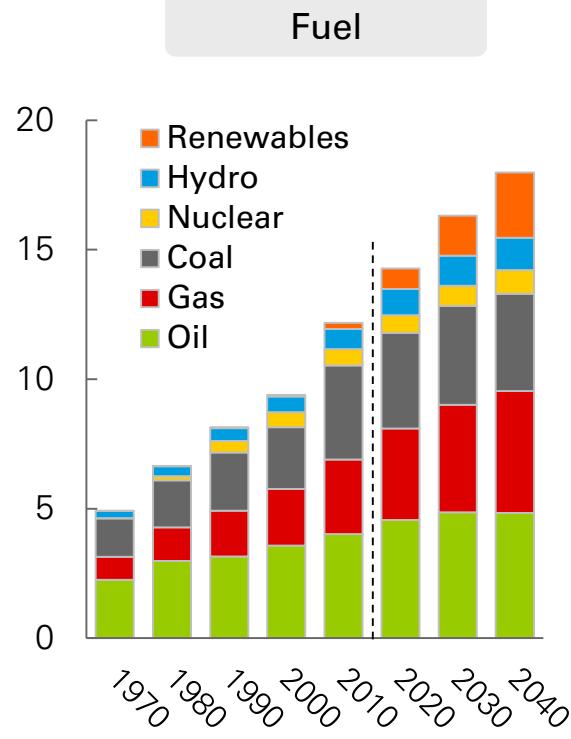
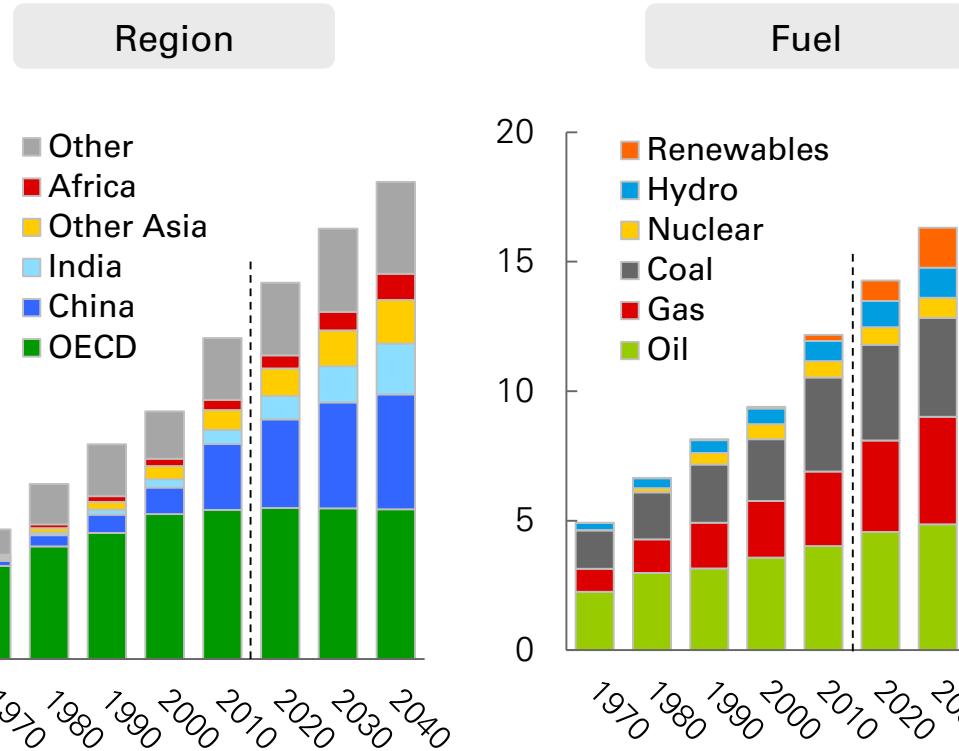
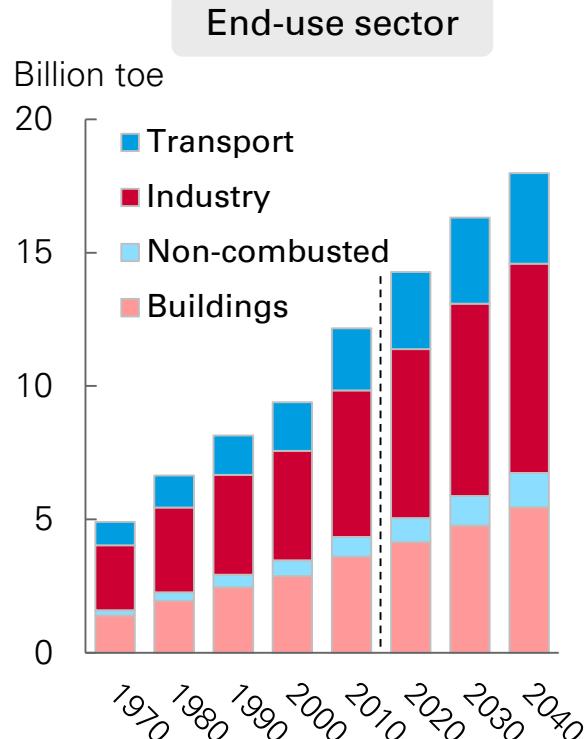


Carbon emissions



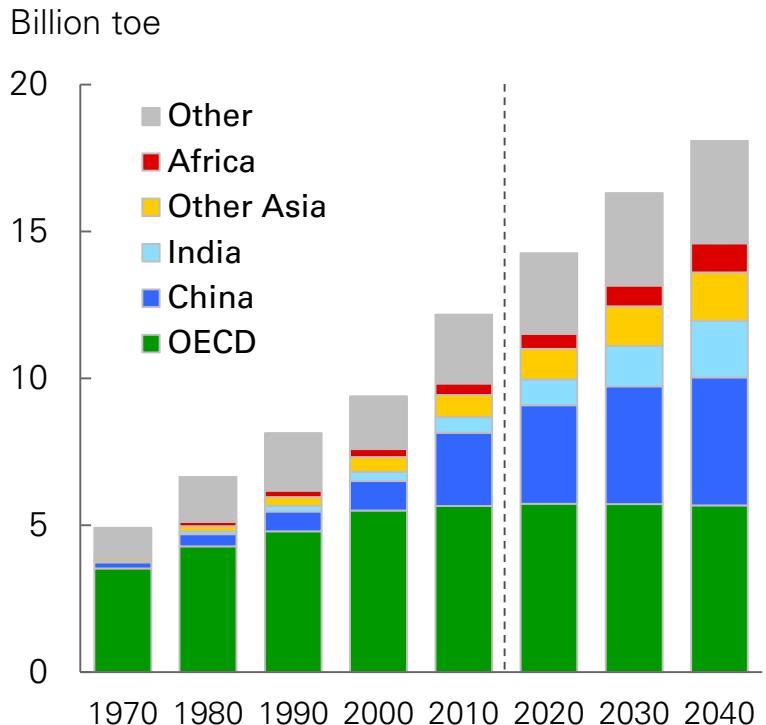
Three windows on the energy transition

Primary energy demand

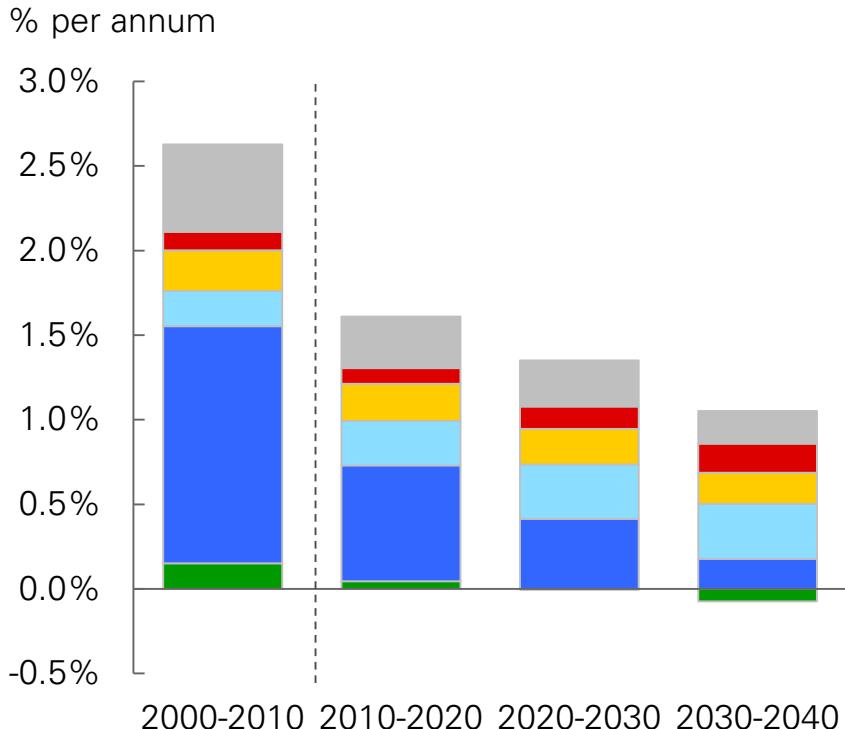


Regional energy demand

Primary energy consumption by region

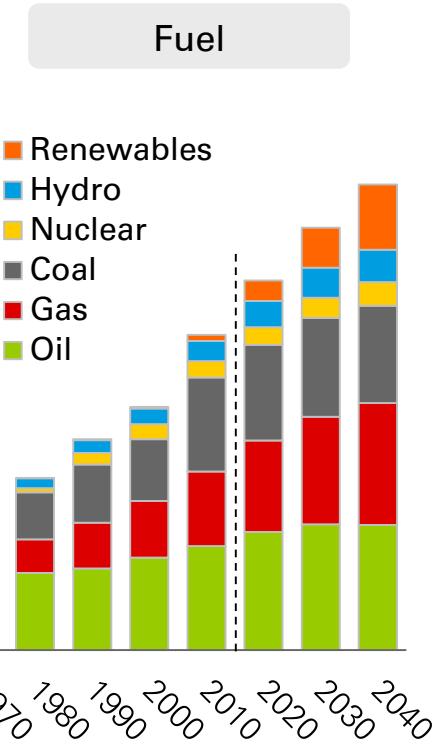
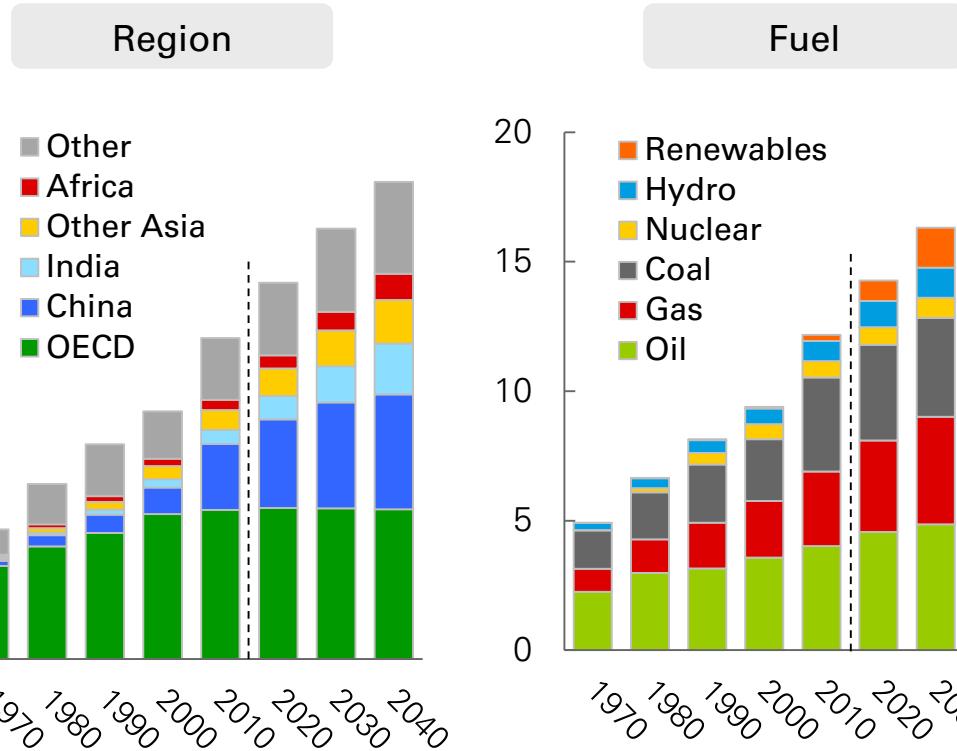
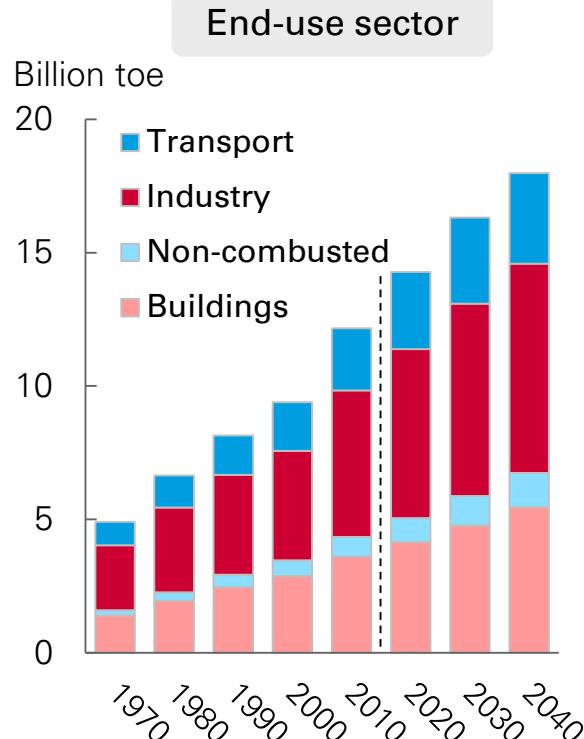


Primary energy growth and regional contributions



Three windows on the energy transition

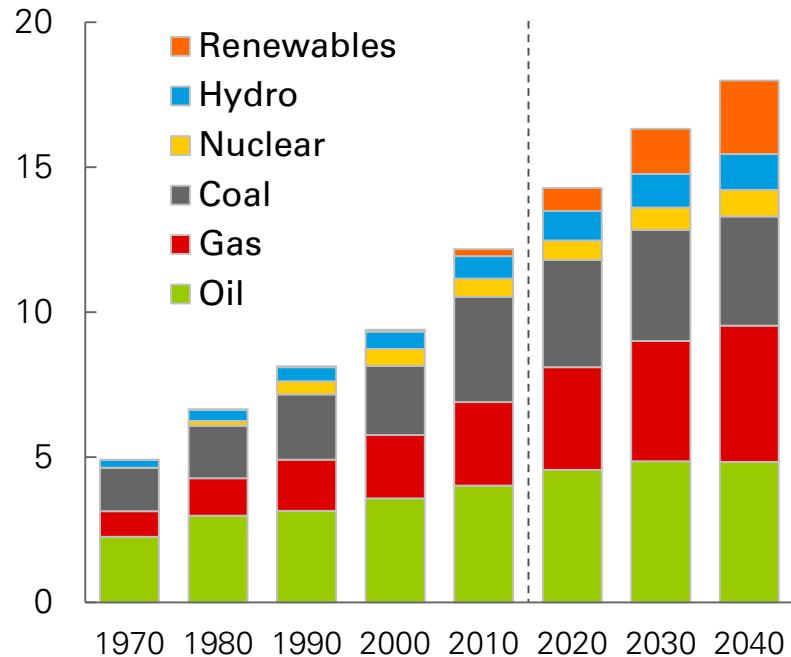
Primary energy demand



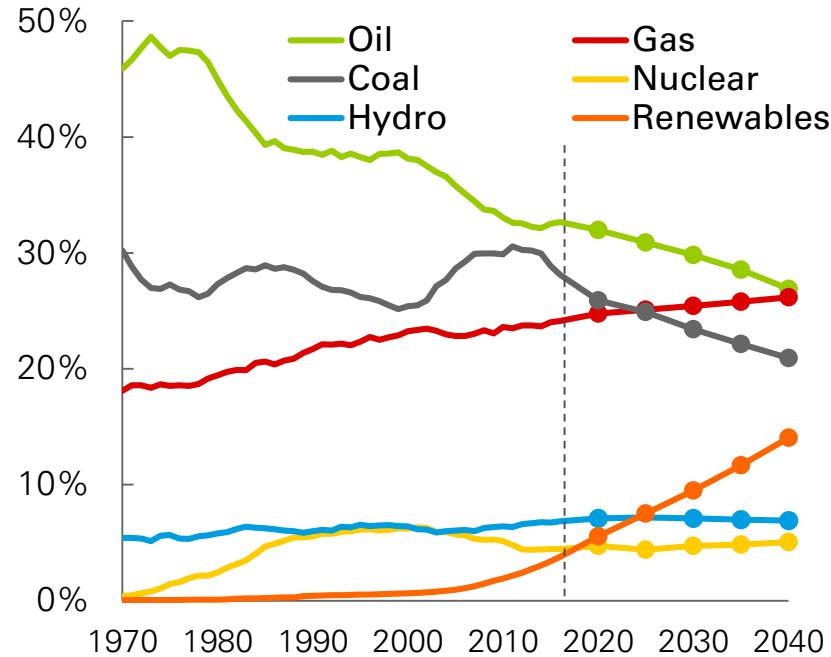
Global energy by fuel

Primary energy consumption by fuel

Billion toe

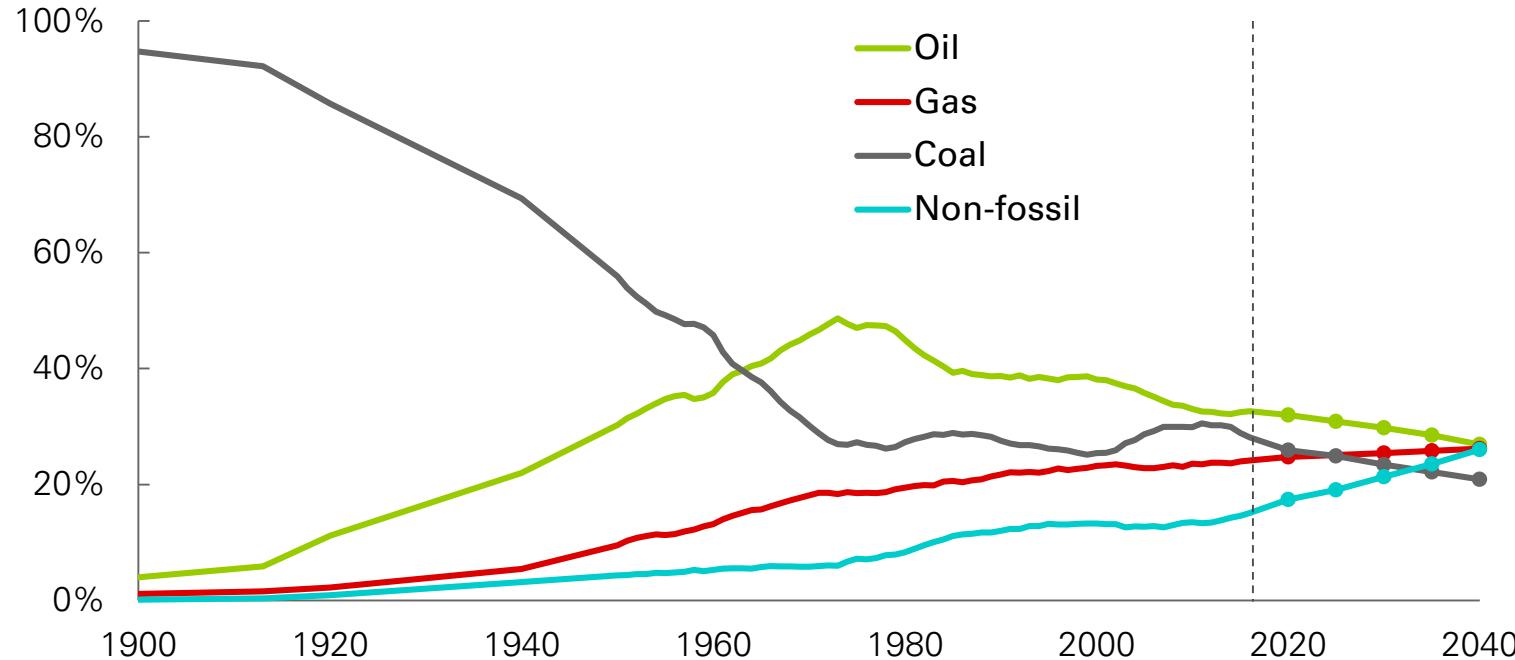


Shares of primary energy



Diversified fuel mix

Shares of primary energy



Five key questions

- What have we learnt about electric cars and the mobility revolution?
- When is global oil demand likely to stop growing?
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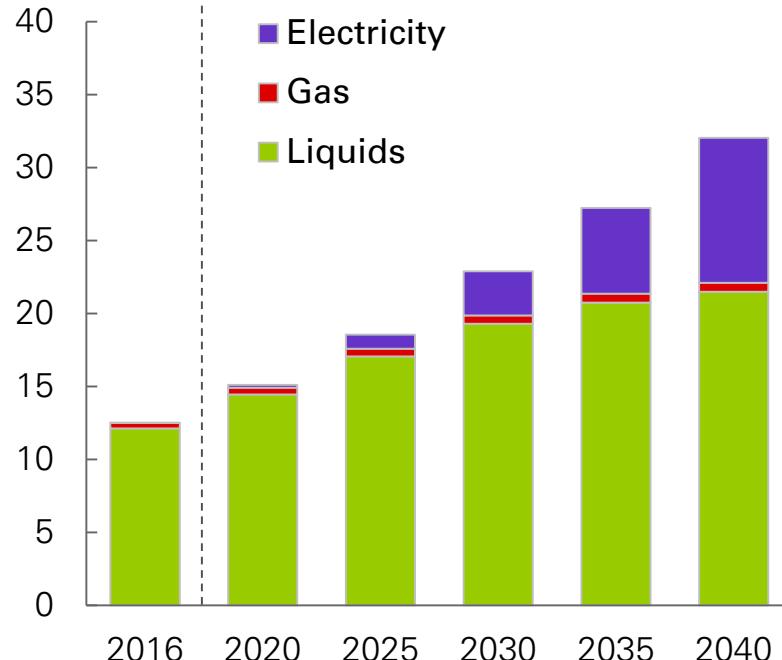
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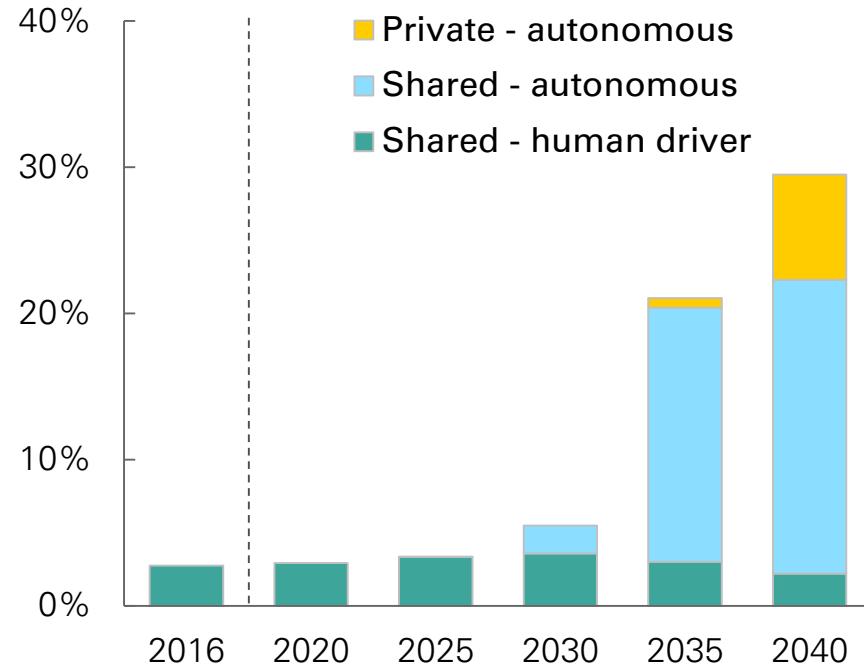
Electric cars, shared mobility and autonomy

Car kilometres by fuel type

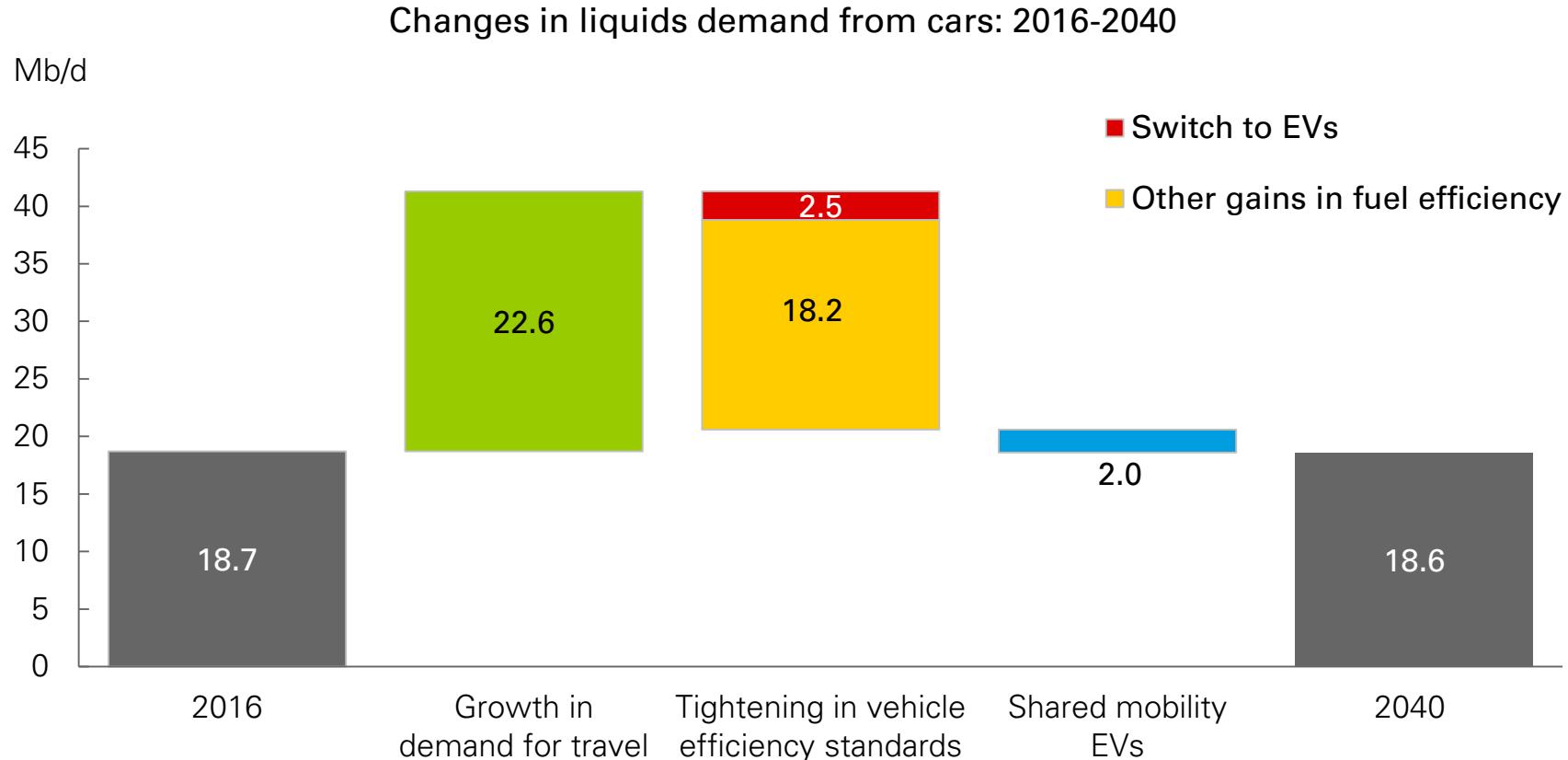
Trillion km



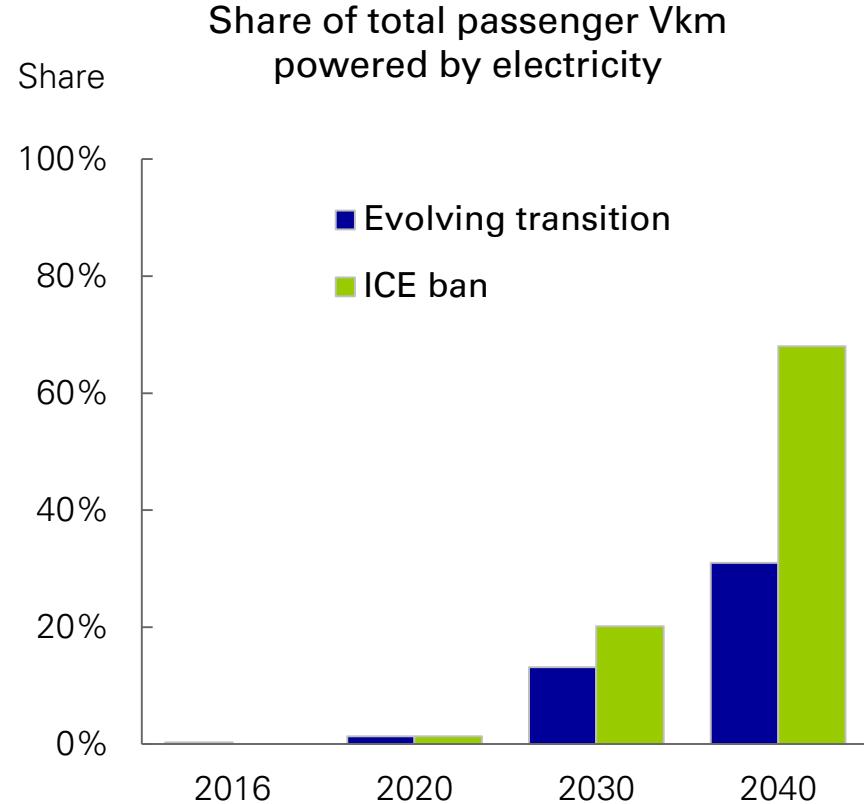
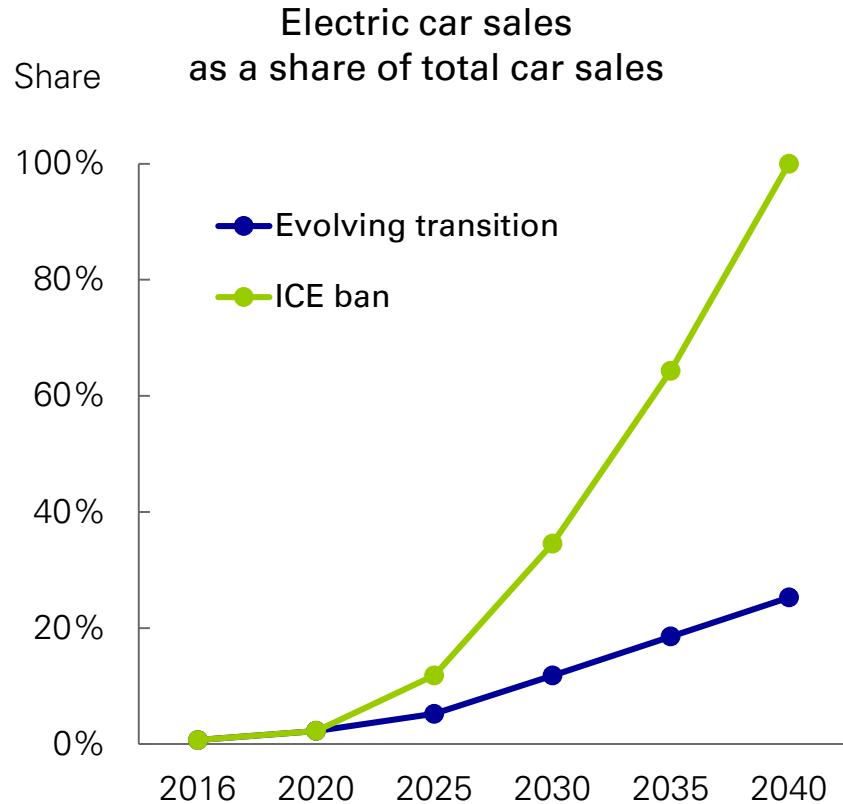
New mobility share of Vkm



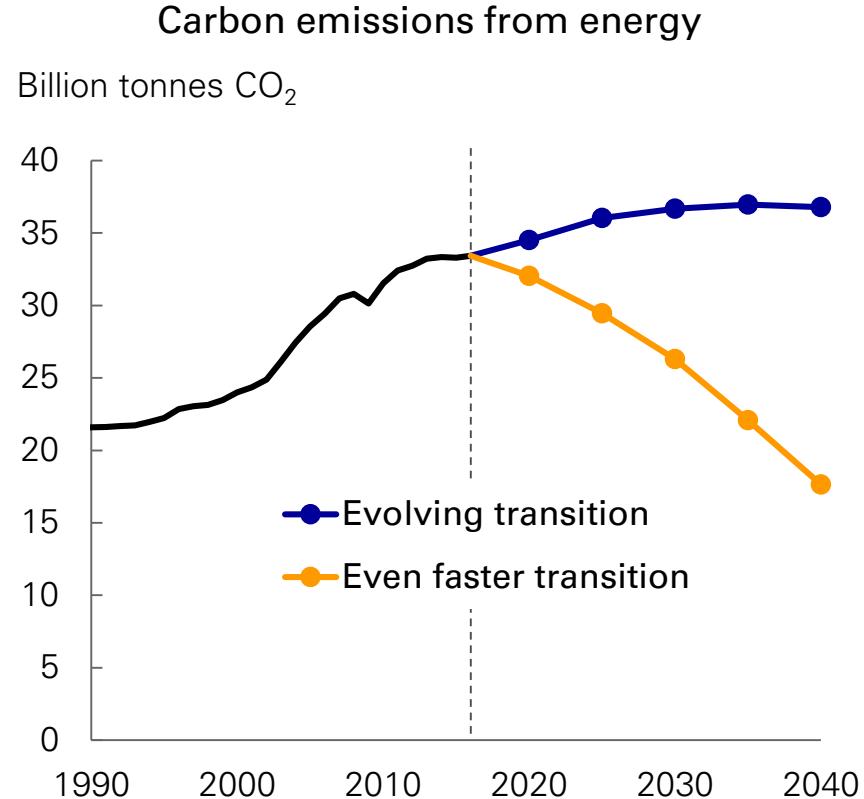
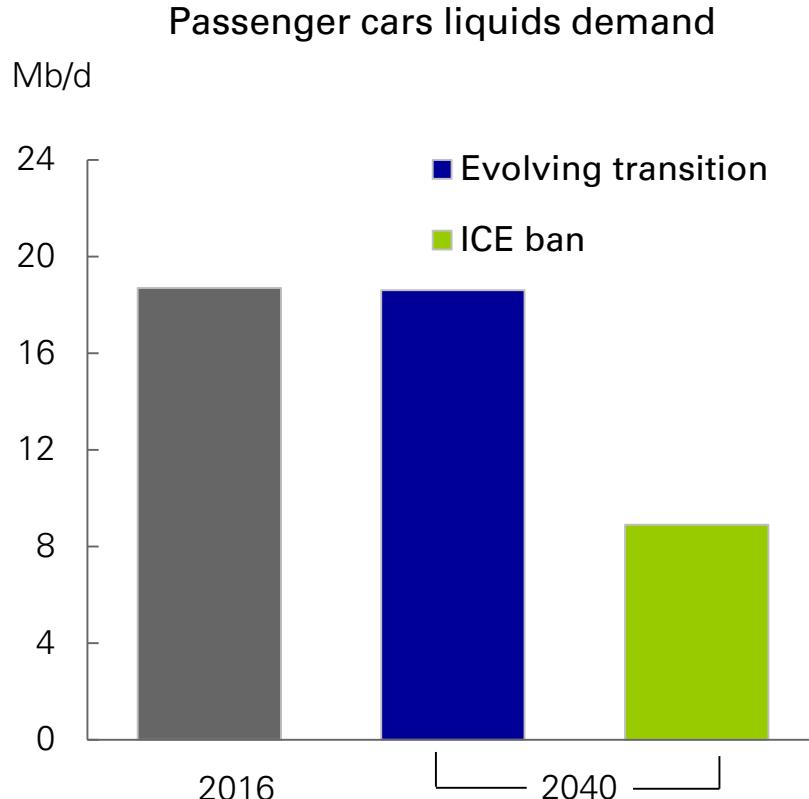
Liquid fuel demand from passenger cars



Global ban on internal-combustion engine (ICE) cars

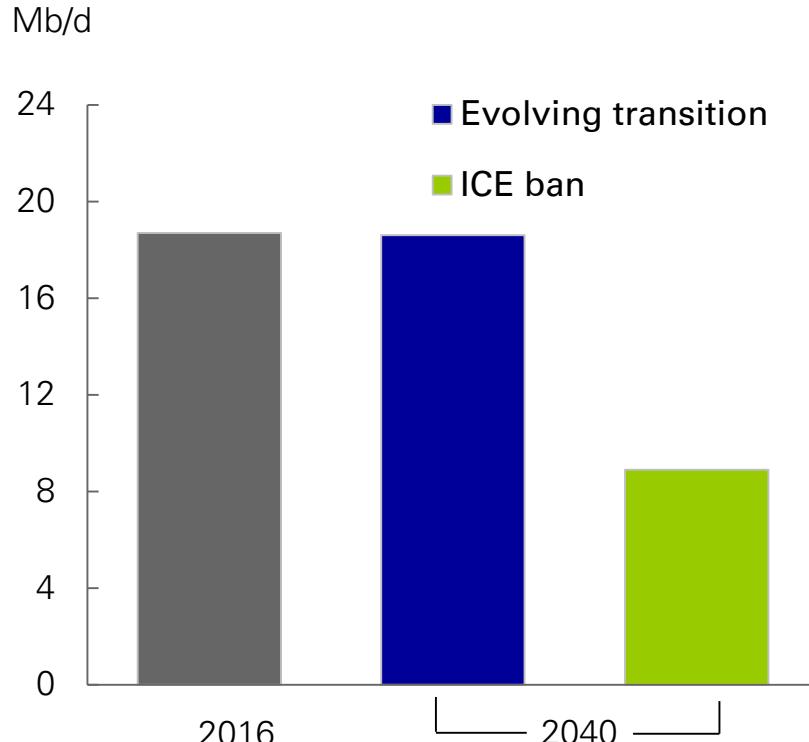


Impact of ICE ban

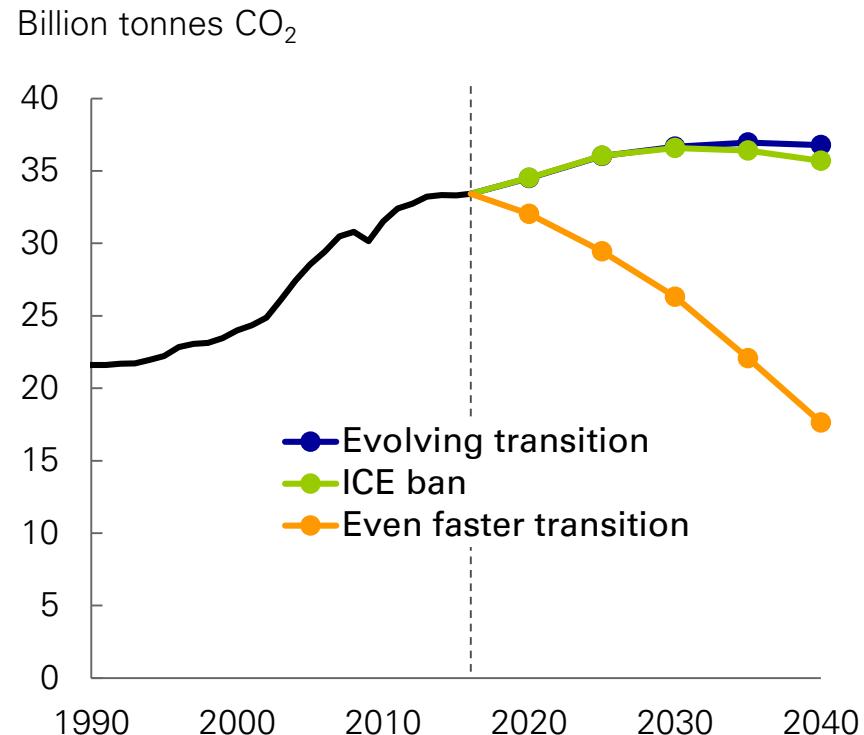


Impact of ICE ban

Passenger cars liquids demand



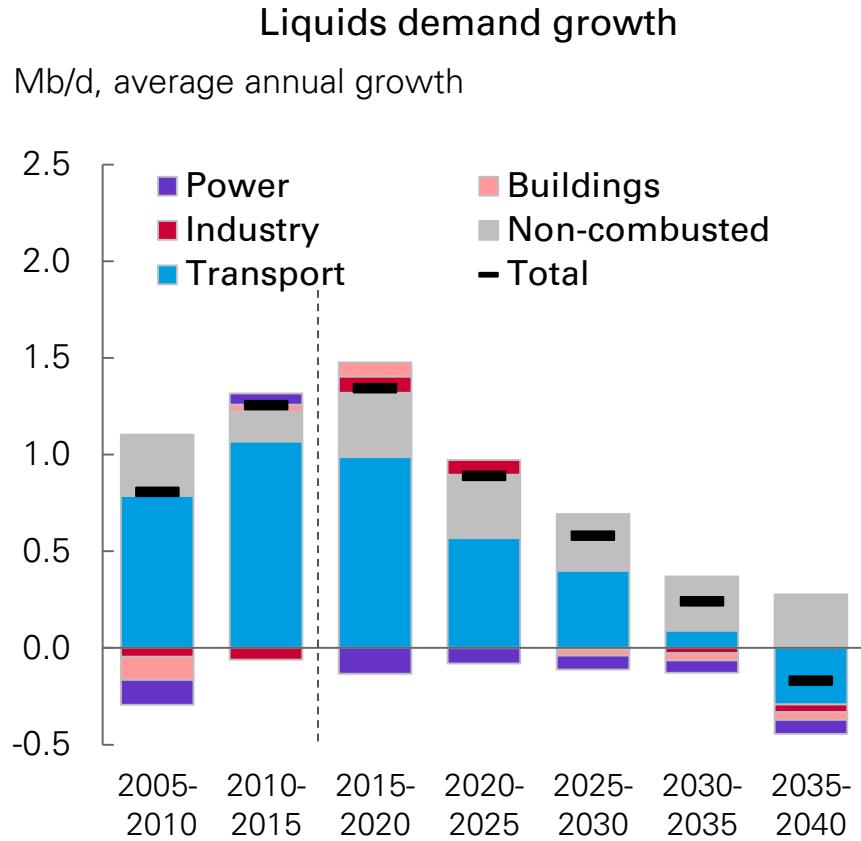
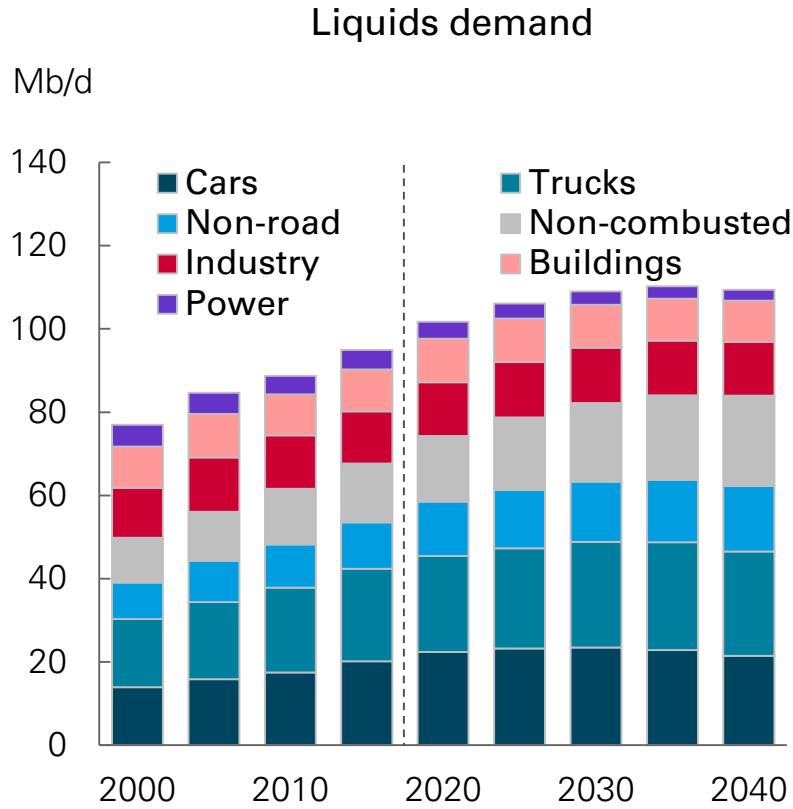
Carbon emissions from energy



Five key questions

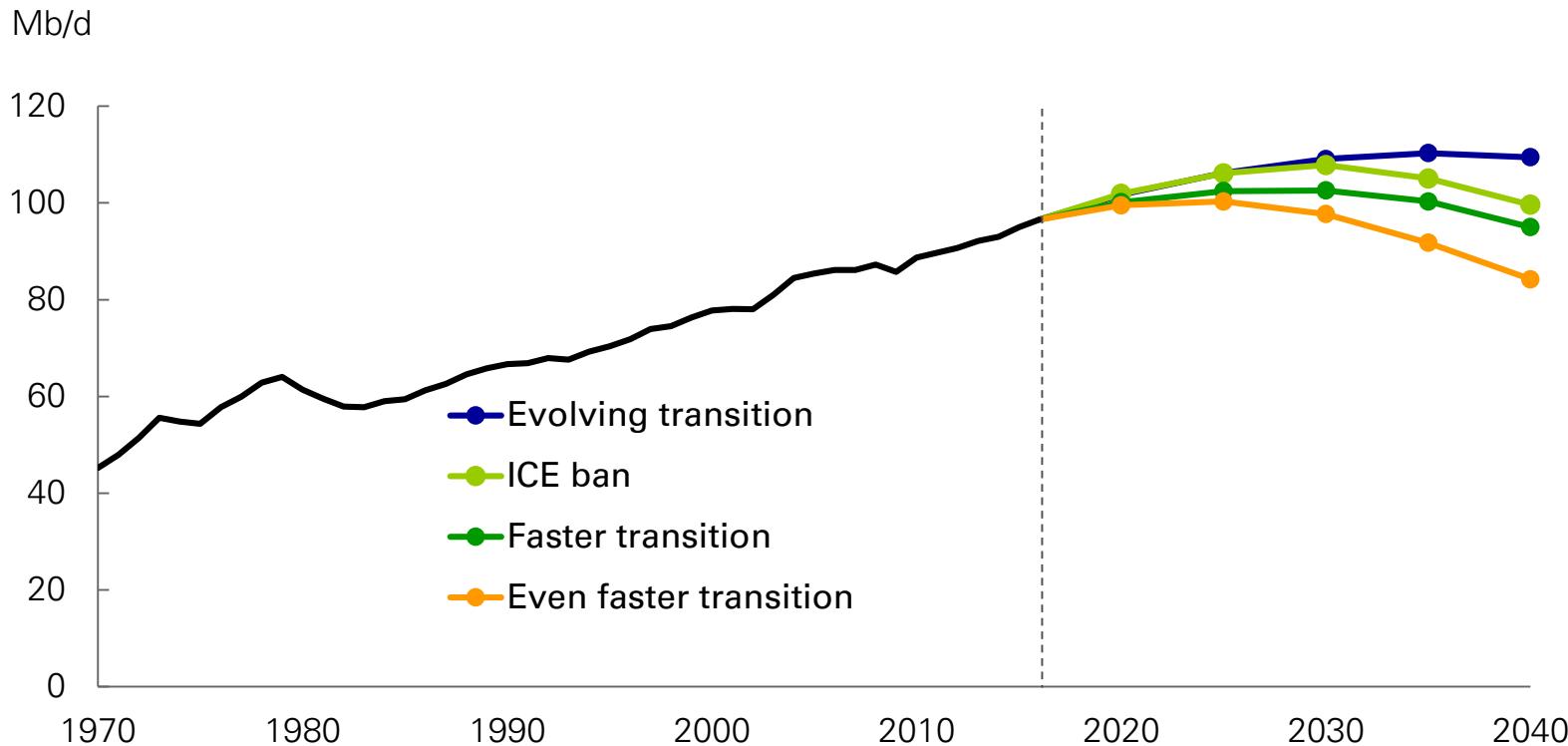
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Demand for oil and other liquid fuels

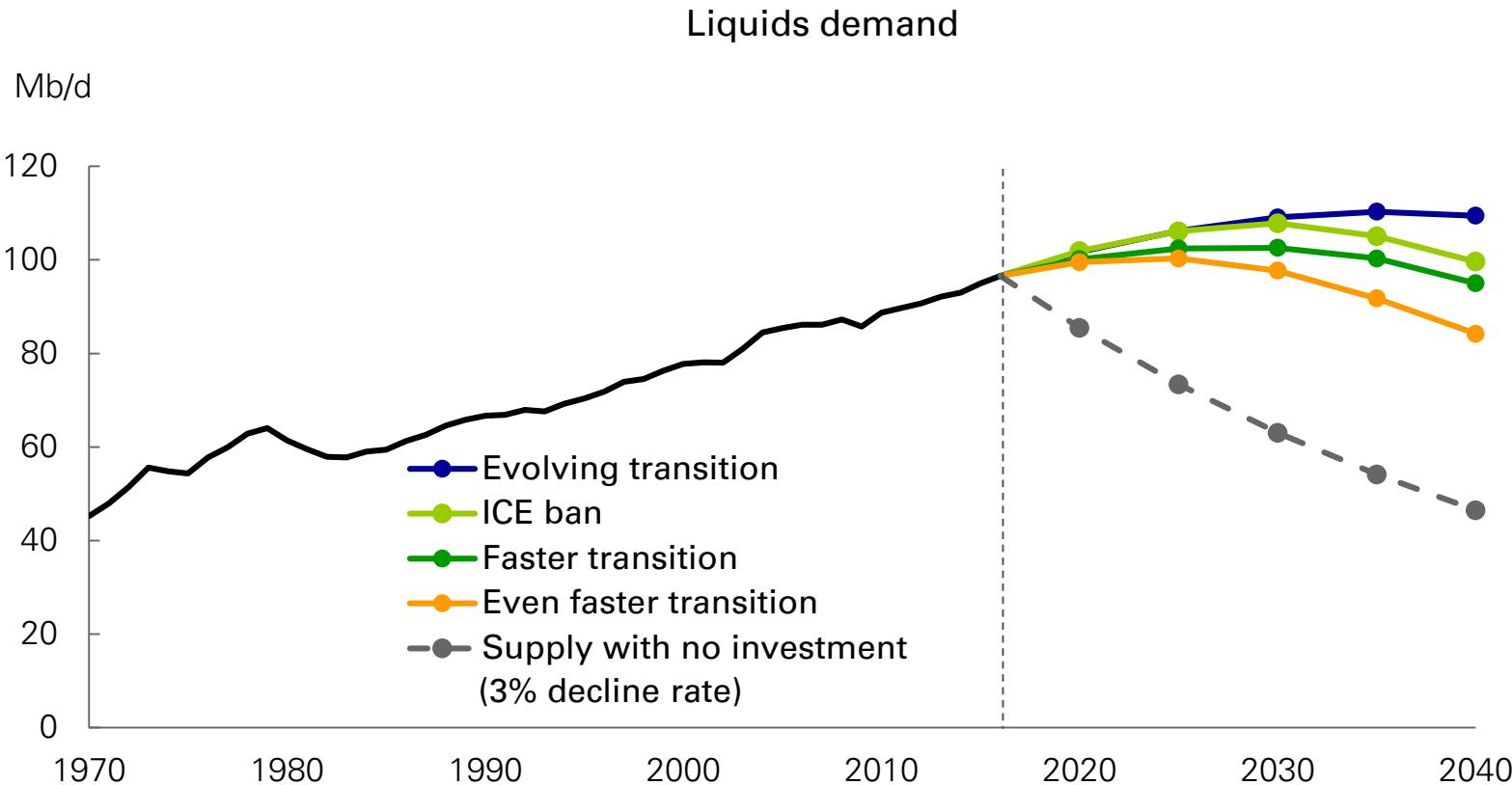


Demand for oil and other liquid fuels

Liquids demand



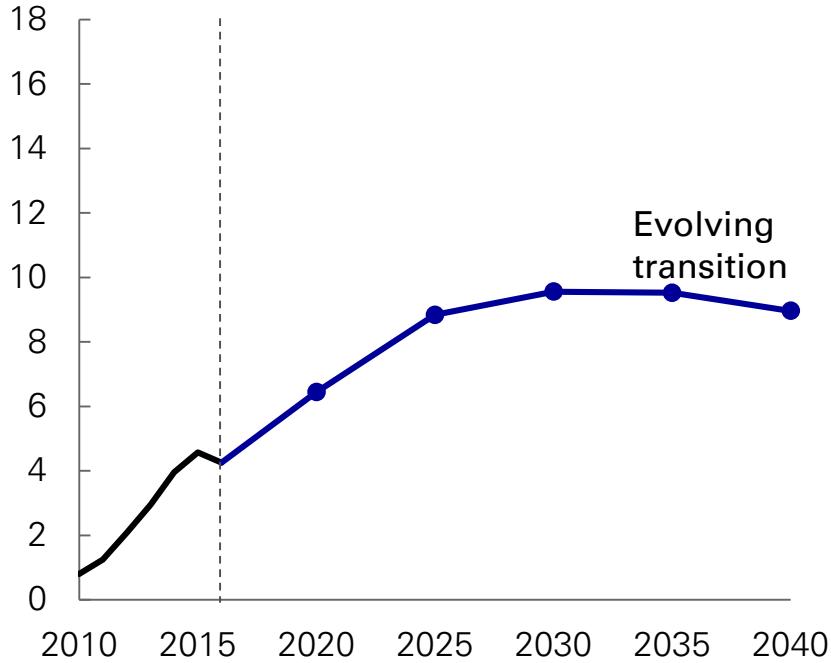
Demand for oil and other liquid fuels



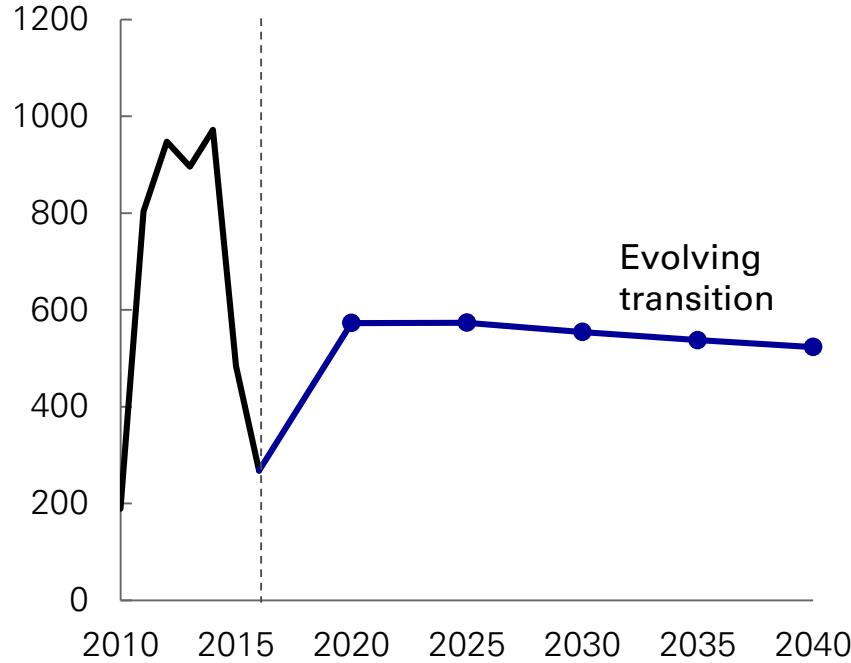
US tight oil: alternative scenarios

US tight oil production

Mb/d



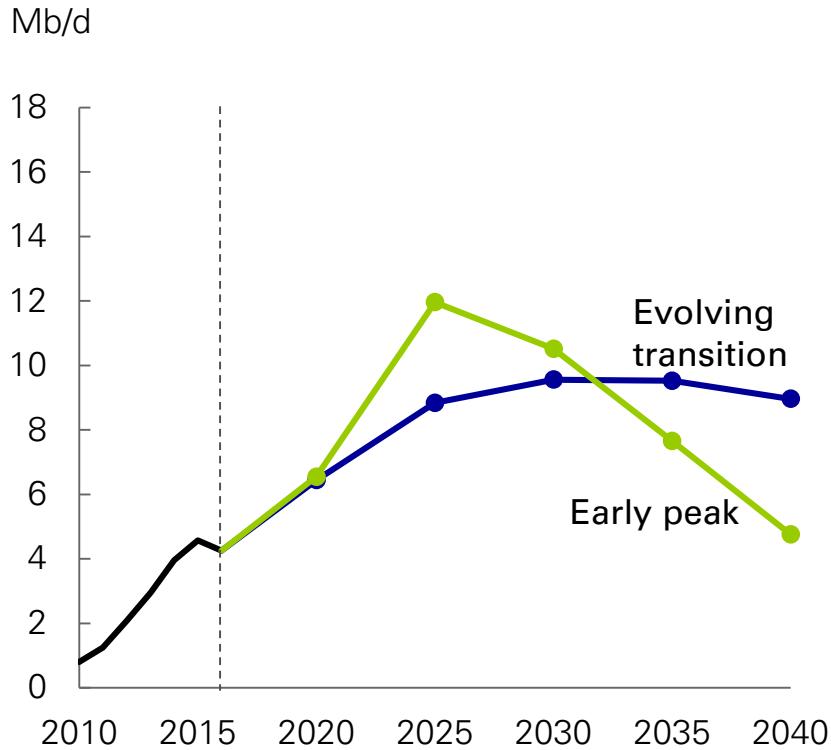
Number of US oil rigs
(in the four main producing regions*)



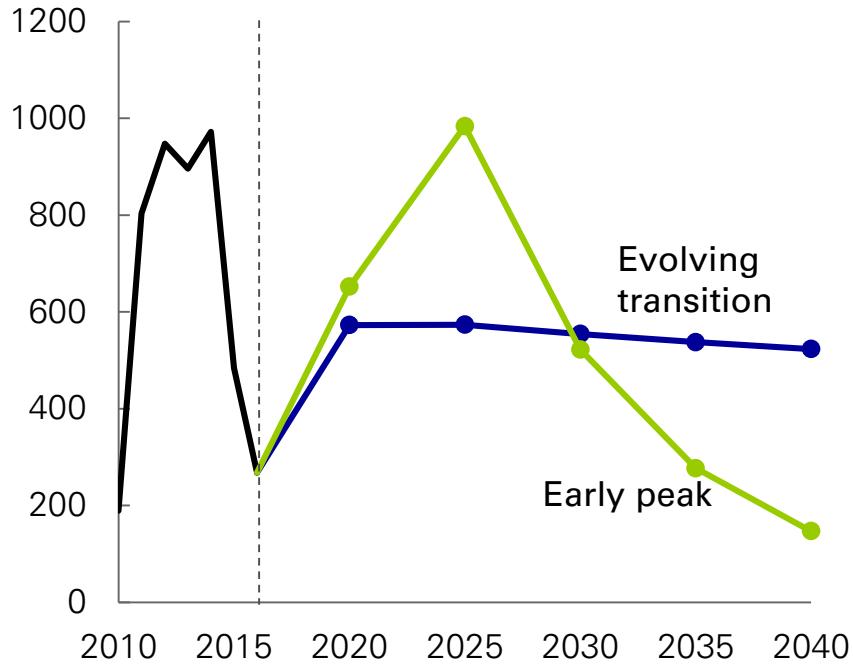
*Permian, Eagle Ford, Bakken and Niobrara

US tight oil: alternative scenarios

US tight oil production



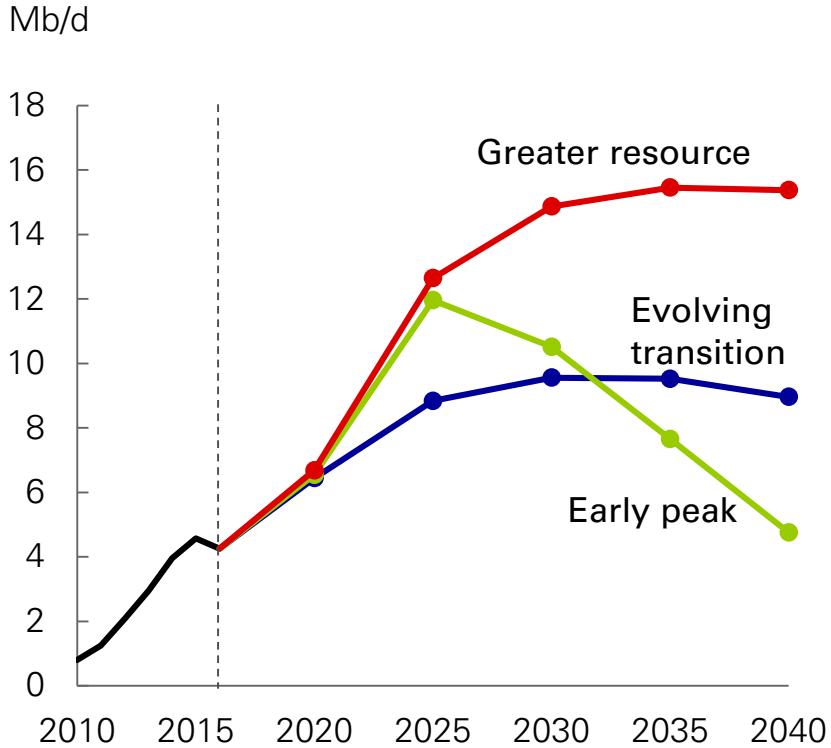
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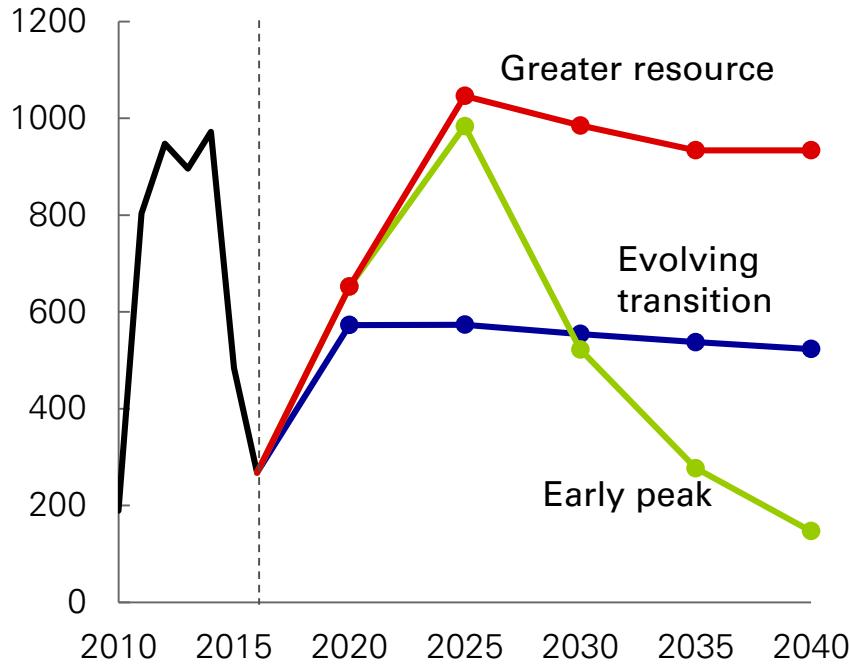
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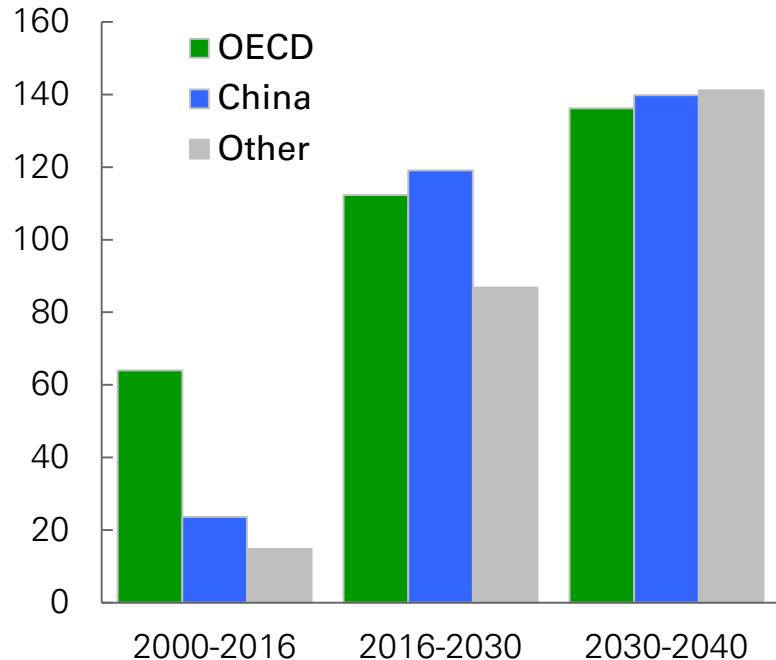
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Rapid growth in renewable energy

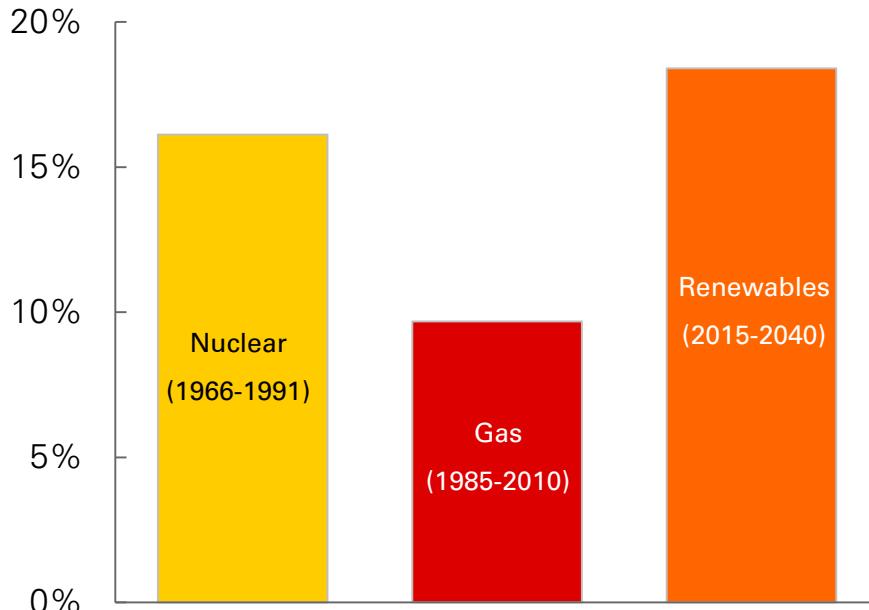
Growth of renewable power

TWh, average annual growth



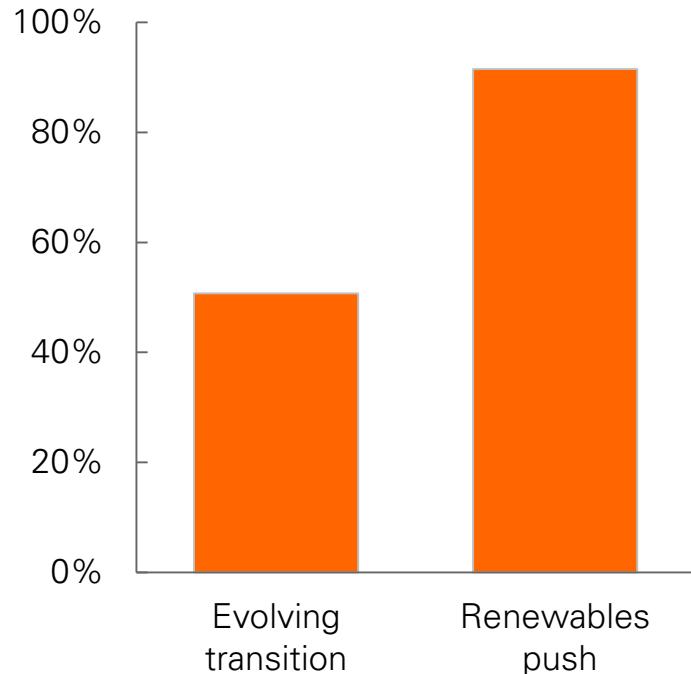
Pace of power market penetration

Largest gains in market share over 25 years, %pts



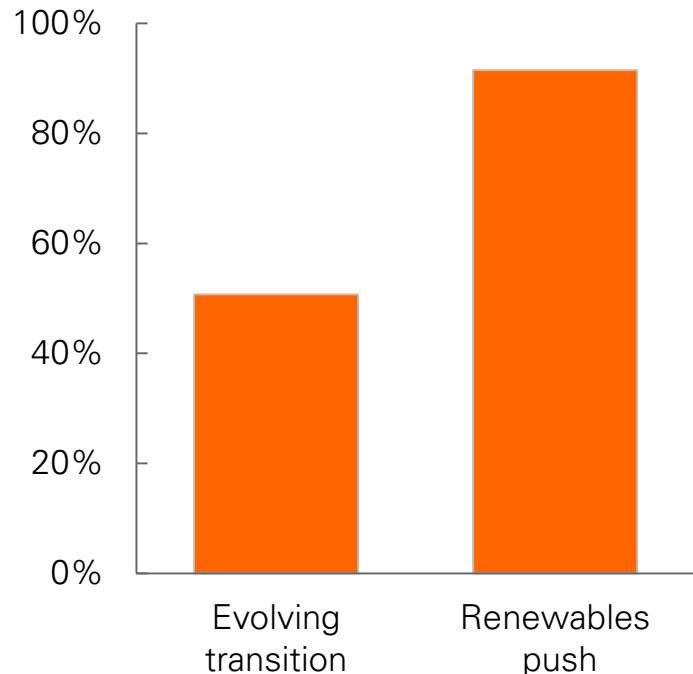
'Renewables push' scenario

Renewables share of power growth
2016-2040

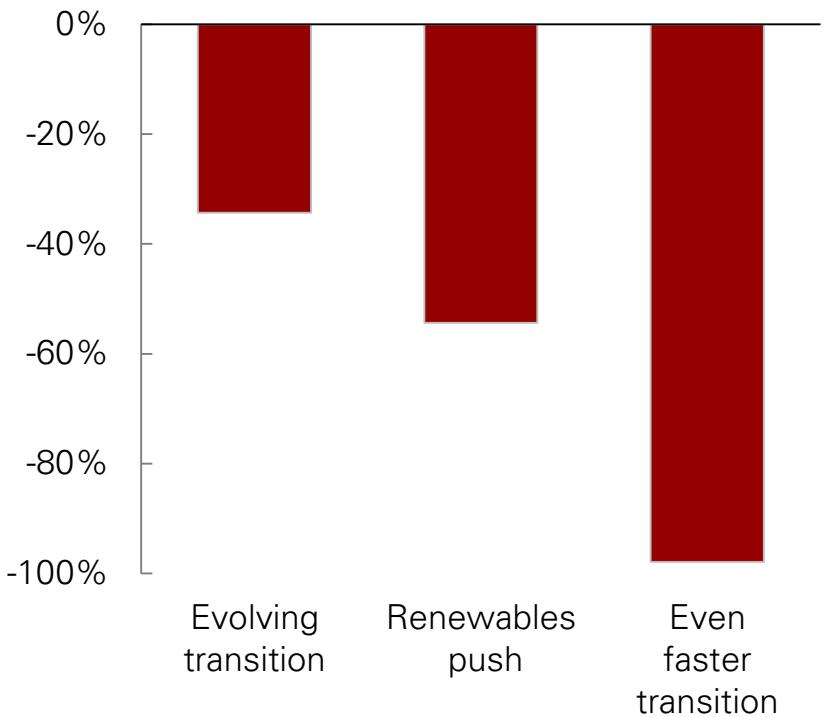


'Renewables push' scenario

Renewables share of power growth
2016-2040



Change in carbon intensity of power
2016-2040

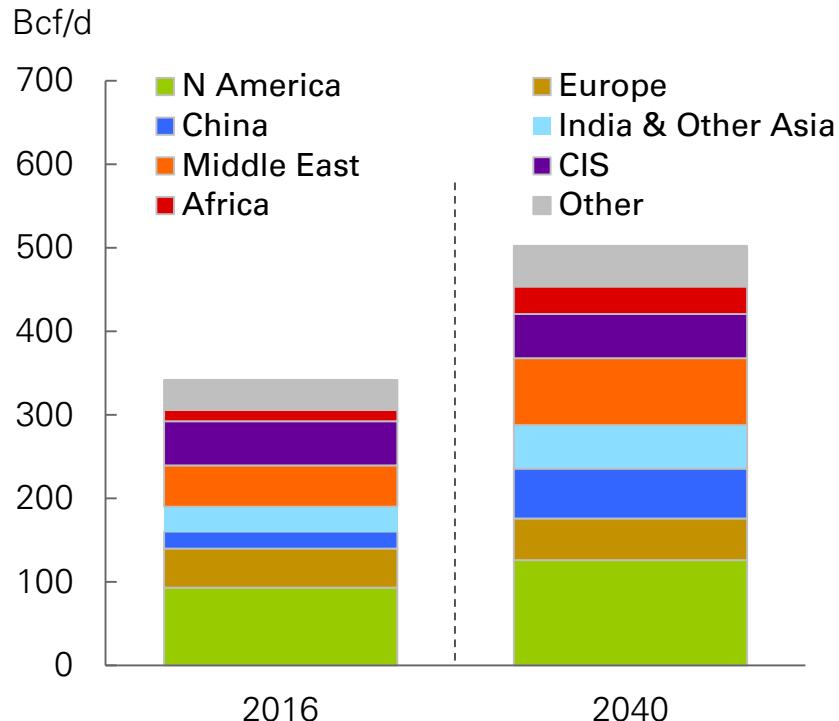


Five key questions

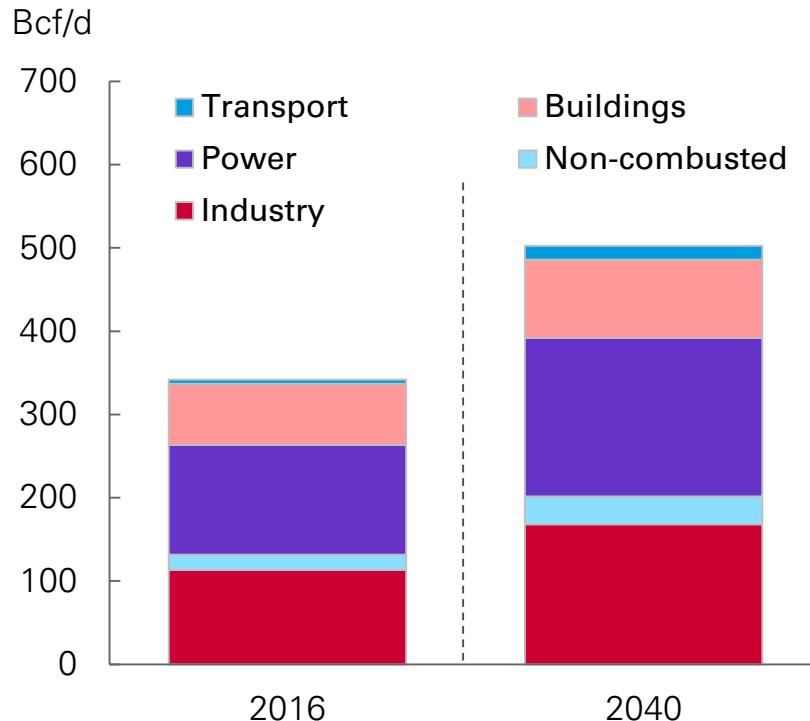
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Growth in natural gas demand

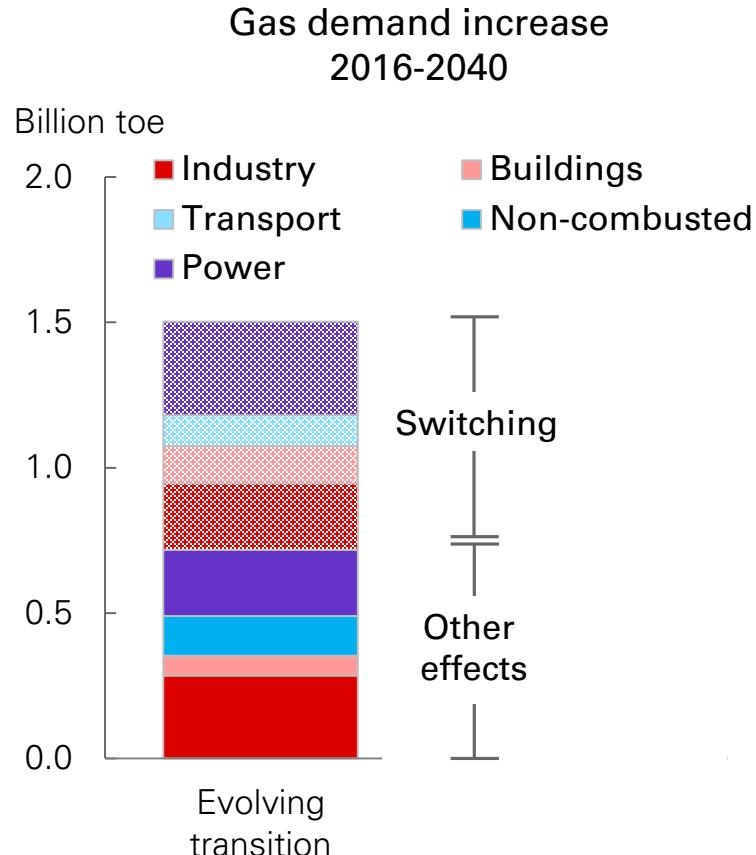
Gas consumption by region



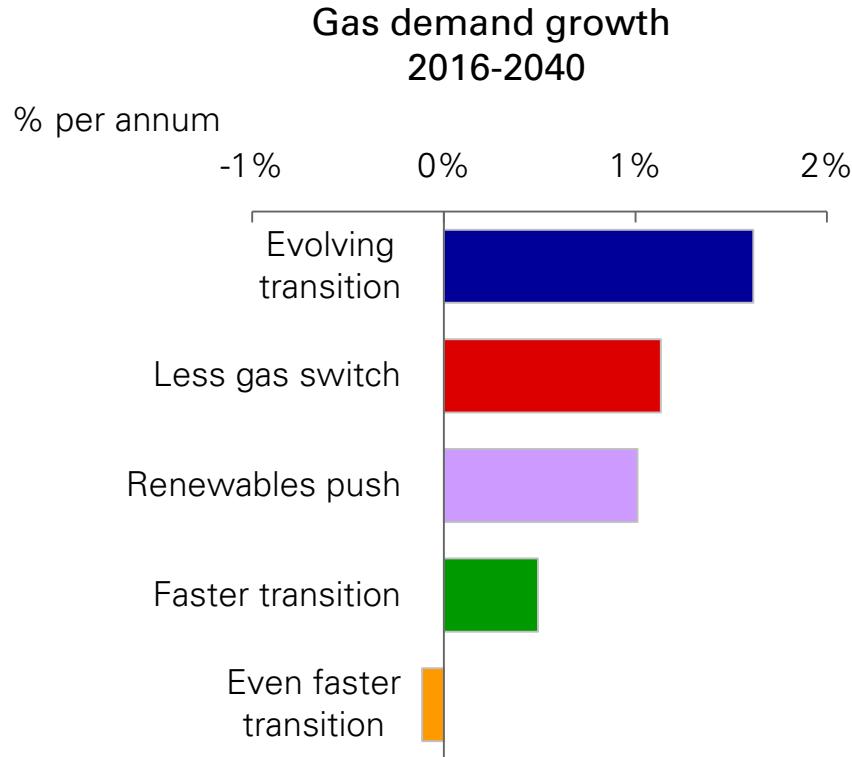
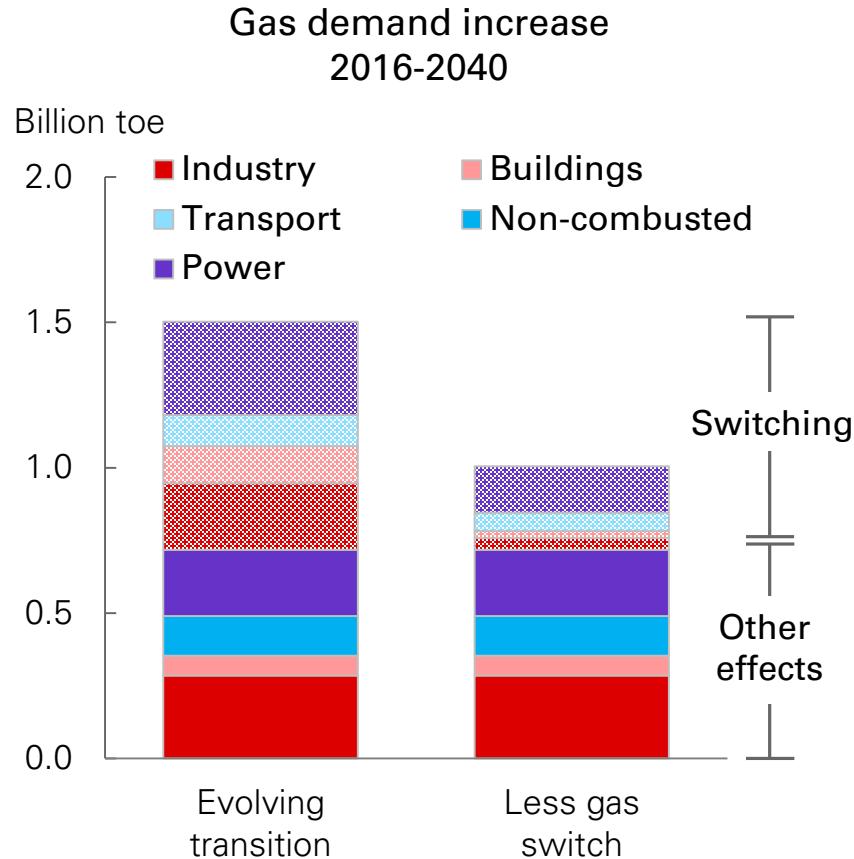
Gas consumption by sector



Possible risks to the outlook for natural gas

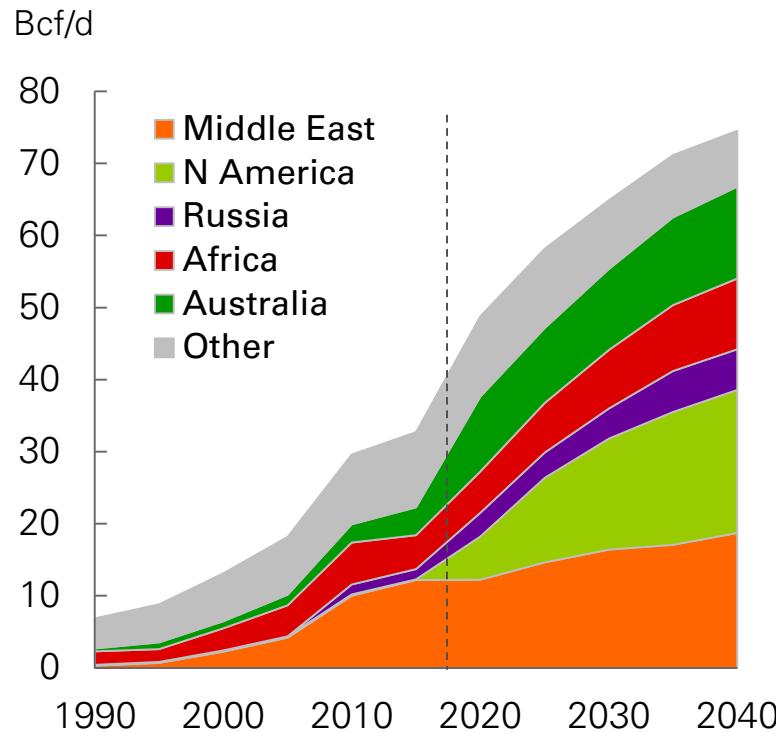


Possible risks to the outlook for natural gas

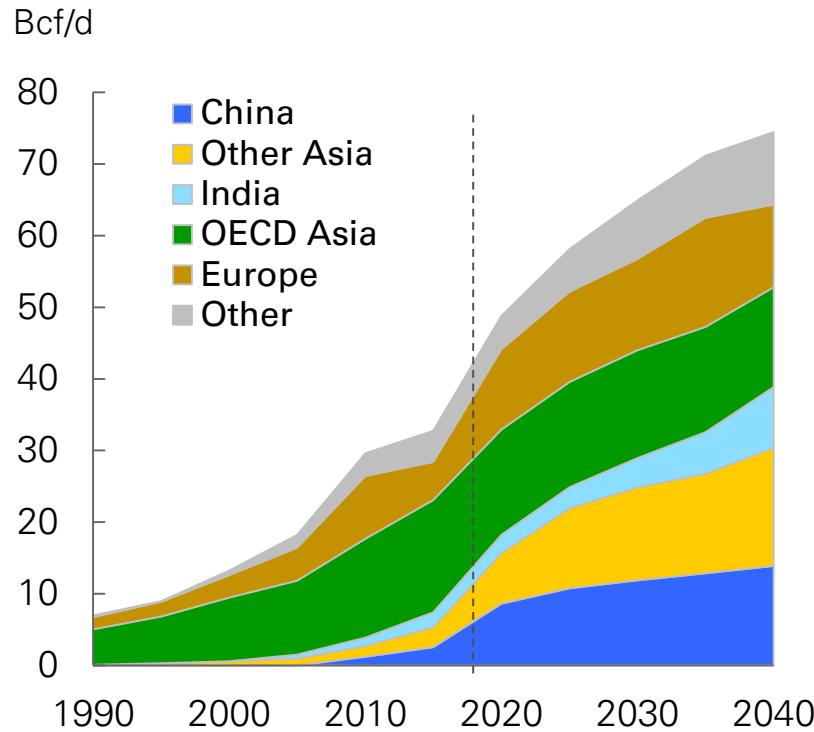


LNG continues to grow

LNG exports



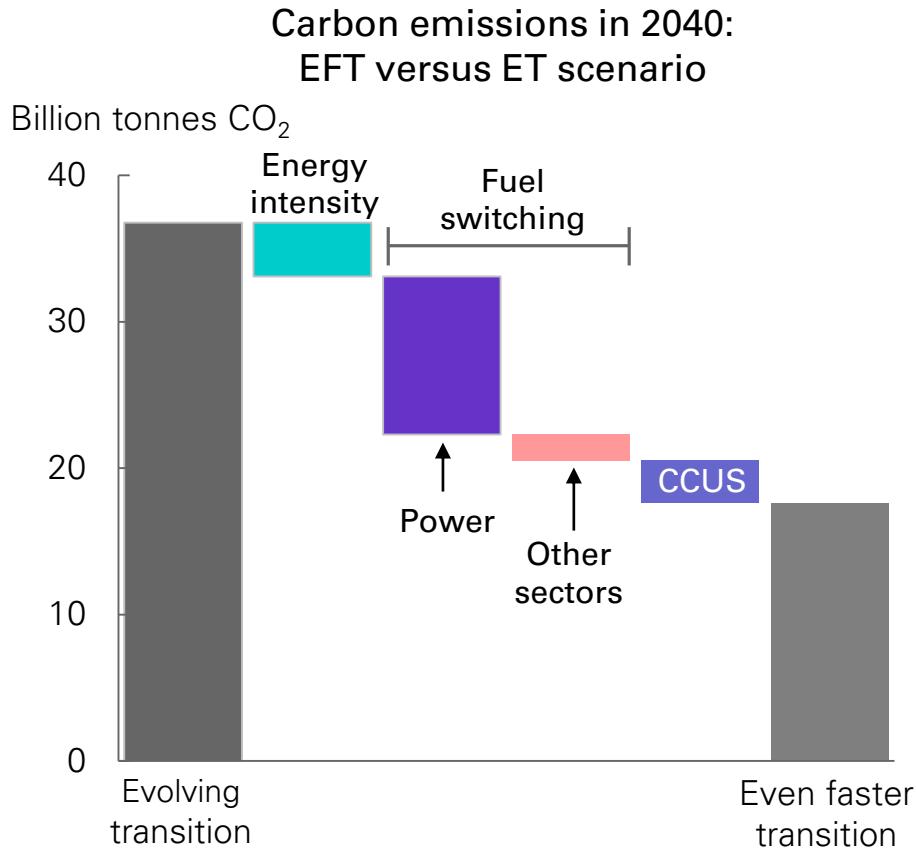
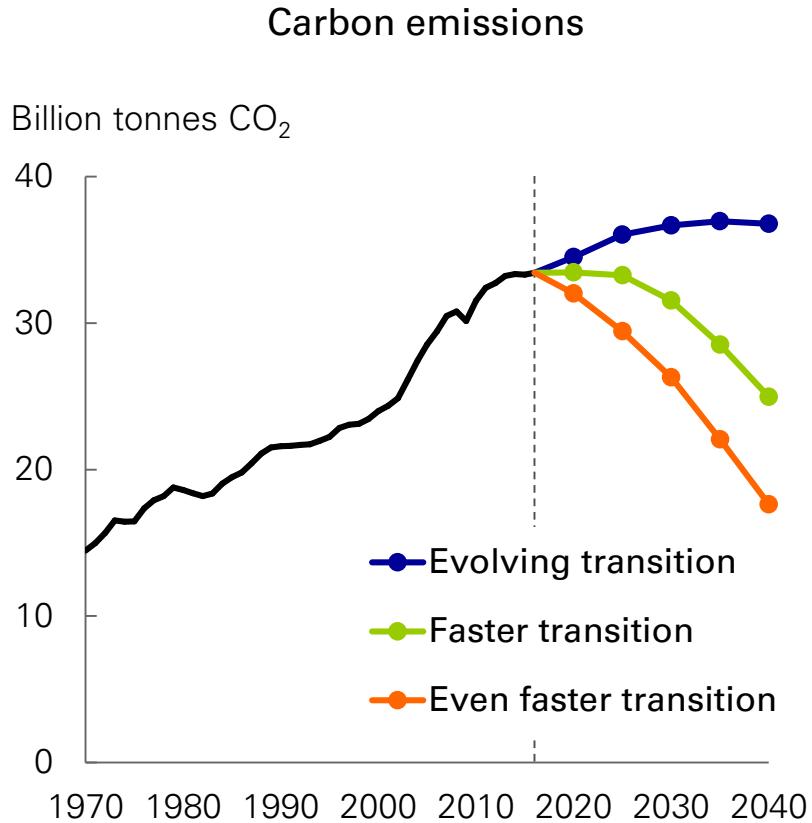
LNG imports



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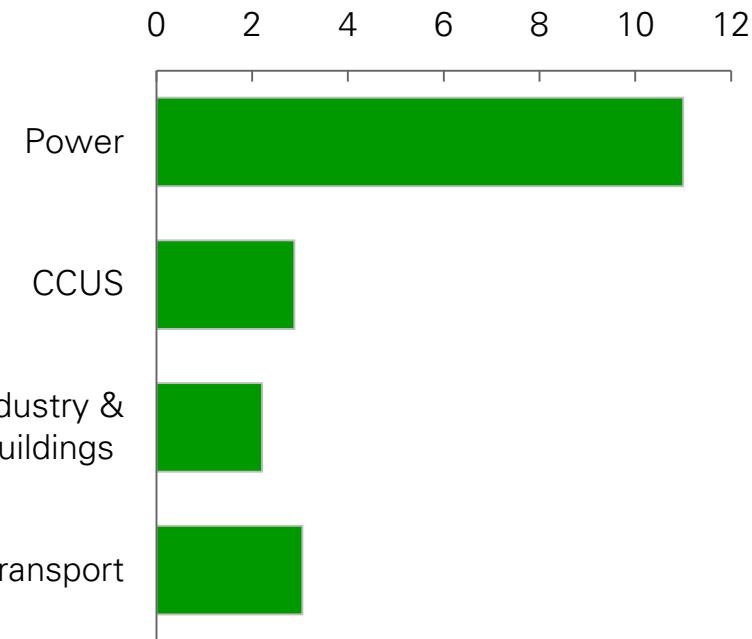
Carbon emissions continue to rise in the ET scenario



Impact of faster transition on global energy system

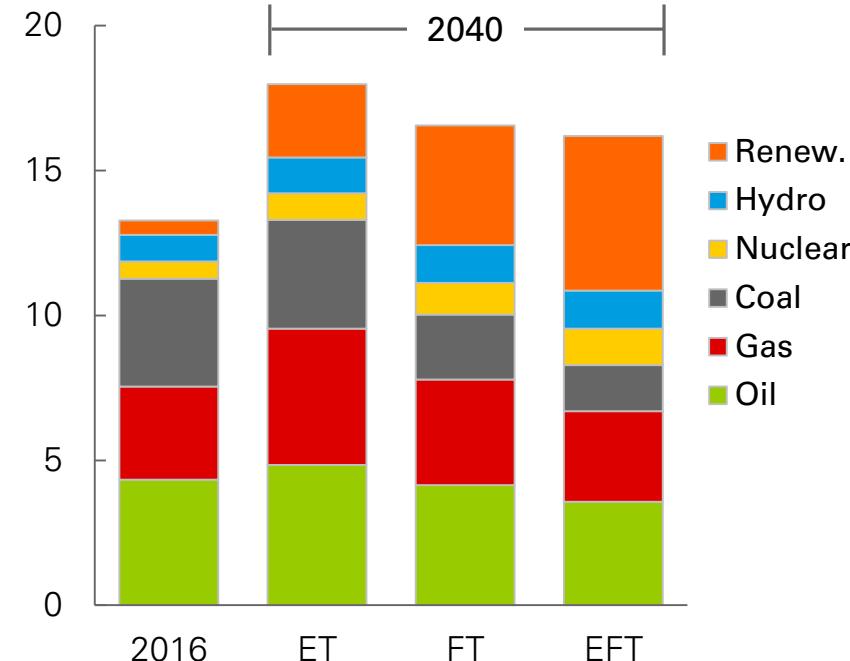
Reductions in carbon emissions:
EFT versus ET scenario

Billion tonnes CO₂ in 2040



Primary energy consumption under different scenarios

Billion toe



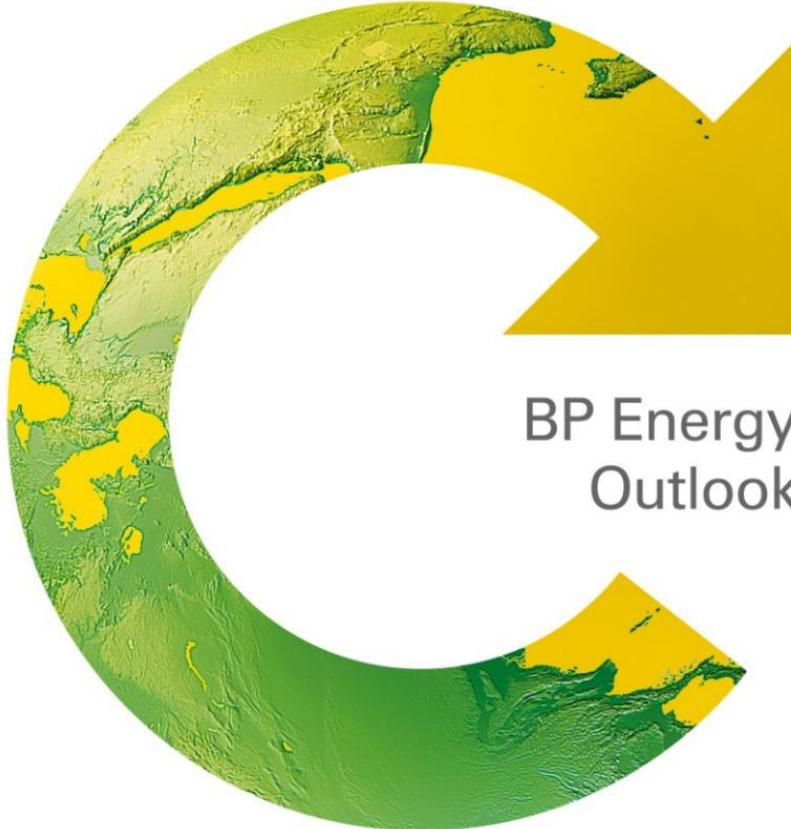
Conclusion

- Some aspects of energy transition seem relatively likely:
 - global energy demand continues to grow – driven by increasing prosperity
 - slower growth as we learn to do more with less
 - increasing abundance and diversification of energy supplies
 - renewable energy growing in importance
 - oil and gas continue to play a central role in the global energy system
- Other aspects remain far more uncertain:
 - impact of EVs and autonomy in reshaping transport sector
 - role of natural gas and renewables in lower carbon transition
 - how will we achieve a more decisive break from past to achieve sharp fall in carbon emissions?



BP Energy Outlook

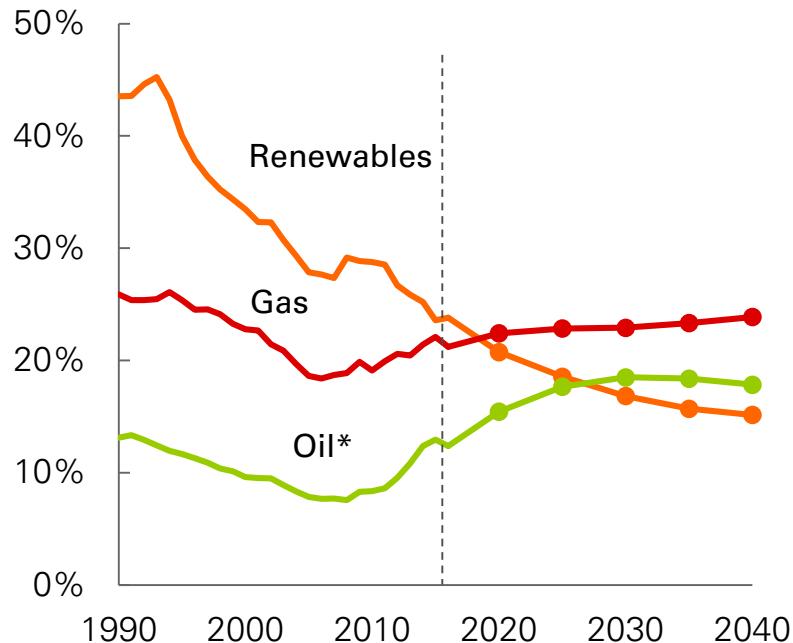
2018 edition



Mark Finley
General manager

The role of US in global energy markets

US shares of global production



* Includes crude and NGLs

Regional oil/gas imbalances

