

# BP Energy Outlook

## 2016 edition



Mark Finley  
14th February 2016

[bp.com/energyoutlook](http://bp.com/energyoutlook)  
#BPstats

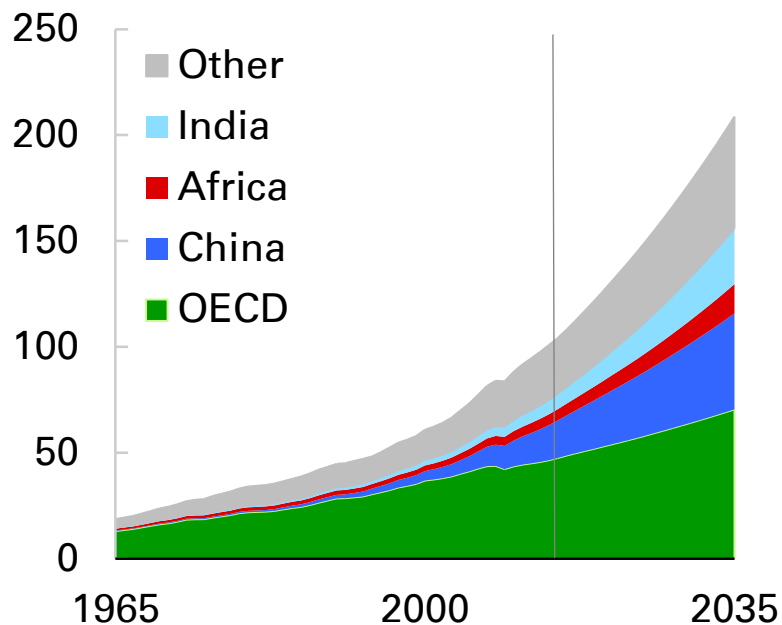


Outlook  
to 2035

# Economic backdrop

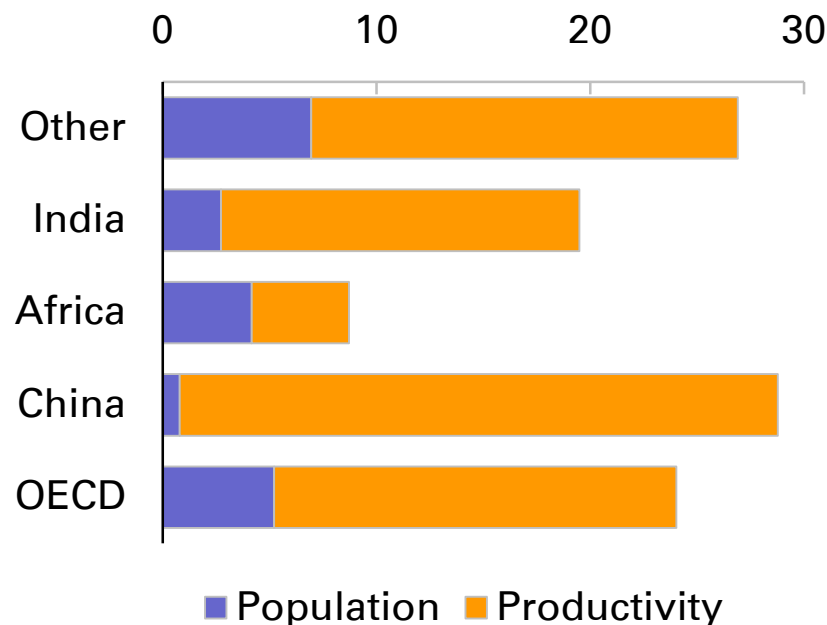
## GDP

Trillion, \$2010



## Contribution to GDP growth 2014-35

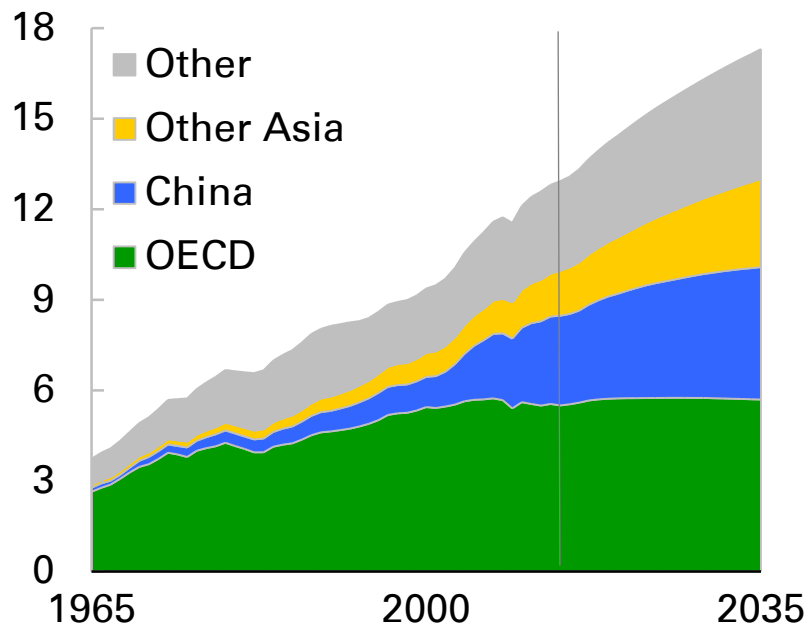
Trillion, \$2010



# Global energy demand

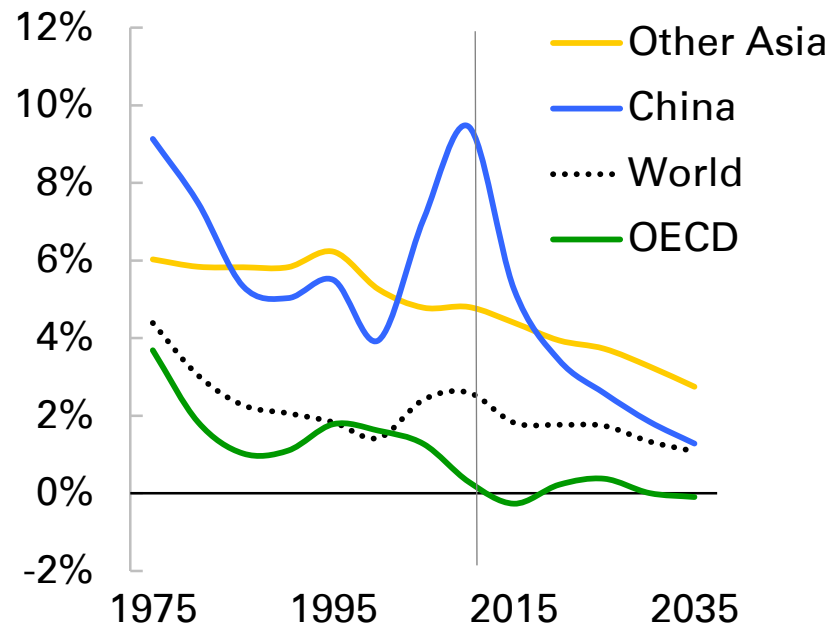
## Consumption by region

Billion toe



## Consumption growth by region

10 year average, % per annum

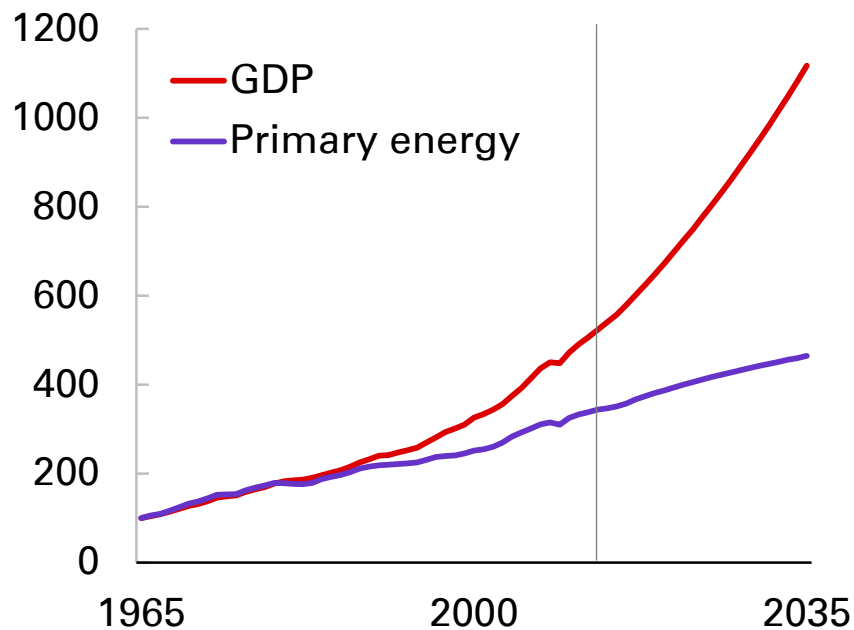


# What drives energy demand?

# Global GDP and energy

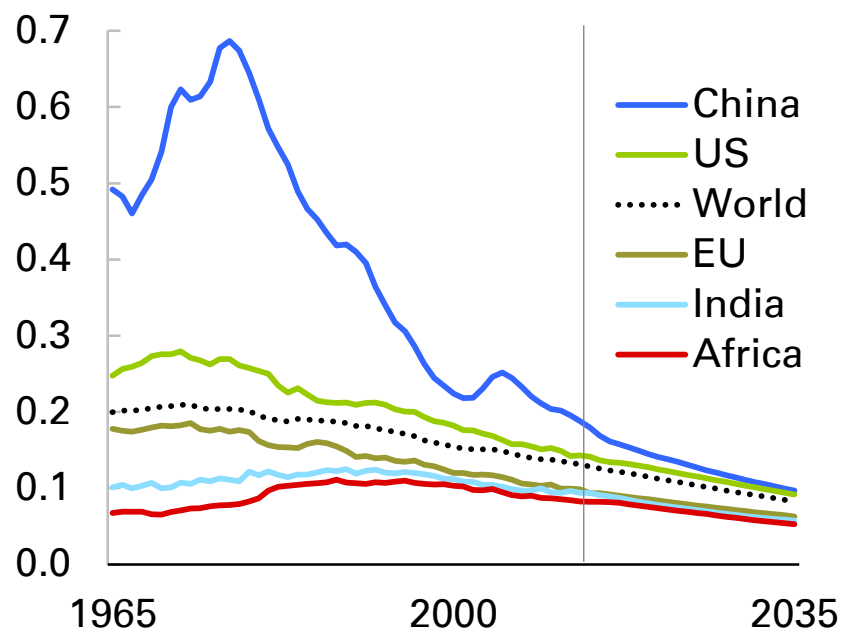
## World GDP and energy demand

Index (1965=100)



## Energy intensity by region

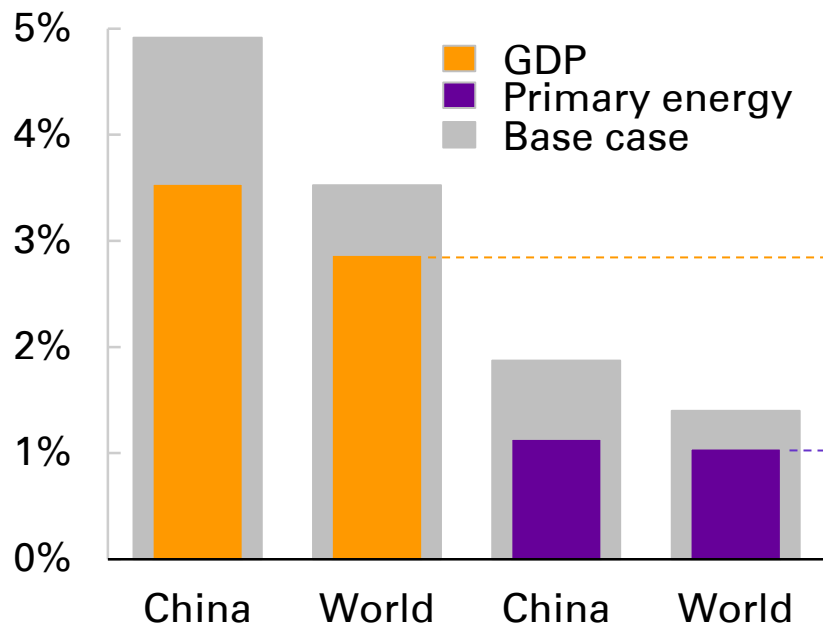
Toe per thousand \$2010 GDP



# Slower global GDP growth

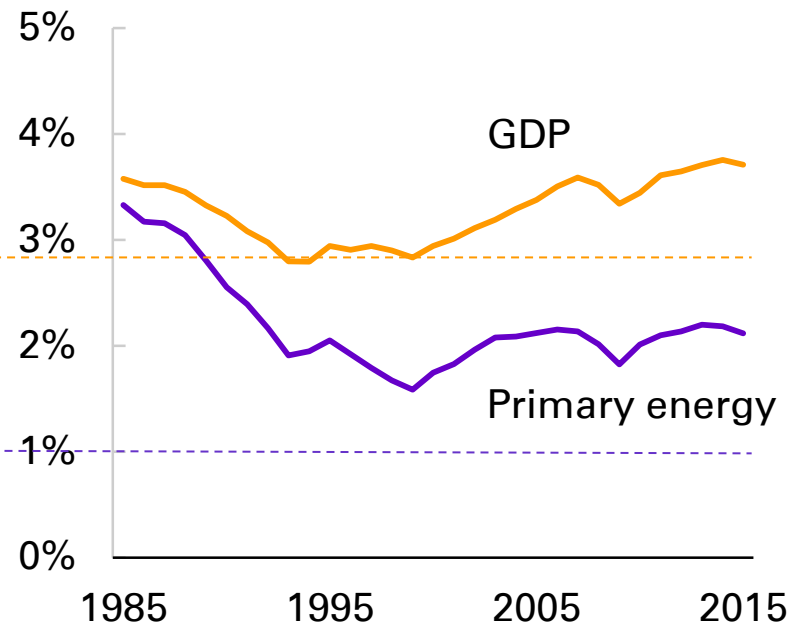
## Annual growth rates 2014-35

% per annum



## Historical growth rates

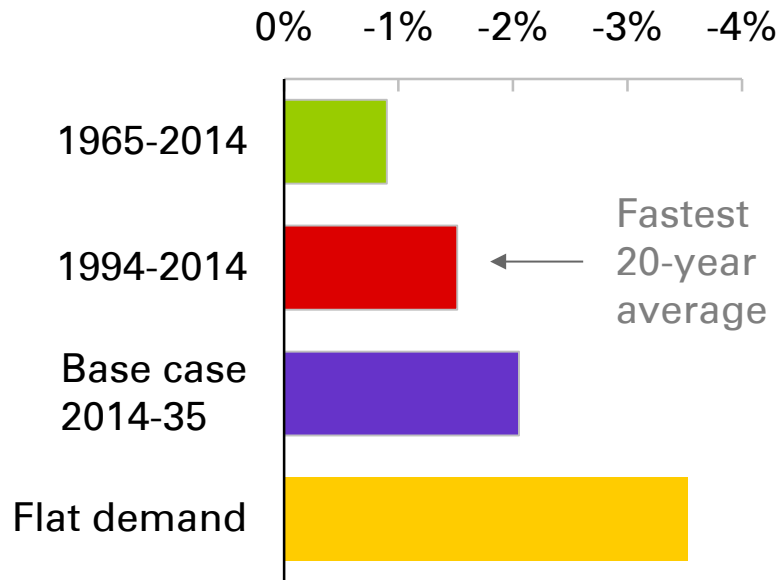
% per annum, 20-year moving average



# Energy intensity and energy demand

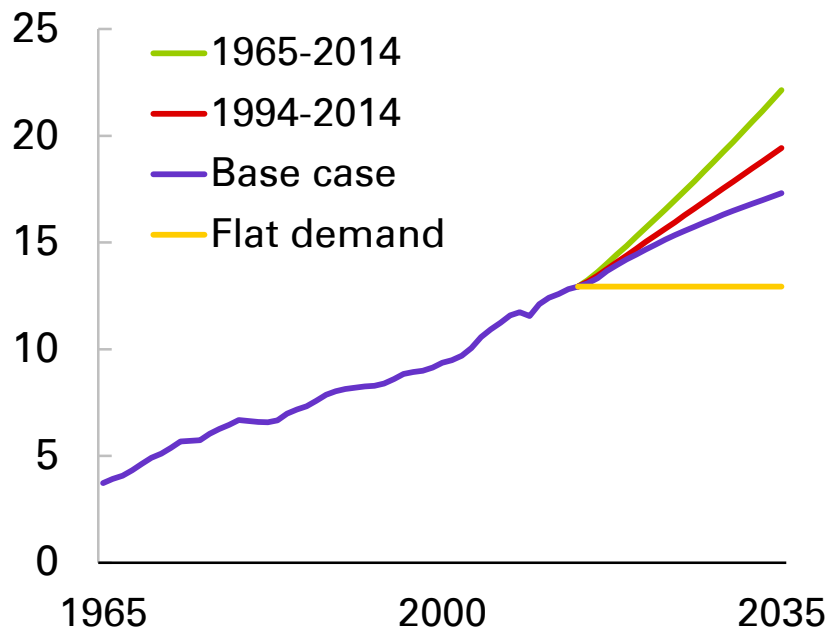
## Decline in world energy intensity

% per annum



## World energy demand

Billion toe



Q: What drives energy demand?

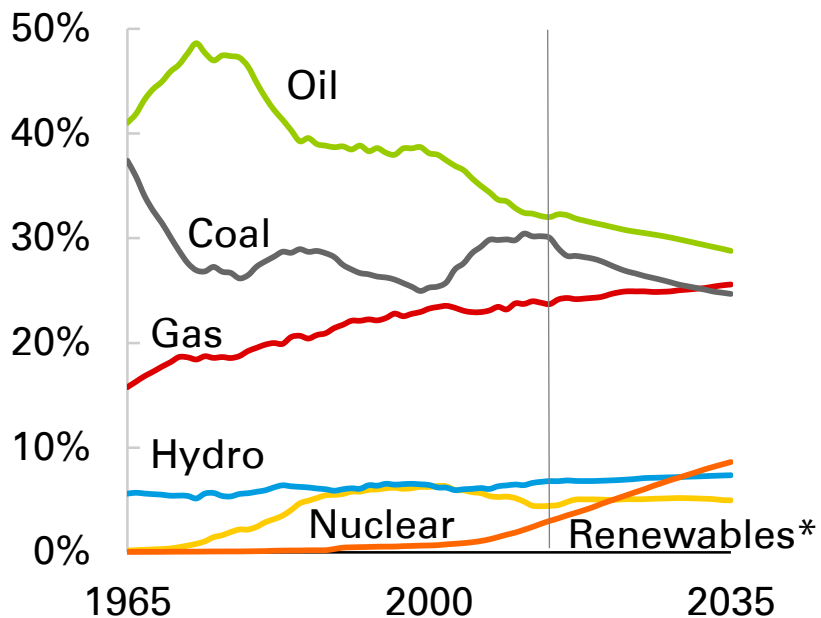
A: Global economic growth



# Fuel mix



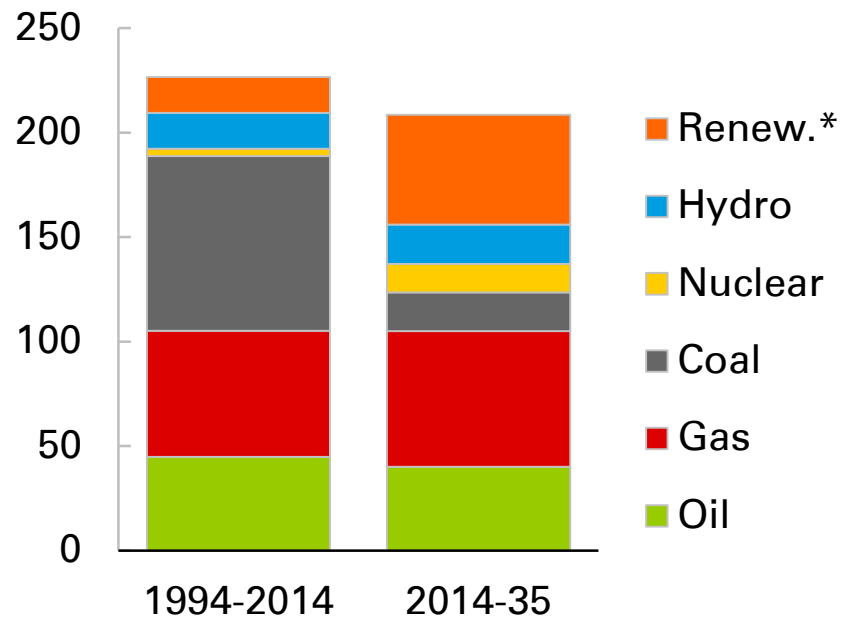
## Shares of primary energy



\*Includes biofuels

## Annual demand growth by fuel

Mtoe per annum



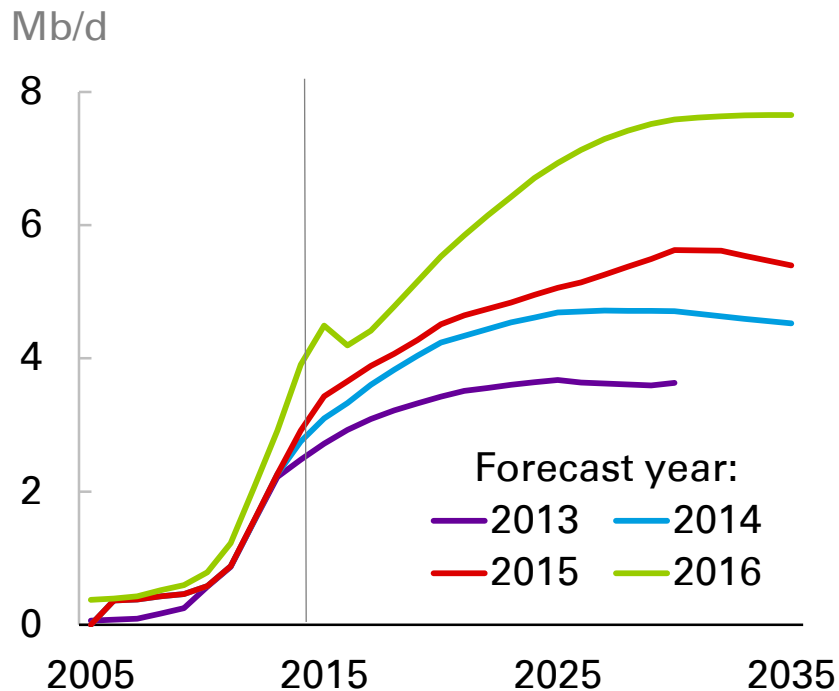
# Key factors shaping the fuel mix

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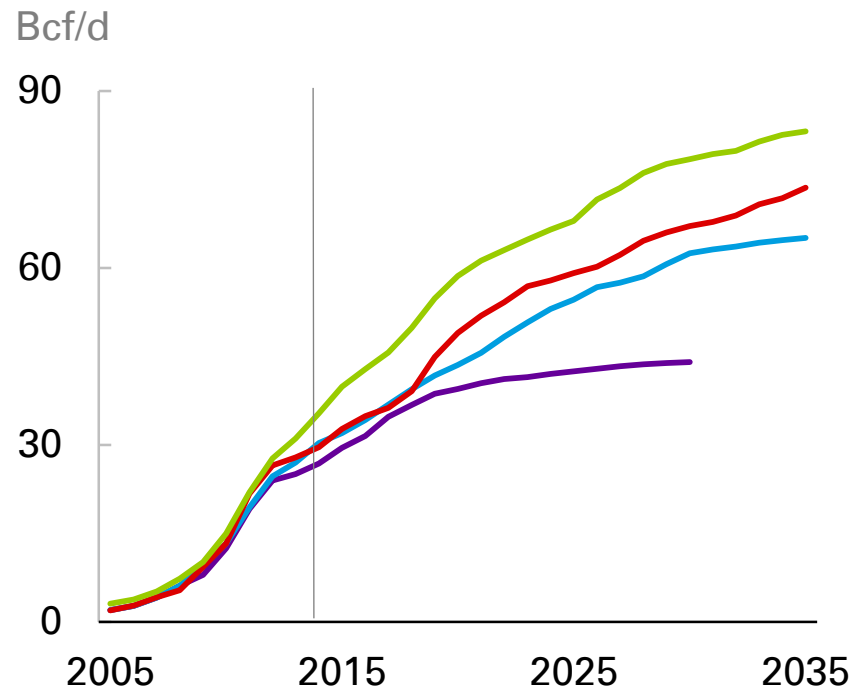
- What have we learned about US shale?
- China's changing energy needs
- Prospects for renewables and other non-fossil fuels

# US tight oil and shale gas

## US tight oil forecasts

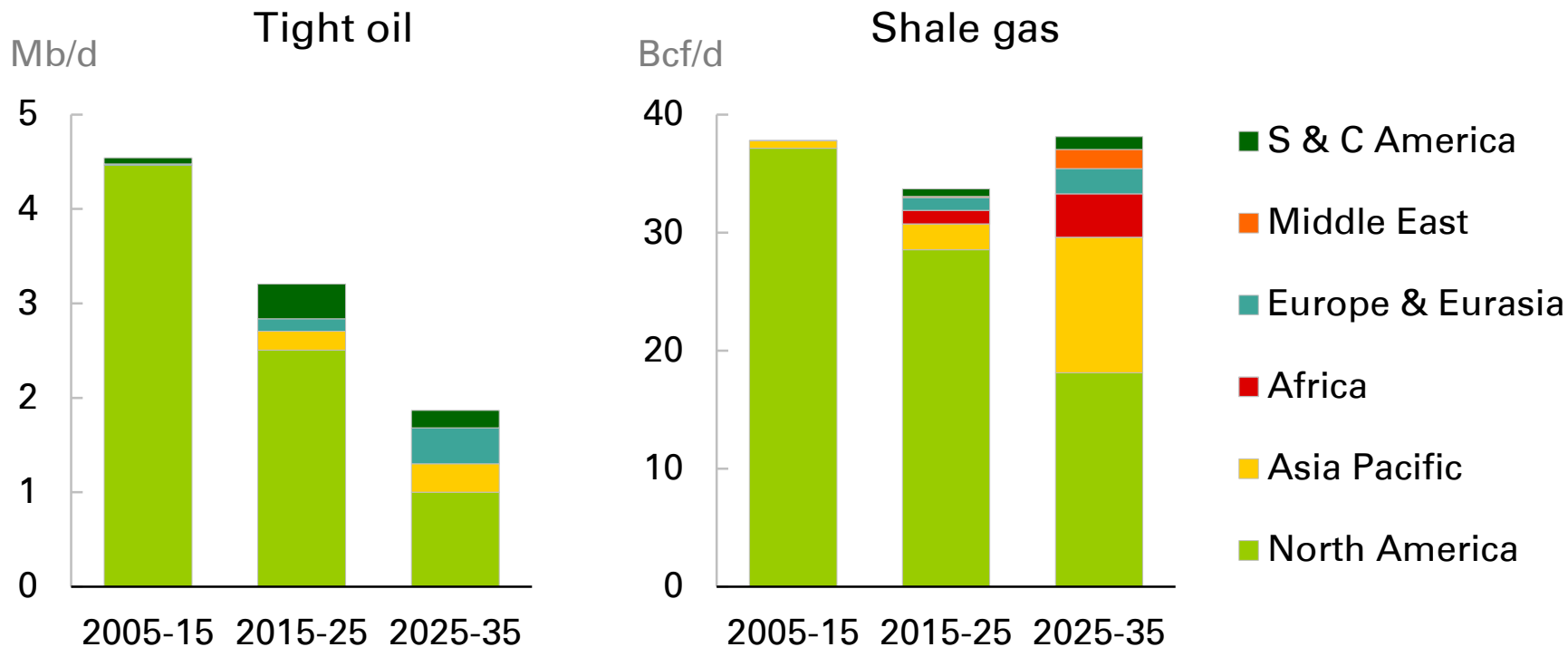


## US shale gas forecasts



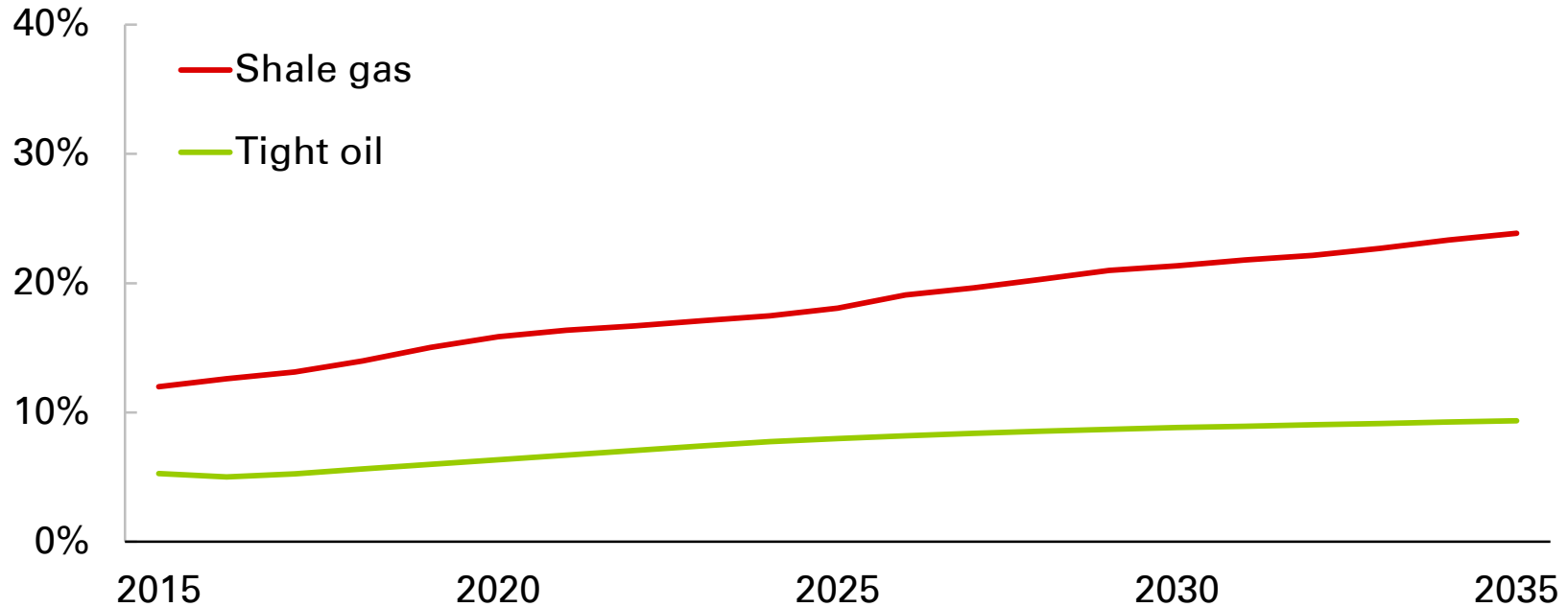
# Global tight oil and shale gas

Ten year supply increments:



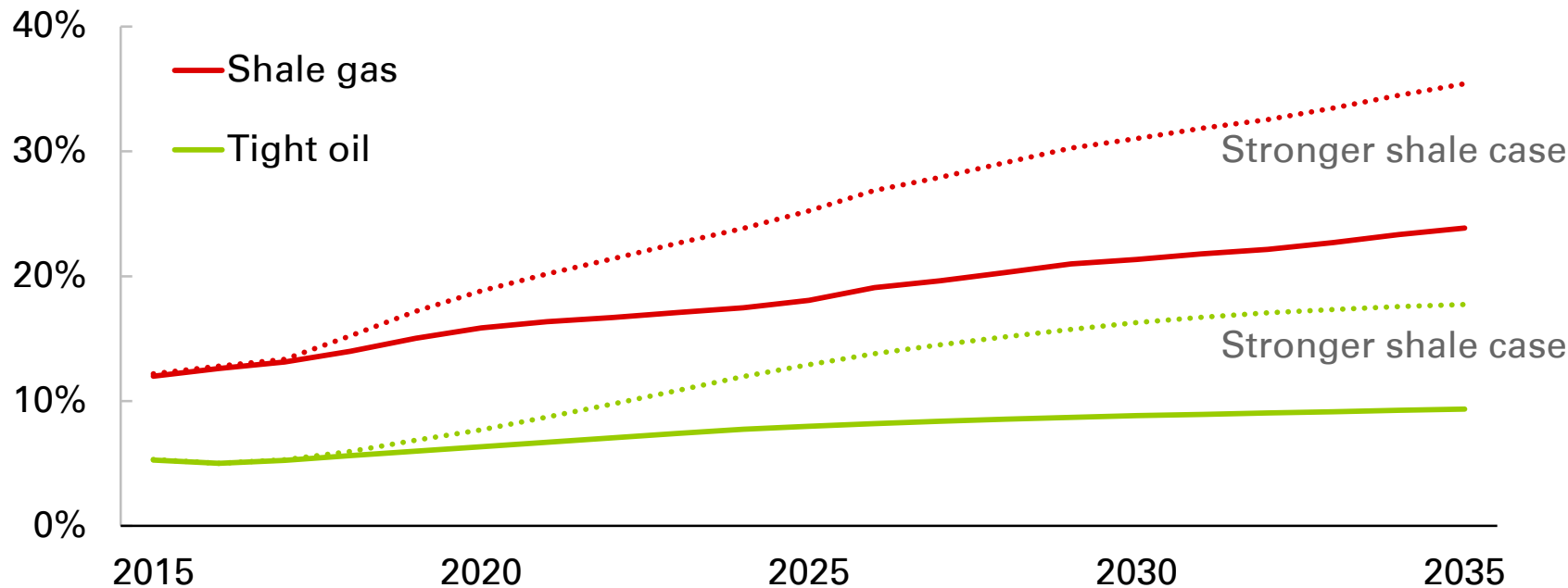
# Market shares of tight oil and shale gas

Shares of total oil/gas production



# Market shares of tight oil and shale gas

Shares of total oil/gas production



# Key factors shaping the fuel mix

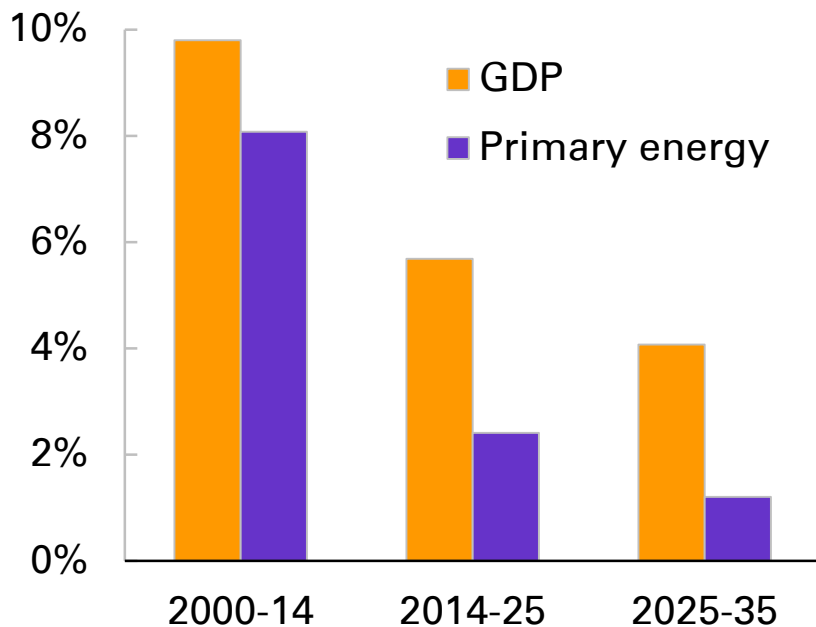
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- What have we learned about US shale?
- China's changing energy needs
- Prospects for renewables and other non-fossil fuels

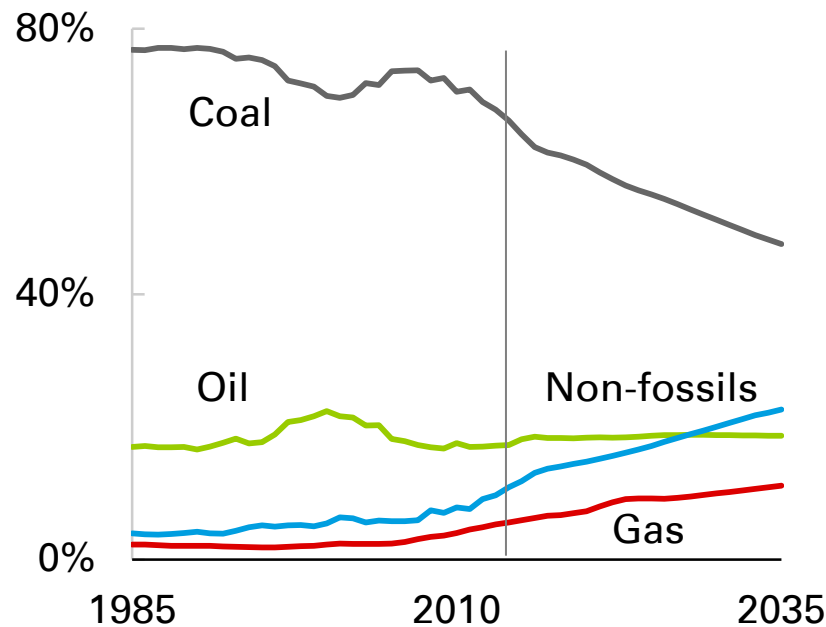
# China's changing energy needs

## GDP and primary energy growth

% per annum



## Shares of primary energy





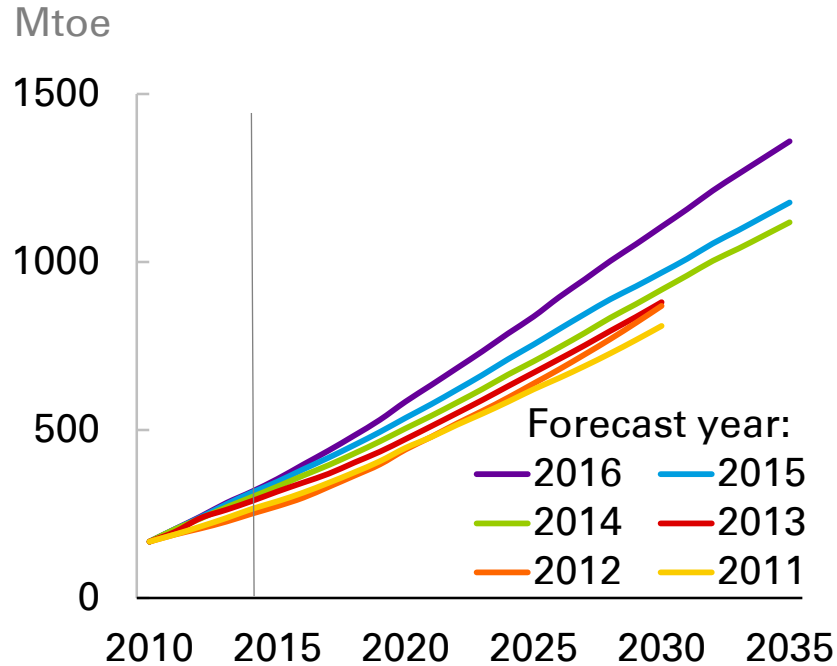
# Key factors shaping the fuel mix

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- What have we learned about US shale?
- China's changing energy needs
- Prospects for renewables and other non-fossil fuels

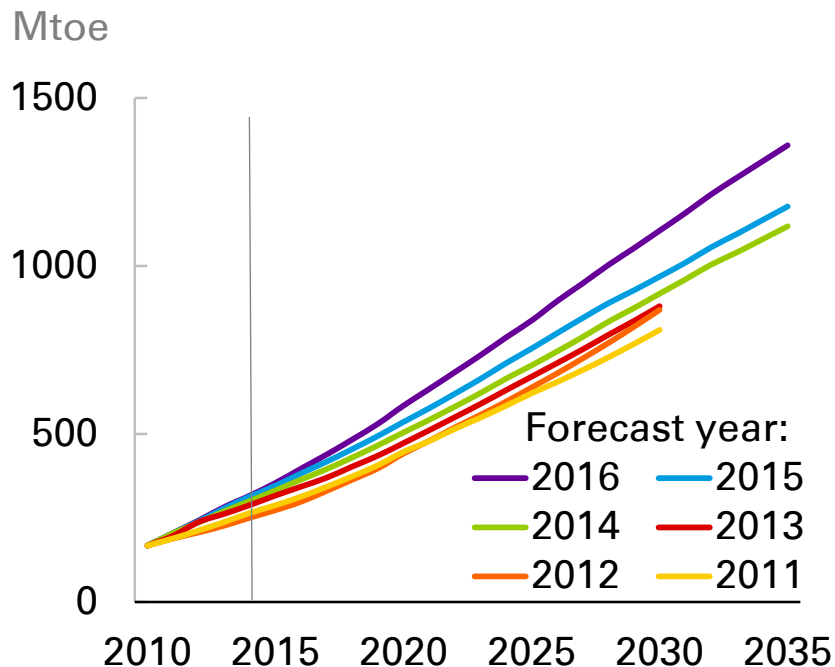
# Renewables and other non-fossil fuels

## Renewables in power forecasts

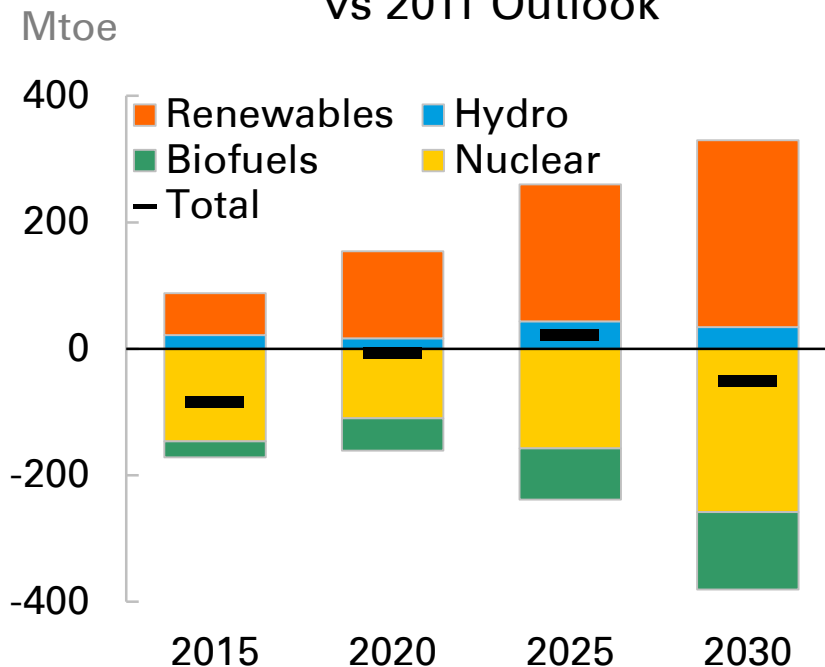


# Renewables and other non-fossil fuels

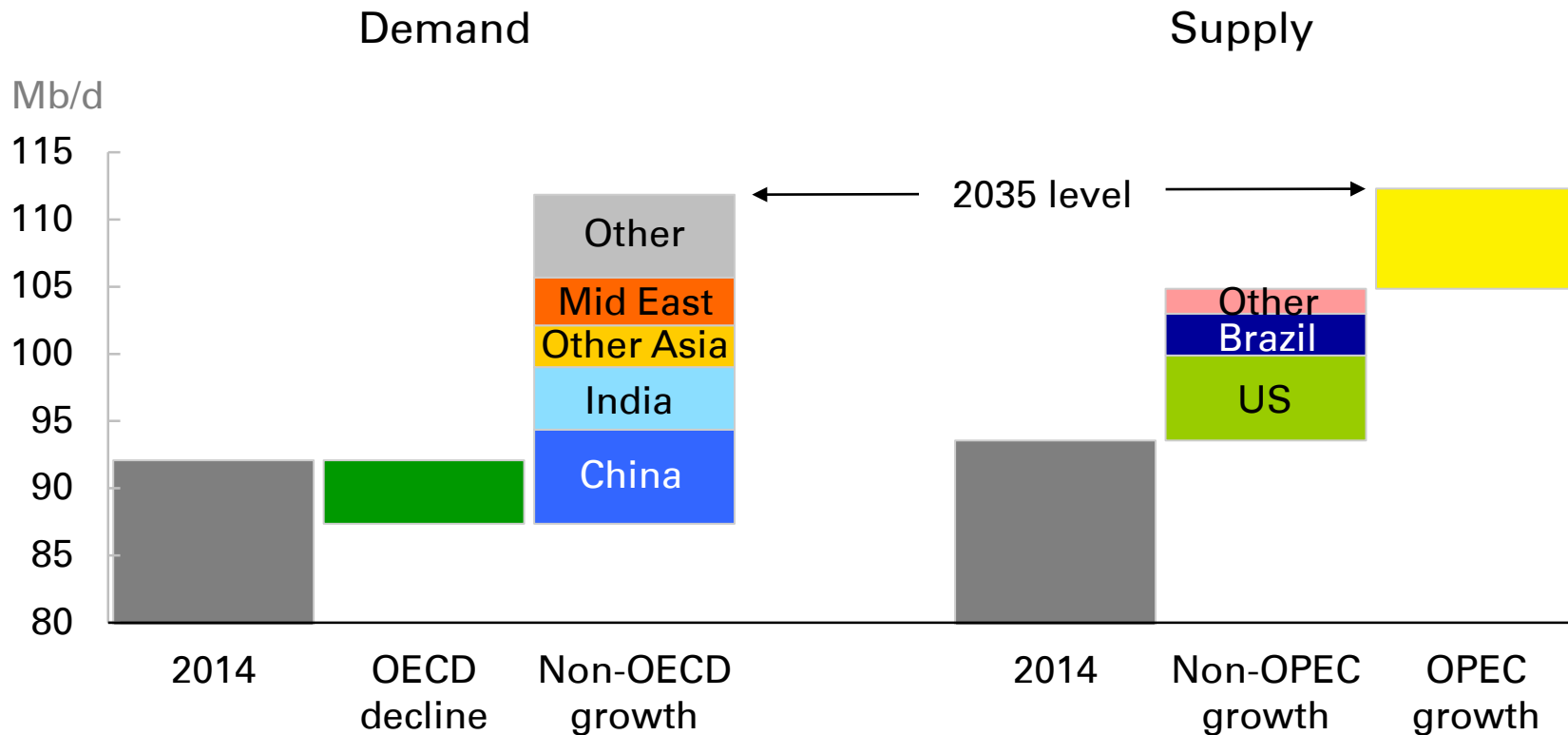
## Renewables in power forecasts



## Revisions to non-fossil fuels vs 2011 Outlook

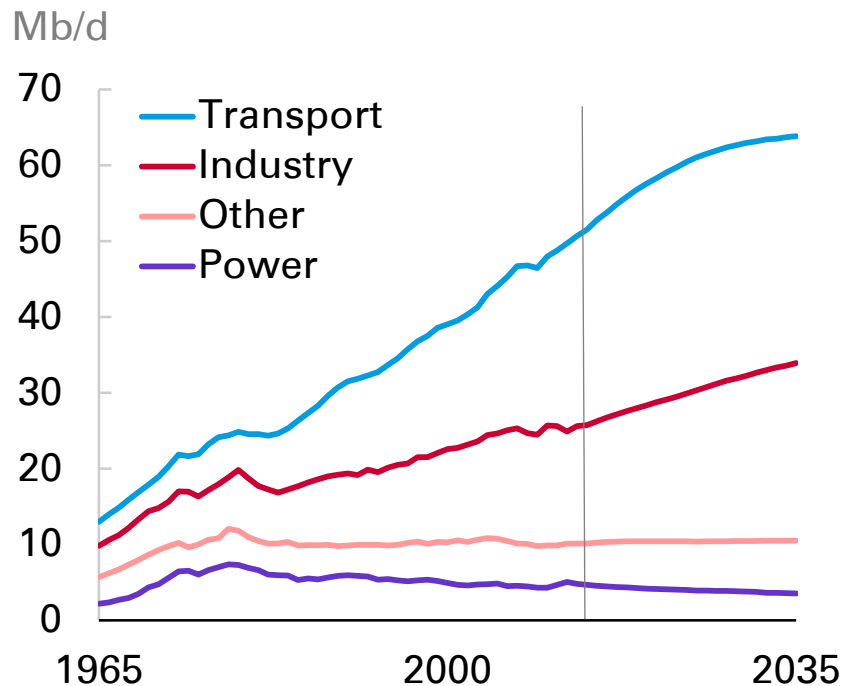


# Oil demand and supply

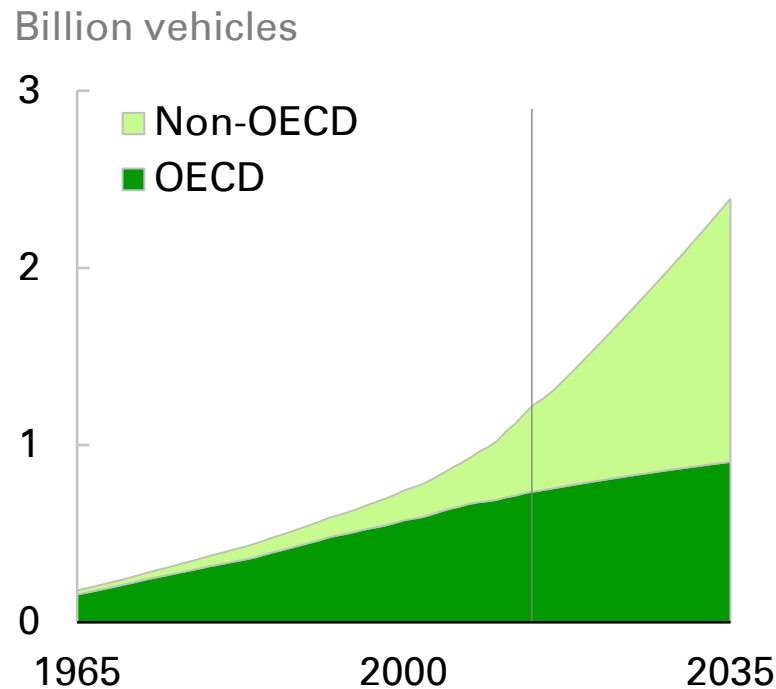


# Oil demand

## Liquids fuel demand by sector



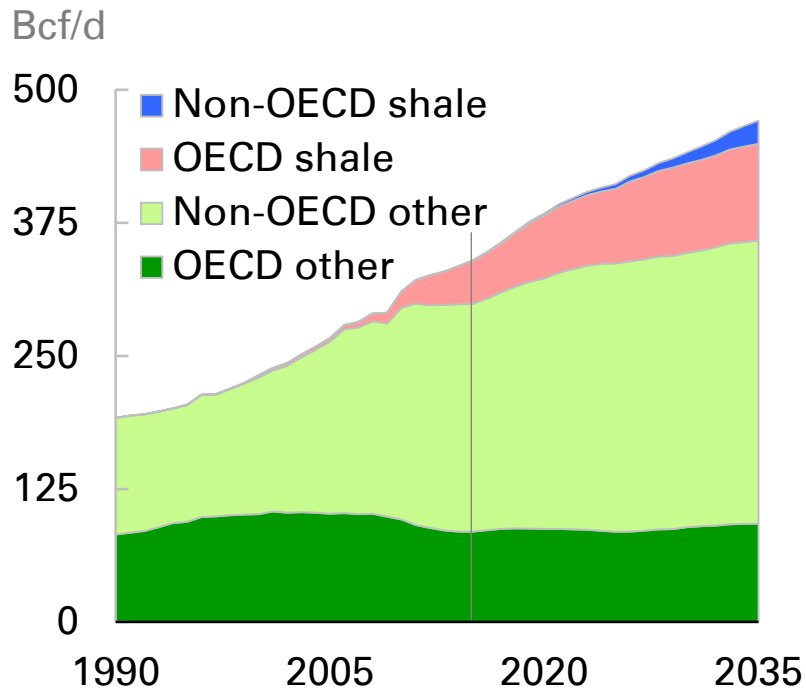
## Vehicle fleet



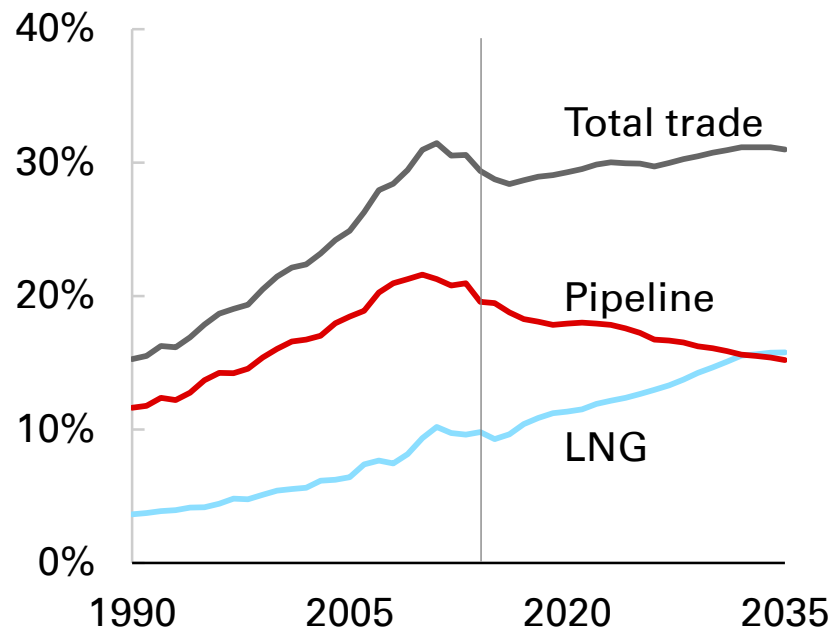
# Natural gas



## Gas production by type and region

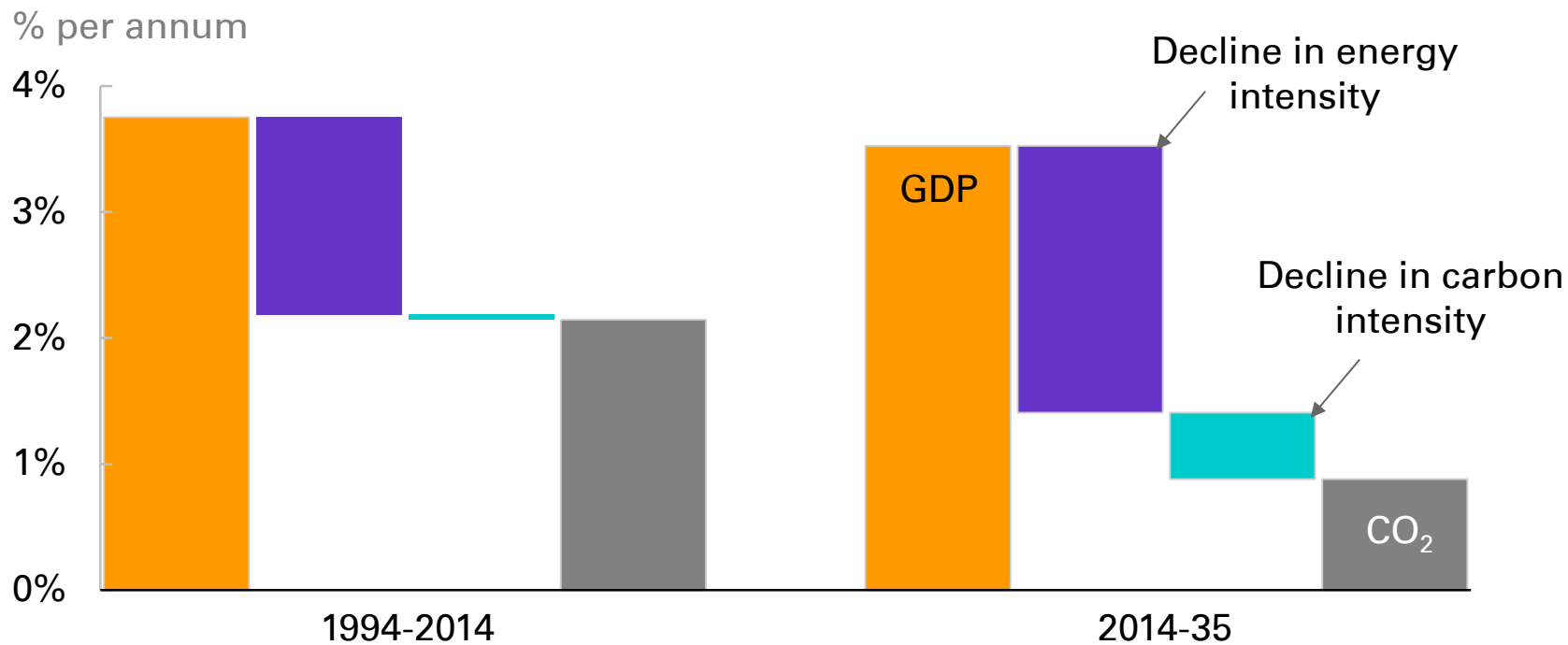


## Shares of global gas consumption



# Changing outlook for carbon emissions

# Carbon emissions

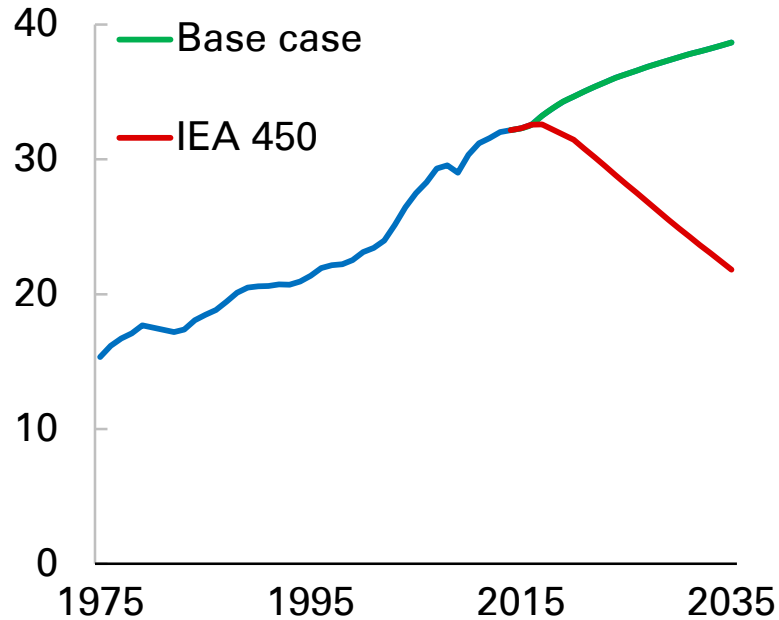




# Outlook for carbon emissions

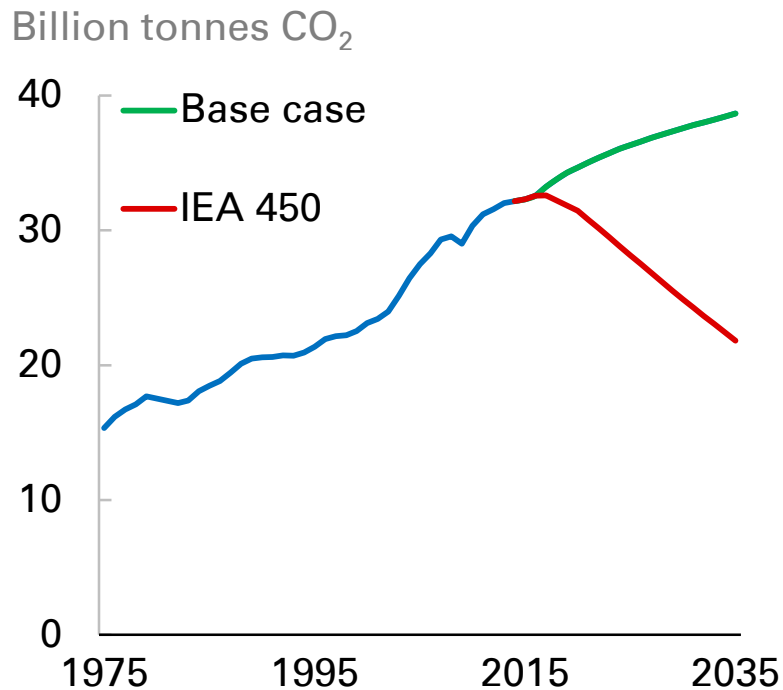
## Carbon emissions

Billion tonnes CO<sub>2</sub>

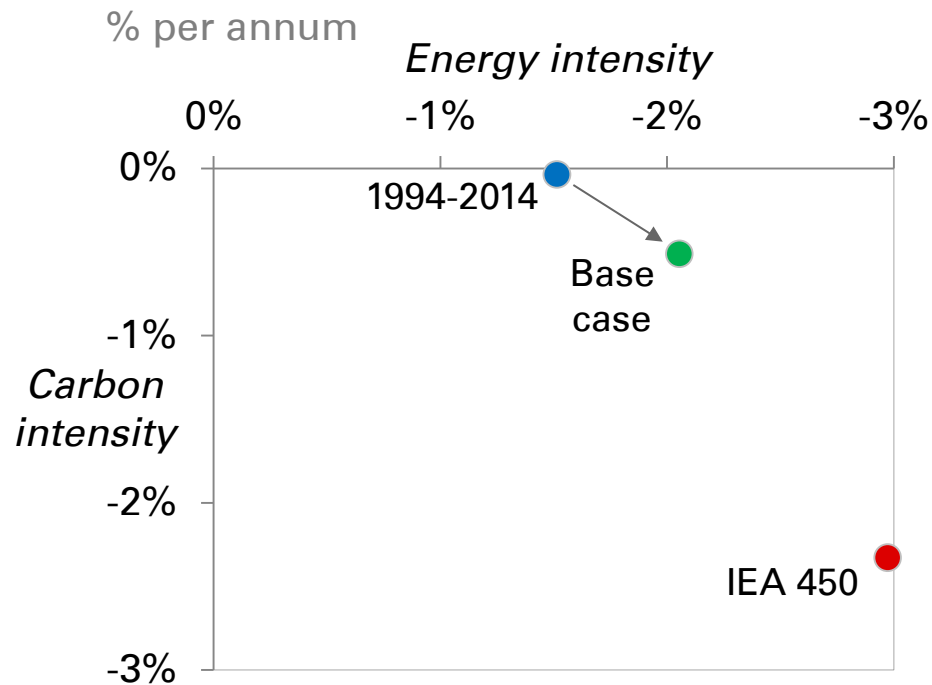


# Outlook for carbon emissions

## Carbon emissions



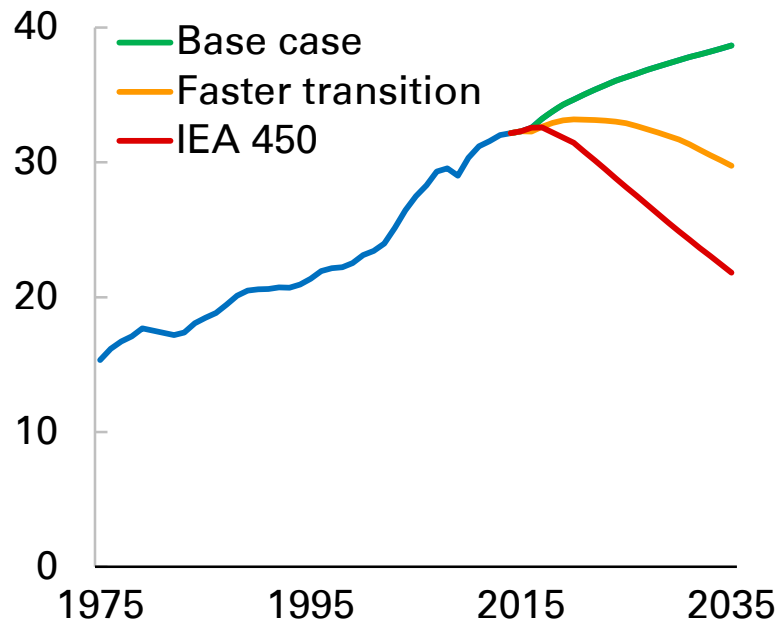
## Changes in intensity



# Outlook for carbon emissions

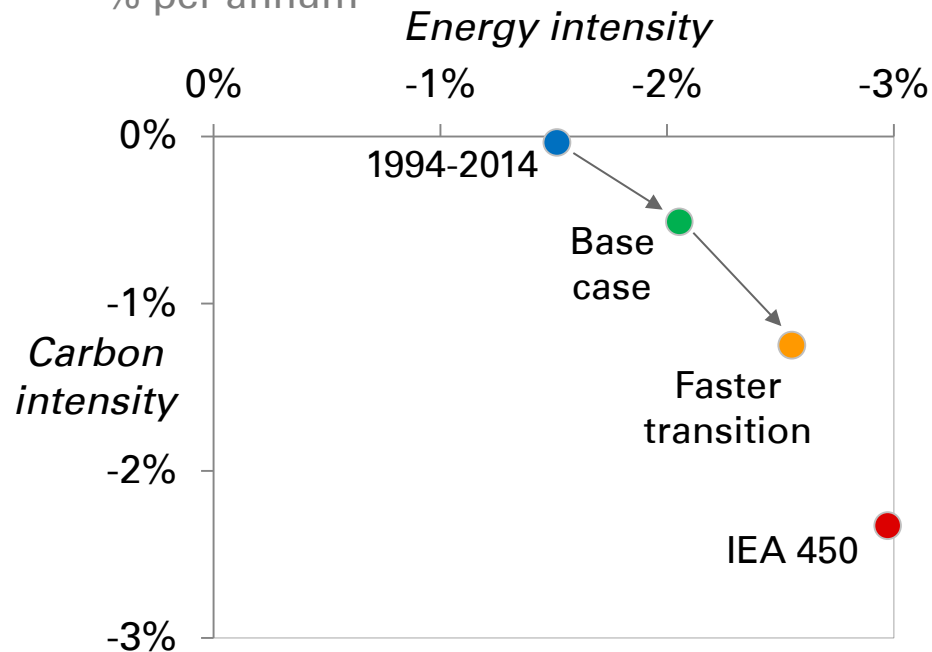
## Carbon emissions

Billion tonnes CO<sub>2</sub>



## Changes in intensity

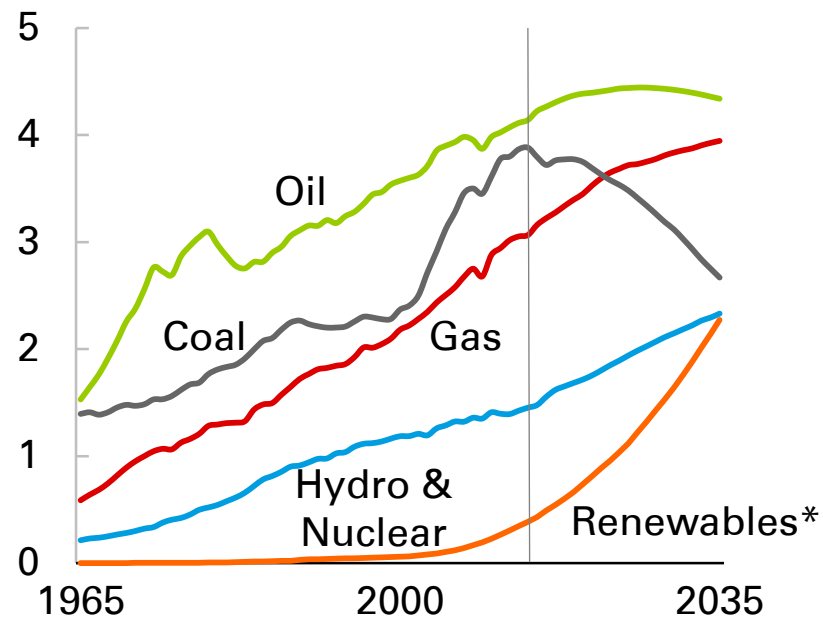
% per annum



# Impact of faster transition case

## Consumption by fuel

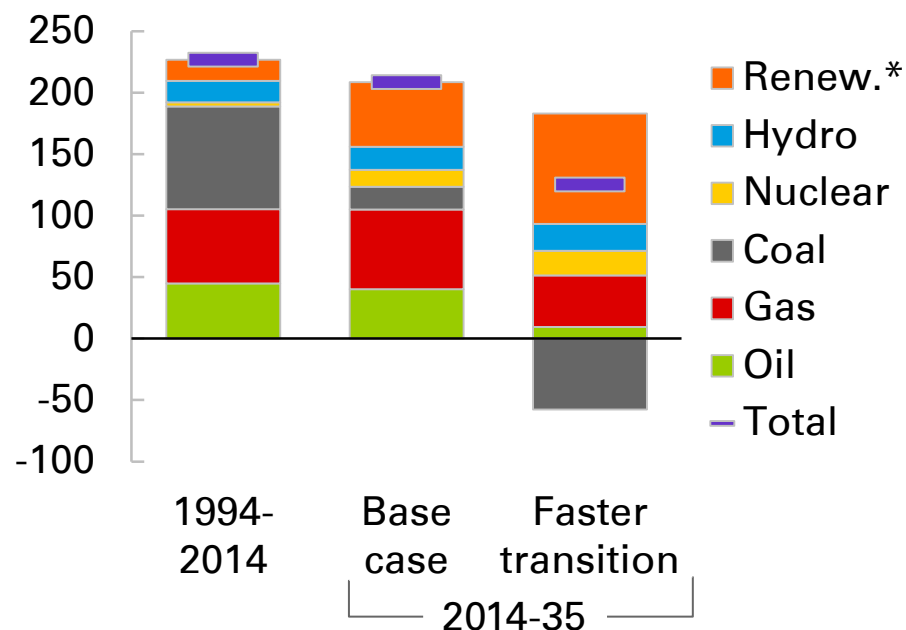
Billion toe



\*Includes biofuels

## Annual demand growth by fuel

Mtoe per annum



# Conclusions

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- Global demand for energy continues to rise
  - to power increased levels of activity as the world economy continues to grow
- Fuel mix changes significantly
  - coal losing, renewables gaining, and oil and gas combined holding steady
- Growth rate of carbon emissions slows sharply
  - but further policy changes are needed



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to 2035