

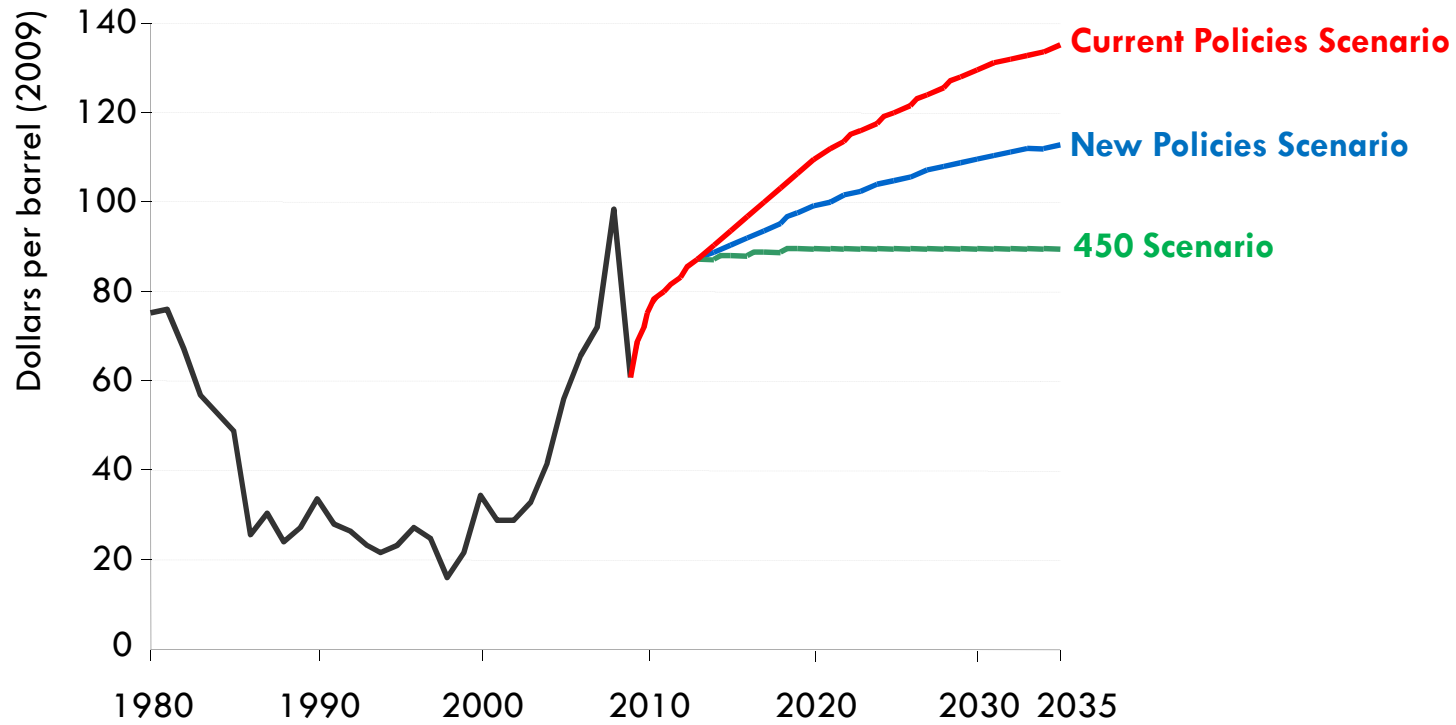
# *World Energy Outlook 2010*

**Presentation to the press  
London, 9 November 2010**

# The context: *A time of unprecedented uncertainty*

- The worst of the global economic crisis appears to be over – *but is the recovery sustainable?*
- Oil demand & supply are becoming less sensitive to price – *what does this mean for future price movements?*
- Natural gas markets are in the midst of a revolution – *will it herald a golden era for gas?*
- Copenhagen Accord & G-20 subsidy reforms are key advances – *but do they go far enough & will they be fully implemented?*
- China & other emerging economies will shape the global energy future – *where will their policy decisions lead us?*

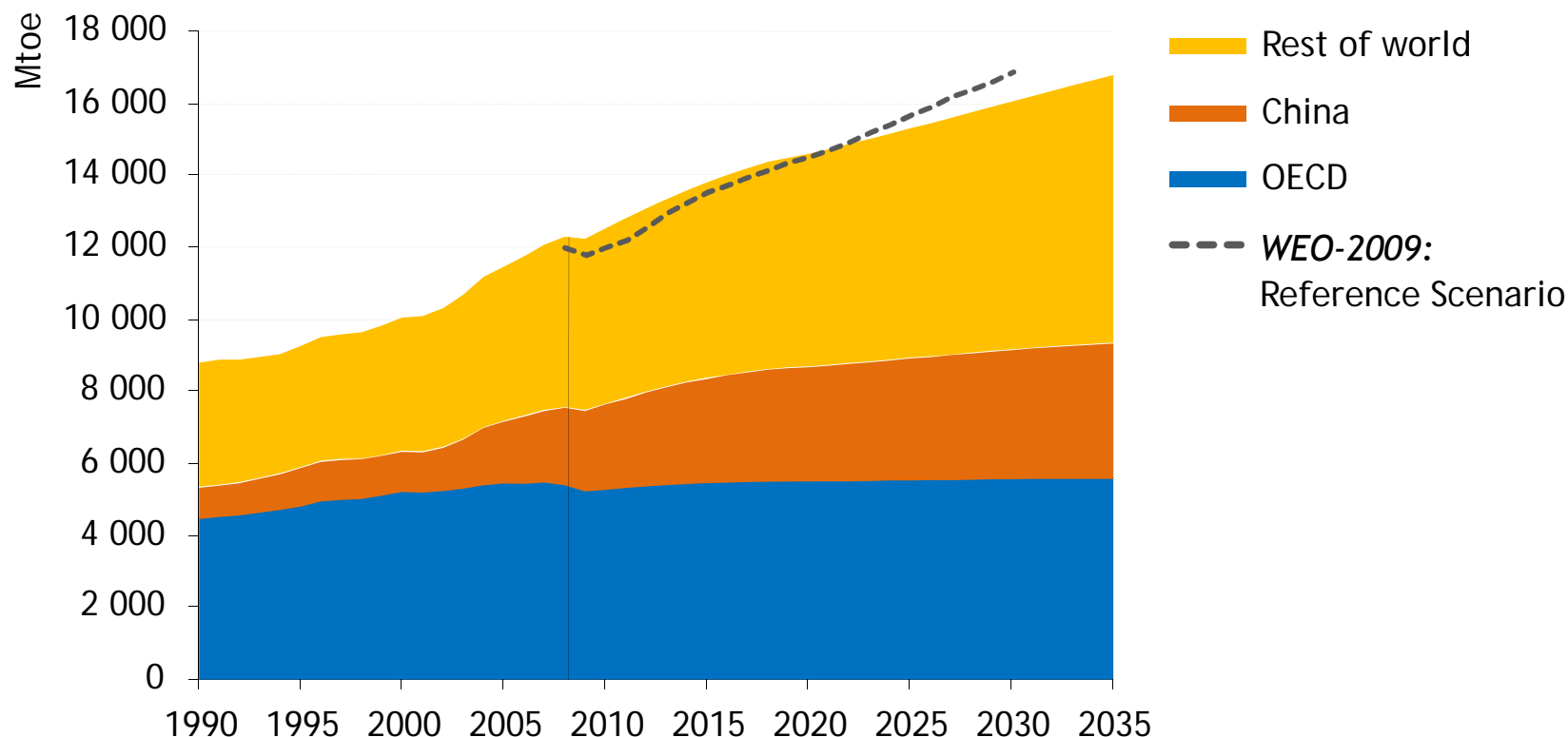
# International oil price assumptions



*The age of cheap oil is over, though policy action could bring lower international prices than would otherwise be the case*

# Recent policy commitments, if implemented, would make a difference

## World primary energy demand by region in the New Policies Scenario

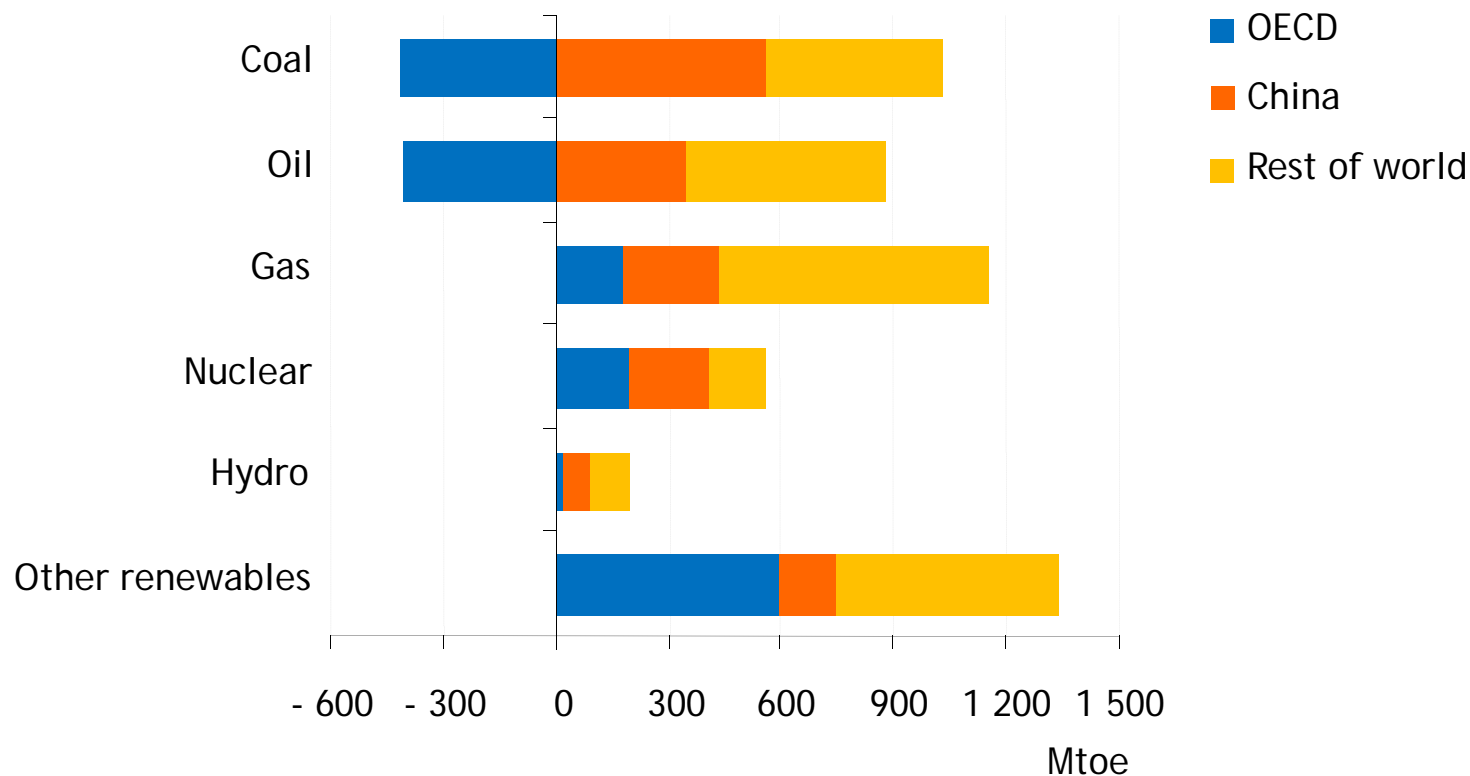


**Global energy use grows by 36%, with non-OECD countries – led by China, where demand surges by 75% – accounting for almost all of the increase**



# Emerging economies dominate the growth in demand for all fuels

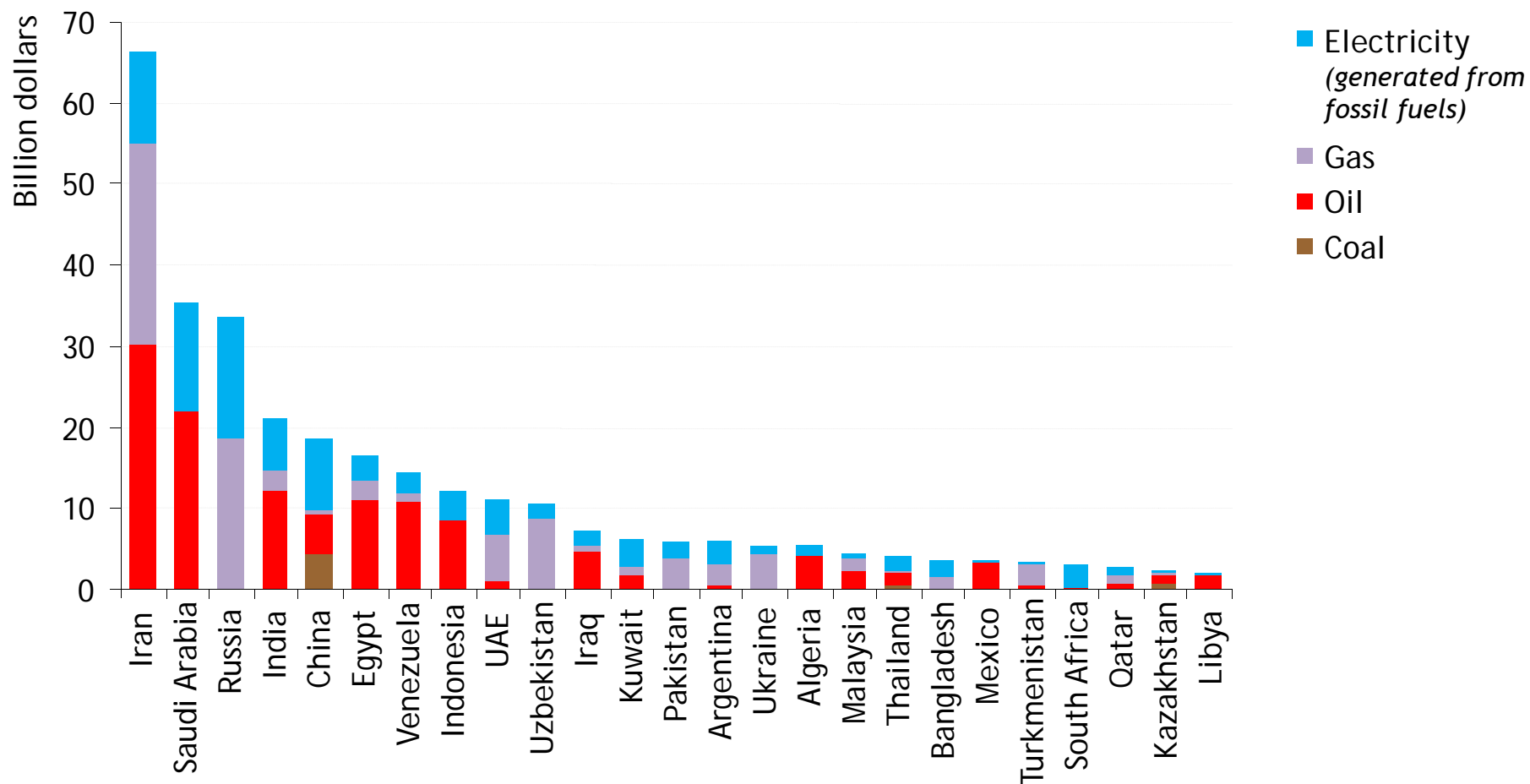
Incremental primary energy demand in the New Policies Scenario, 2008-2035



***Demand for all types of energy increases in non-OECD countries, while demand for coal & oil declines in the OECD***

# Fossil-fuel subsidies are distorting price signals

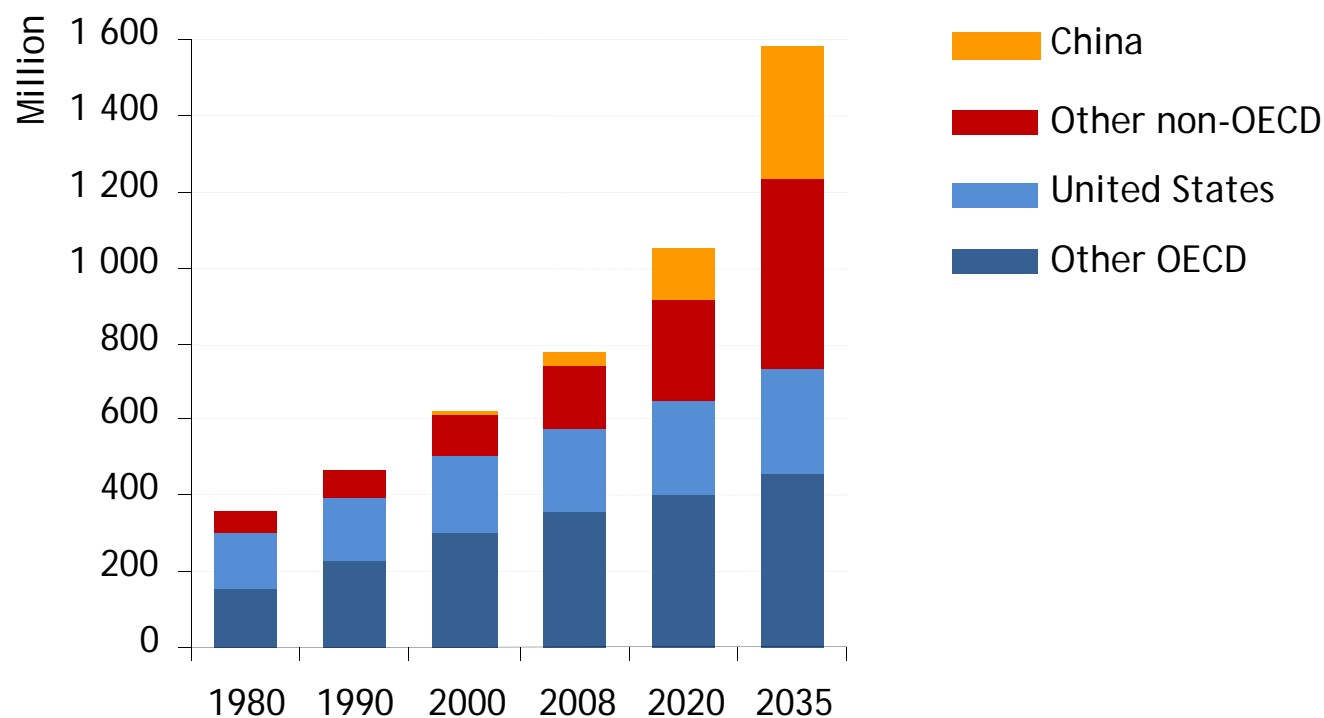
Economic value of fossil-fuel consumption subsidies by country, 2009



**Fossil-fuel consumption subsidies amounted to \$312 billion in 2009, down from \$558 billion in 2008, with the bulk of the fall due to lower international prices**

# Booming demand for mobility in the emerging economies drives up oil use

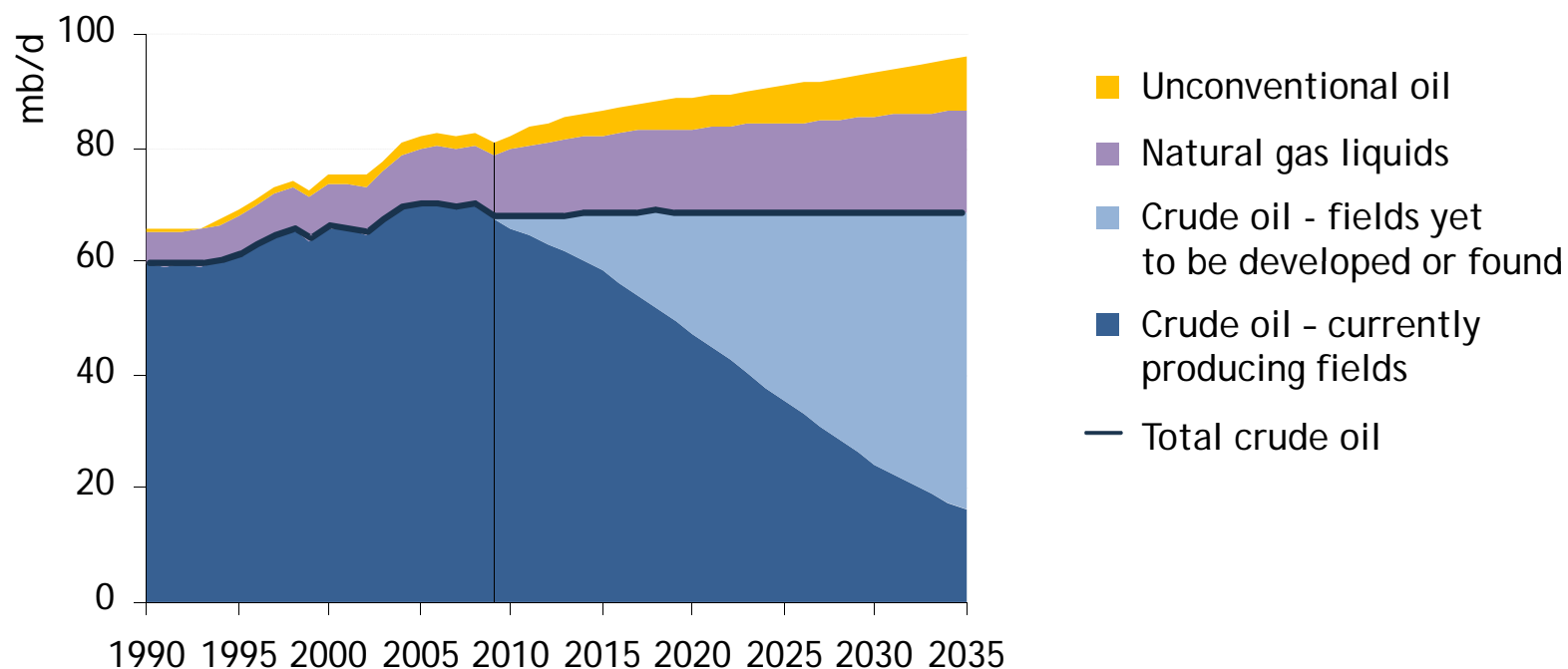
## Passenger vehicles in the New Policies Scenario



***The global car fleet will continue to surge as more & more people in China & other emerging economies buy a car, overshadowing modest growth in the OECD***

# Oil production becomes less crude

## World oil production by type in the New Policies Scenario

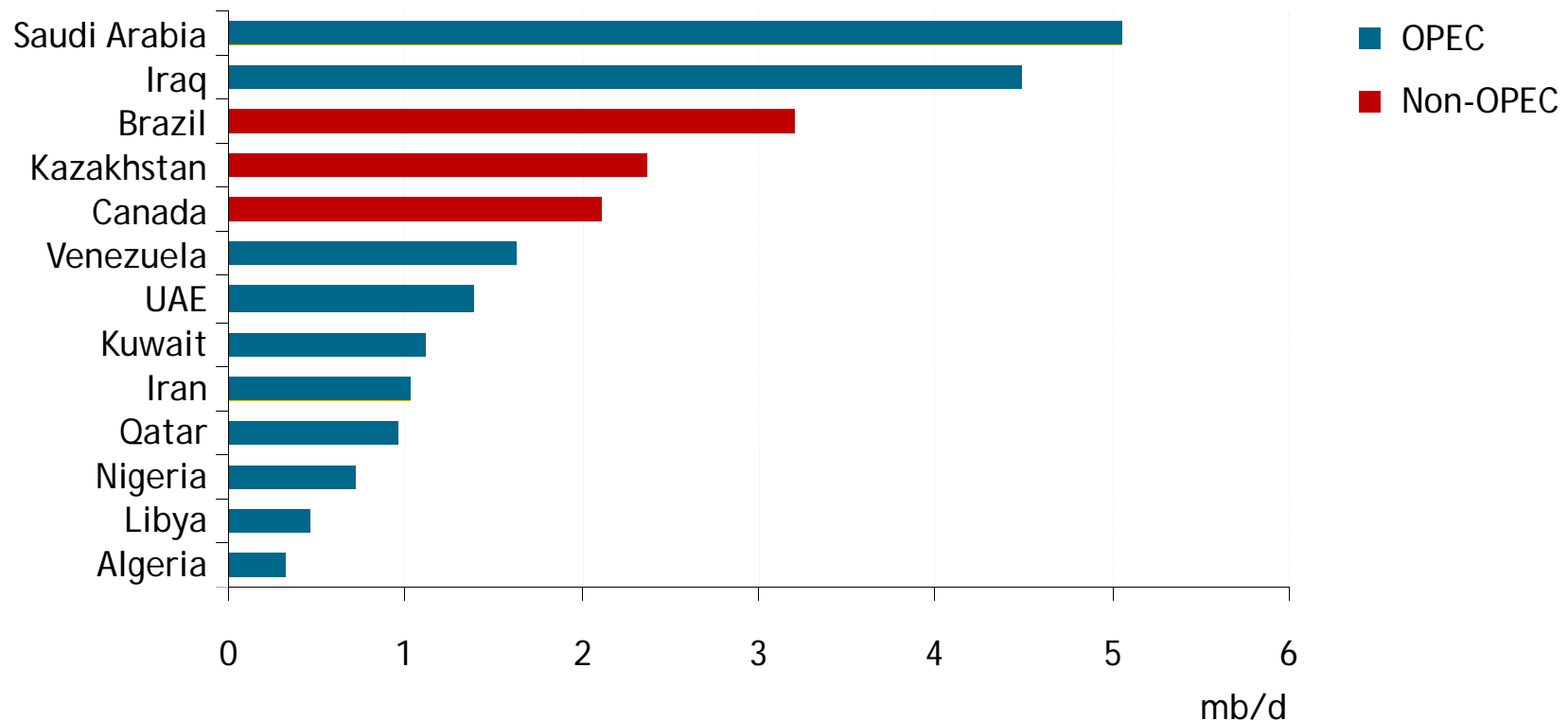


**Global oil production reaches 96 mb/d in 2035 on the back of rising output of natural gas liquids & unconventional oil, as crude oil production plateaus**



# More oil from fewer producers

## Incremental oil production by key country in the New Policies Scenario, 2009-2035



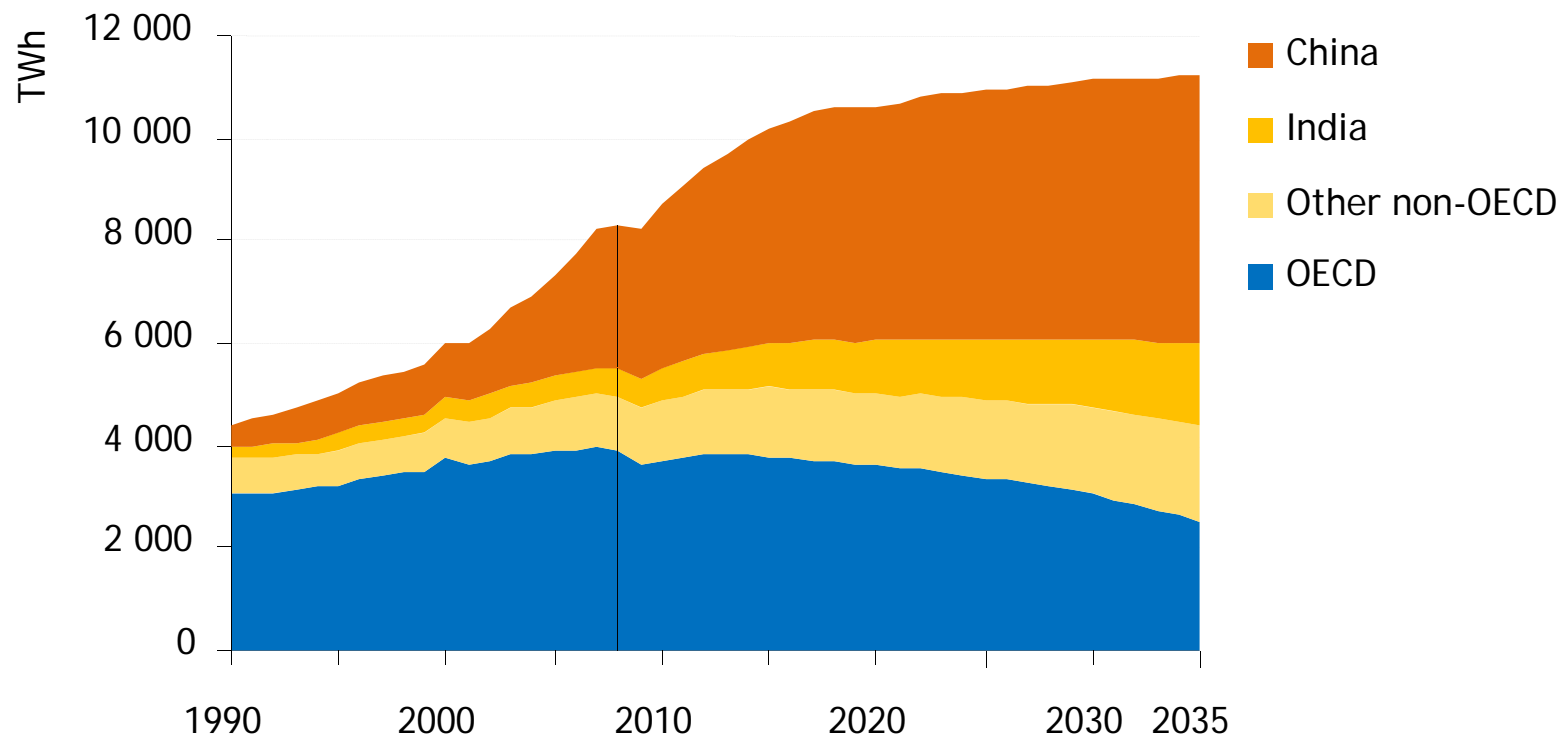
*Production rises most in Saudi Arabia & Iraq, helping to push OPEC's market share from 41% today to 52% by 2035, a level last seen prior to the first oil shock of 1973-1974*

# A golden age for gas?

- Gas is set to play a key role in meeting the world's energy needs
  - > *demand rises by 44%, led by China & Middle East*
- Unconventional gas accounts for 35% of the increase in global supply to 2035, with new non-US producers emerging
- Gas glut will peak soon, but may dissipate only very slowly
- The glut will keep pressure on gas exporters to move away from oil-price indexation, notably in Europe
- Lower prices could lead to stronger demand for gas, backing out renewables & coal in power generation

# Coal remains the backbone of global electricity generation

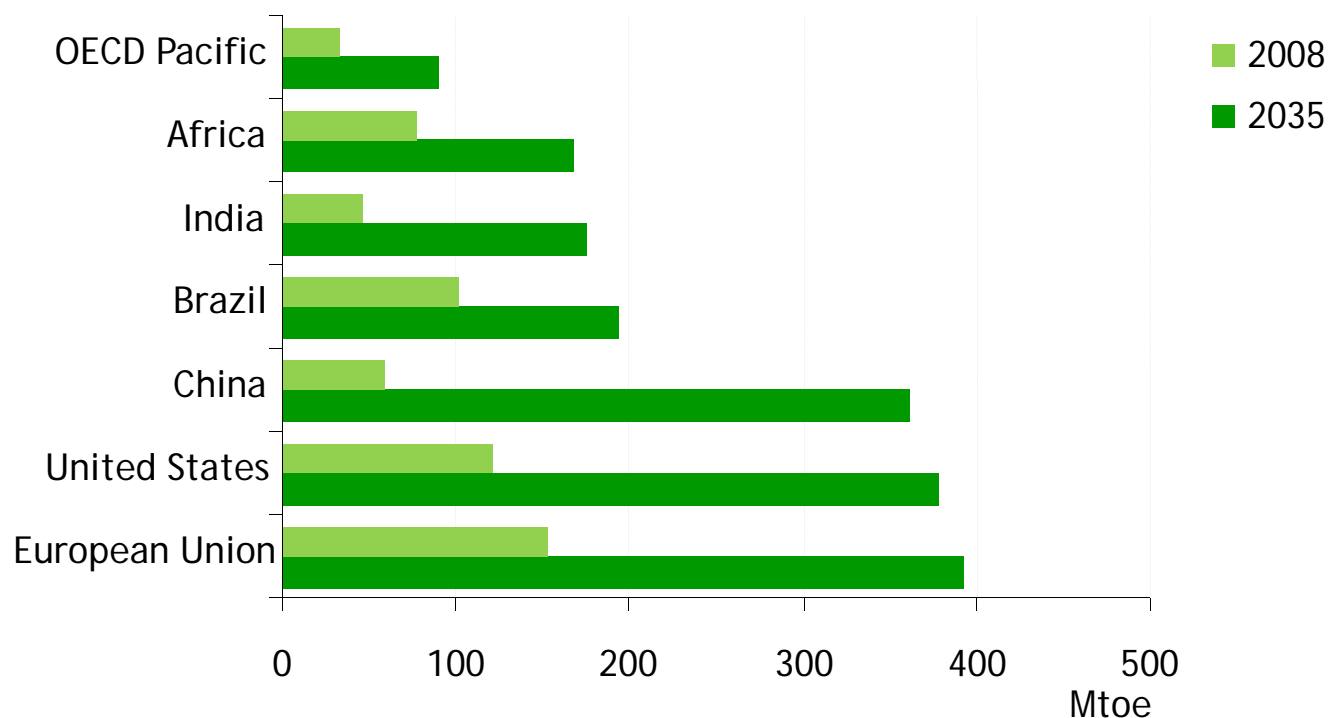
Coal-fired electricity generation by region in the New Policies Scenario



*A drop in coal-fired generation in the OECD is offset by big increases elsewhere, especially China, where 600 GW of new capacity exceeds the current capacity of the US, EU & Japan*

# Renewables enter the mainstream....

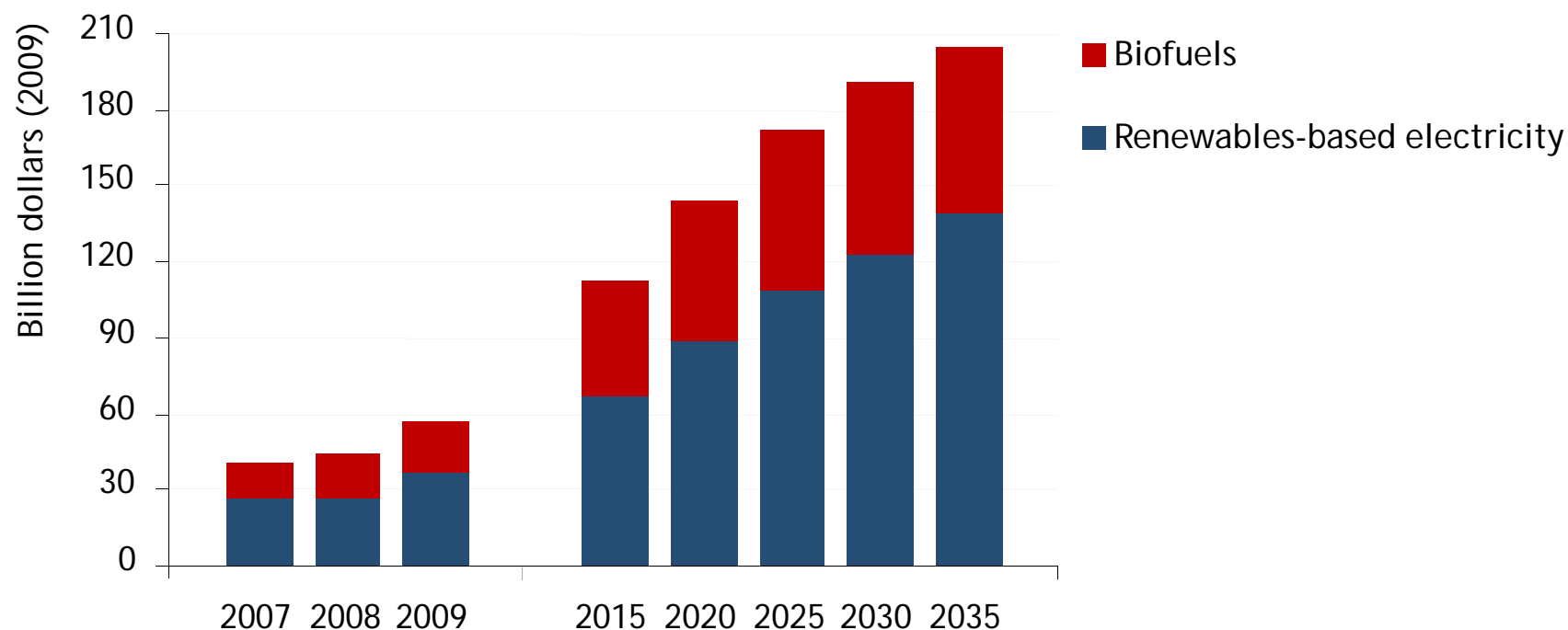
## Renewable primary energy demand in the New Policies Scenario



*The use of renewable energy triples between 2008 & 2035, driven by the power sector where their share in electricity supply rises from 19% in 2008 to 32% in 2035*

....but only if there is enough government support

### Annual global support for renewables in the New Policies Scenario

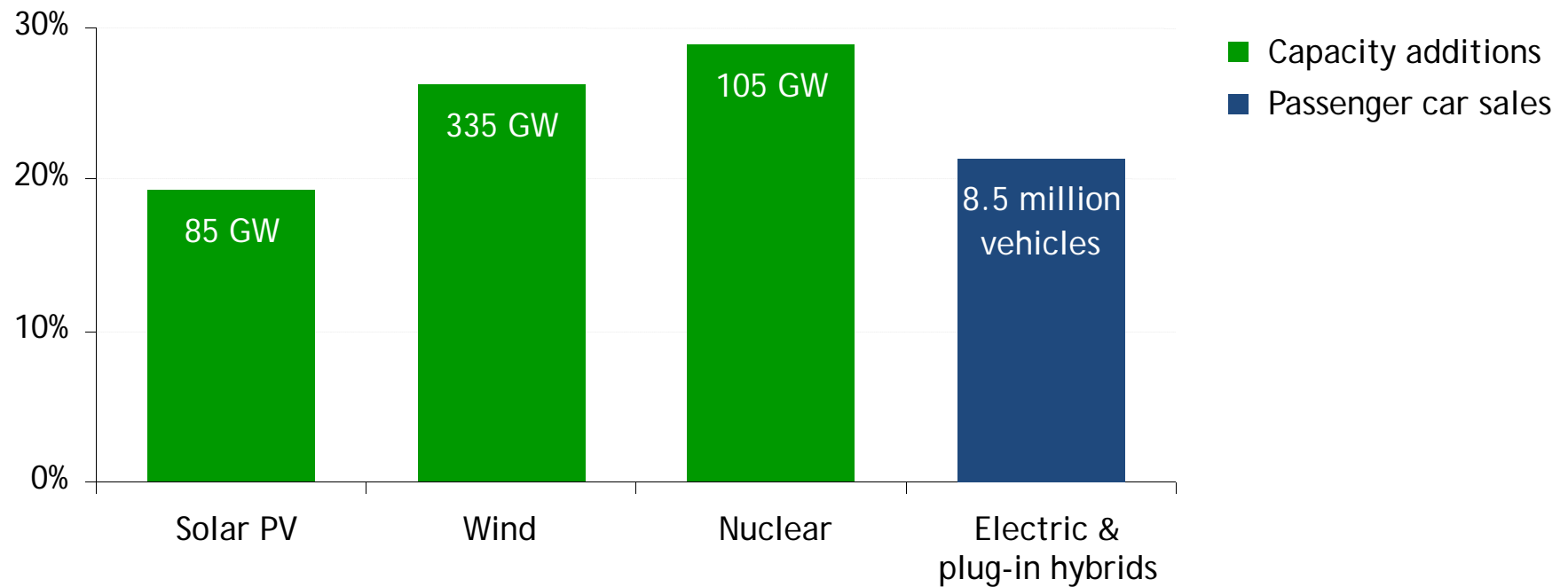


*Government support remains the key driver – rising from \$57 billion in 2009 to \$205 billion in 2035 – but higher fossil-fuel prices & declining investment costs also spur growth*



# China becomes the market leader in low-carbon technologies

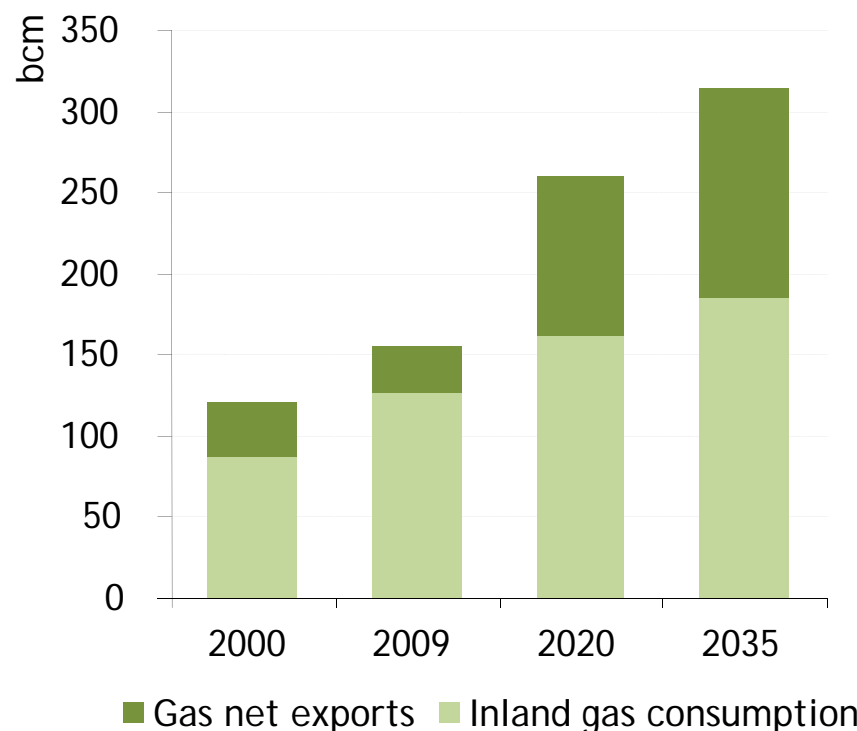
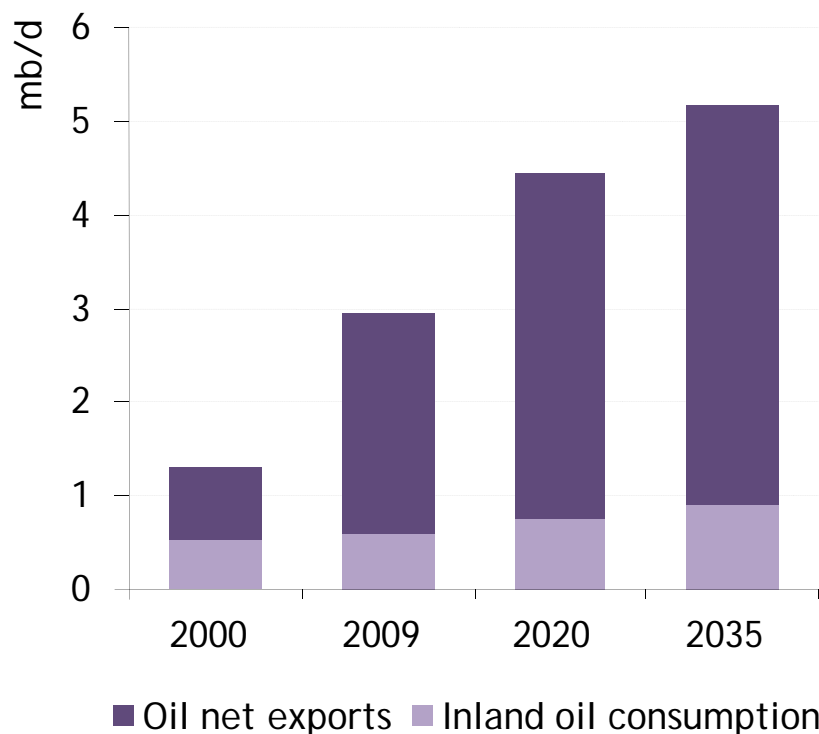
## China's share of cumulative global additions to 2035 for selected technologies



*Given the sheer scale of China's market, its push to expand the role of low-carbon energy technologies is poised to play a key role in driving down costs, to the benefit of all countries*

# Caspian energy riches could enhance global energy security

## Caspian oil & gas outlook in the New Policies Scenario



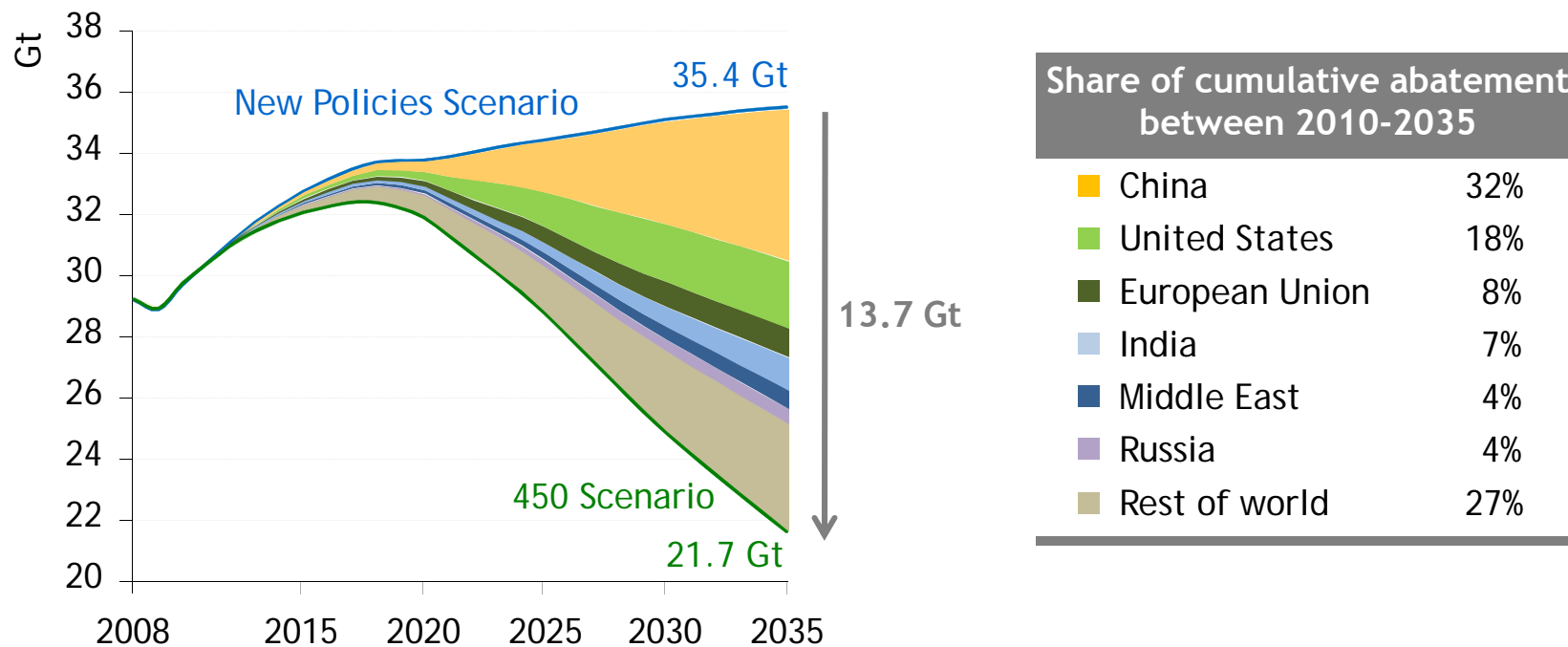
***Kazakhstan drives an increase in Caspian oil production to 5.2 mb/d by 2035, while Turkmenistan & Azerbaijan push up gas production to over 310 bcm***

# The 450 Scenario: A roadmap from 3.5°C to 2°C

- The 450 Scenario sets out an energy pathway consistent with limiting the increase in temperature to 2°C
- Assumes vigorous implementation of Copenhagen Accord pledges to 2020 & much stronger action thereafter
- The failure of the Copenhagen Accord pledges:
  - > *As many lack transparency, there is 3.9 Gt of uncertainty over the level of abatement pledged to 2020*
  - > *As many lack ambition, the cost of achieving the 2°C goal has increased by \$1 trillion in 2010-2030 compared with WEO-2009*

# The 450 Scenario: How do we get there now?

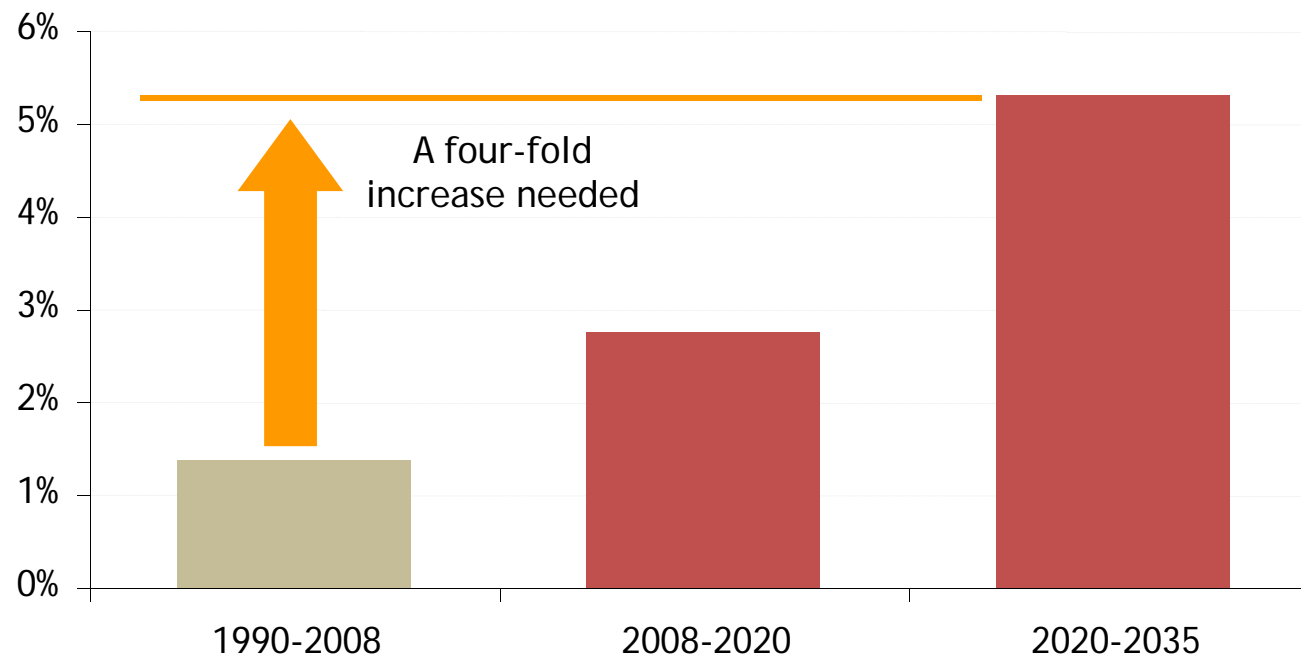
## World energy-related CO<sub>2</sub> emission savings by country in the 450 Scenario



***In the 450 Scenario, China & the US together account for 50% of the cumulative emission abatement that is needed in 2010-2035***

# Achieving the 2°C goal will require rapid decarbonisation of global energy

Average annual change in CO<sub>2</sub> intensity in the 450 scenario

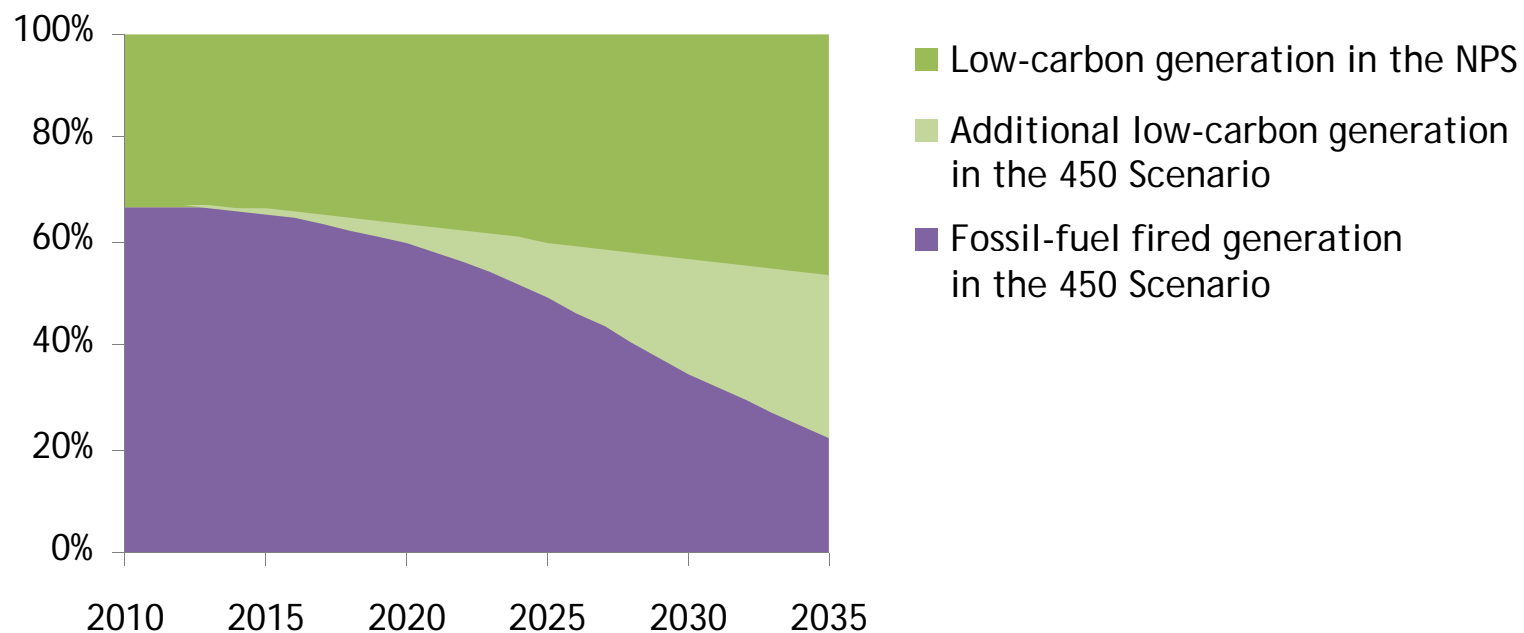


***Carbon intensity would have to fall at twice the rate of 1990-2008 in the period 2008-2020 & almost four times faster in 2020-2035***



# A fundamental change is needed in power generation

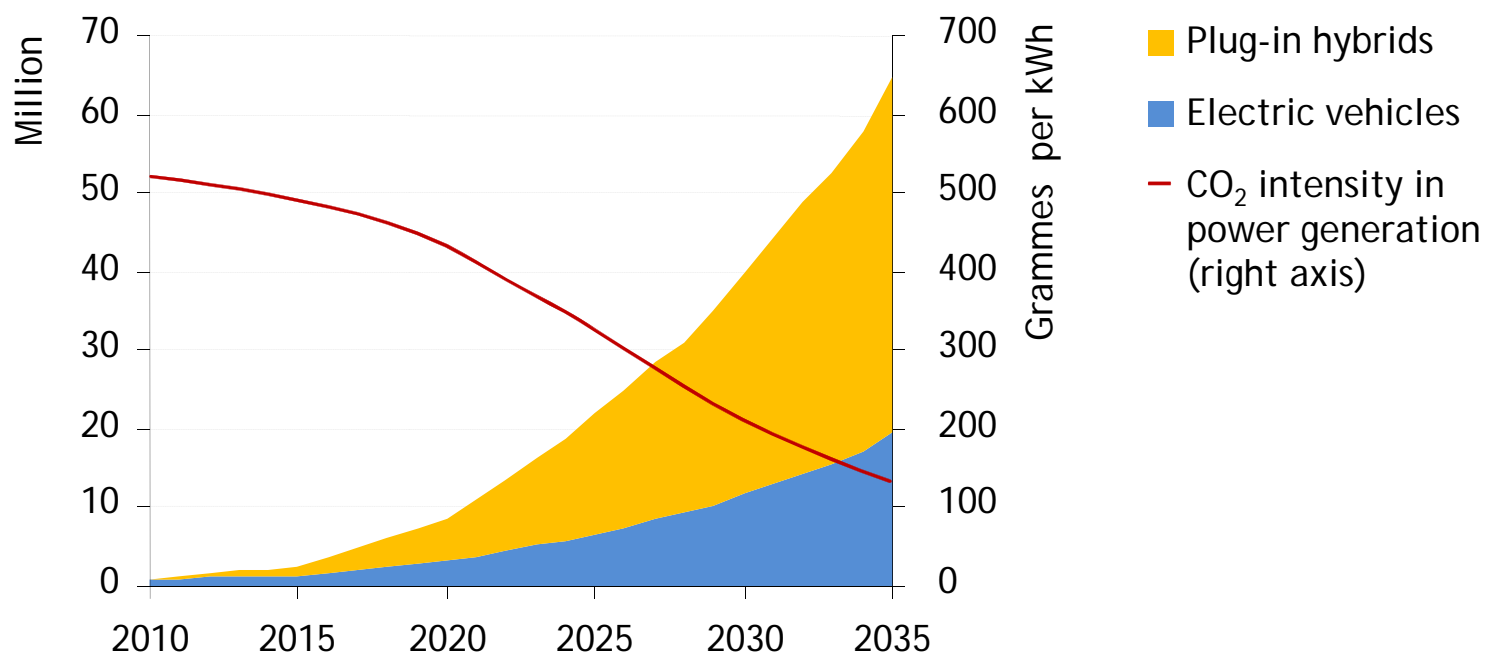
## Share of world electricity generation by type and scenario



***Low-carbon technologies account for over three-quarters of global power generation by 2035 in the 450 Scenario, a four-fold increase on today***

# ... and also in transport

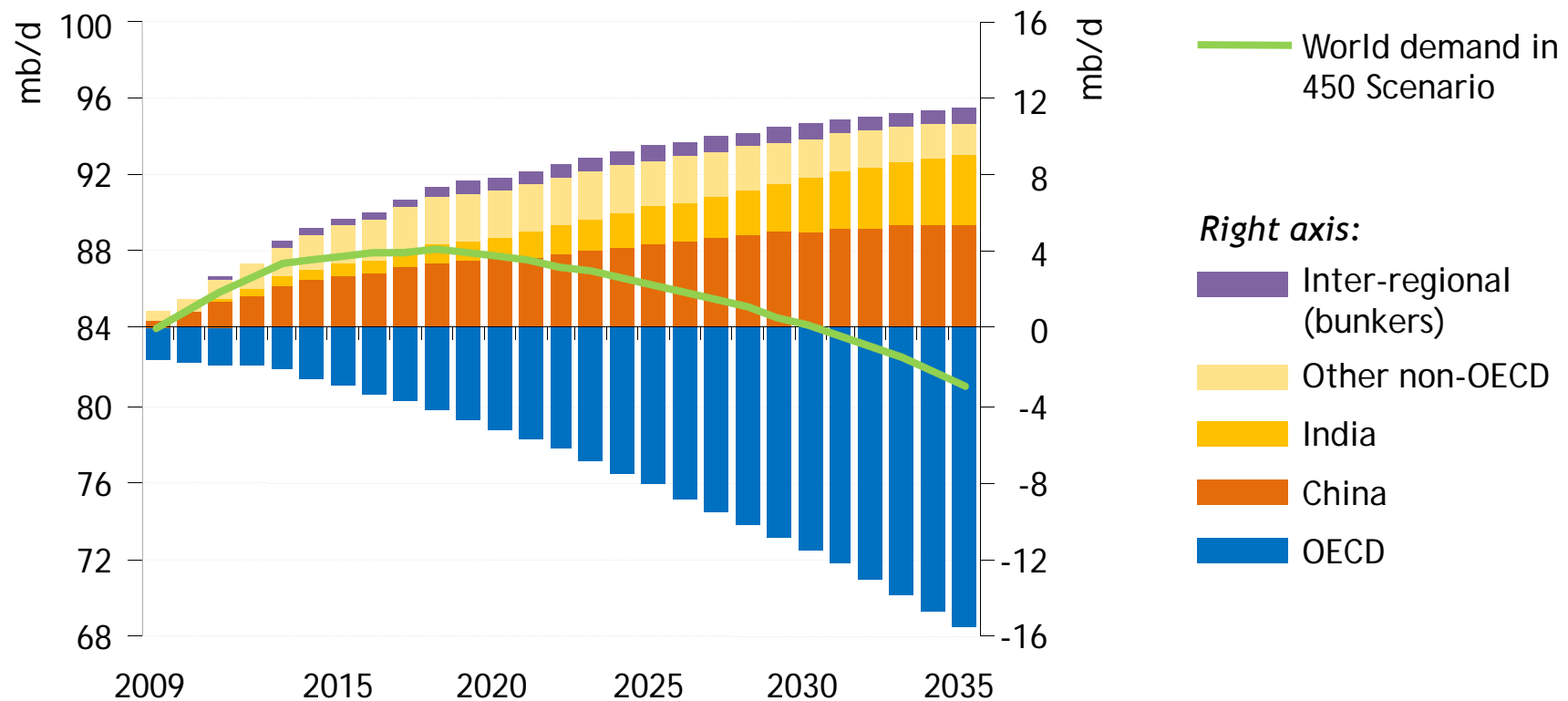
## Sales of plug-in hybrid and electric vehicles in the 450 Scenario & CO<sub>2</sub> intensity of the power sector



***Plug-in hybrids & electric vehicles reach 39% of new sales by 2035, making a big contribution to emissions abatement, thanks to a major decarbonisation of the power sector***

# Will peak oil be a guest or the spectre at the feast?

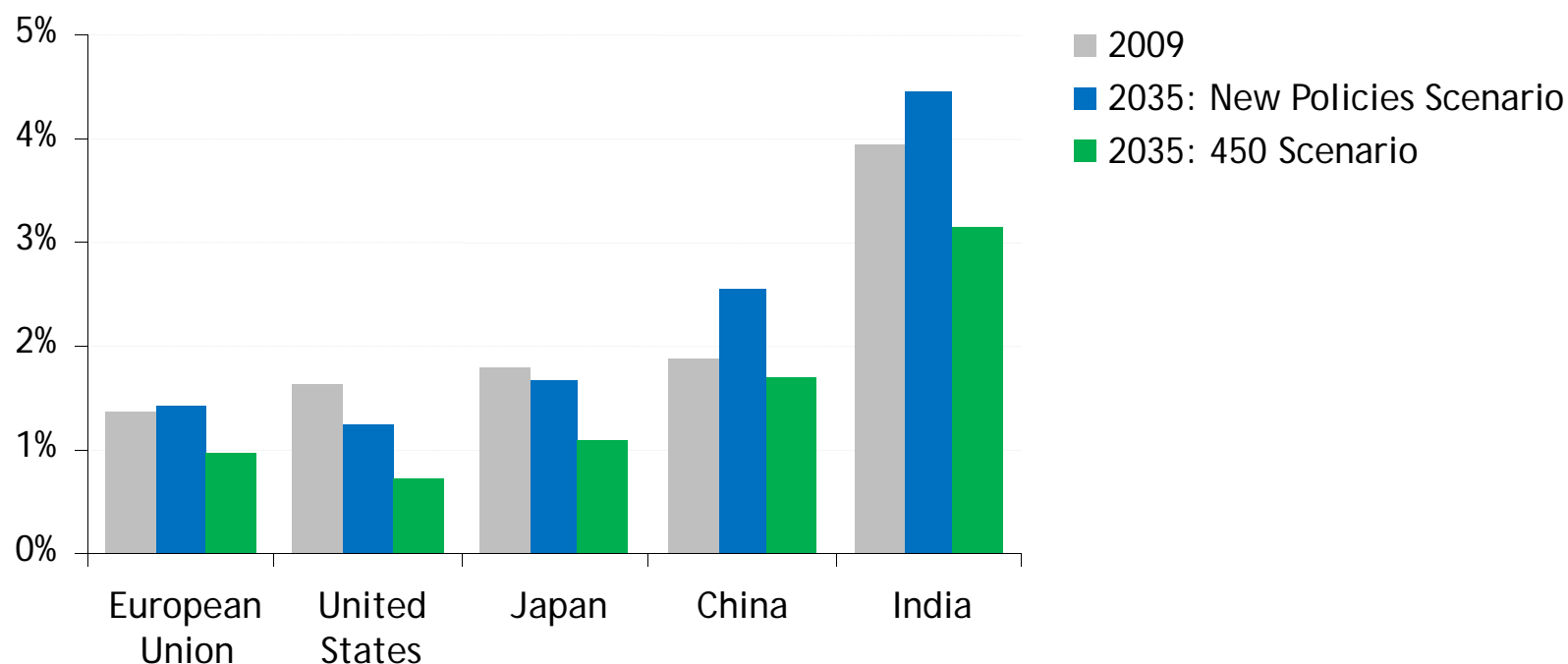
## Oil demand in the 450 Scenario



**Oil demand peaks at 88 mb/d before 2020 & falls to 81 mb/d in 2035, with a plunge in OECD demand more than offsetting continuing growth in non-OECD demand**

# Combating climate change will bring economic benefits as well as costs

## Oil-import bills as share of GDP in selected countries



***In the 450 Scenario, annual spending on oil imports in 2035 by the five largest importers is around \$560 billion, or one-third, lower than in the New Policies Scenario***

- Recently announced policies can make a difference, but fall well short of what is needed for a secure & sustainable energy future
- Lack of ambition in Copenhagen has increased the cost of achieving the 2°C goal & made it less likely to happen
  - > *Unless commitments are fully implemented by 2020, it will be all but impossible to achieve the goal*
- The age of cheap oil is over, though policy action could bring lower international prices than would otherwise be the case
- Renewables are entering the mainstream, but long-term support is needed to boost their competitiveness
- Getting the prices right, by phasing-out fossil-fuel subsidies, is the single most effective measure to cut energy demand