



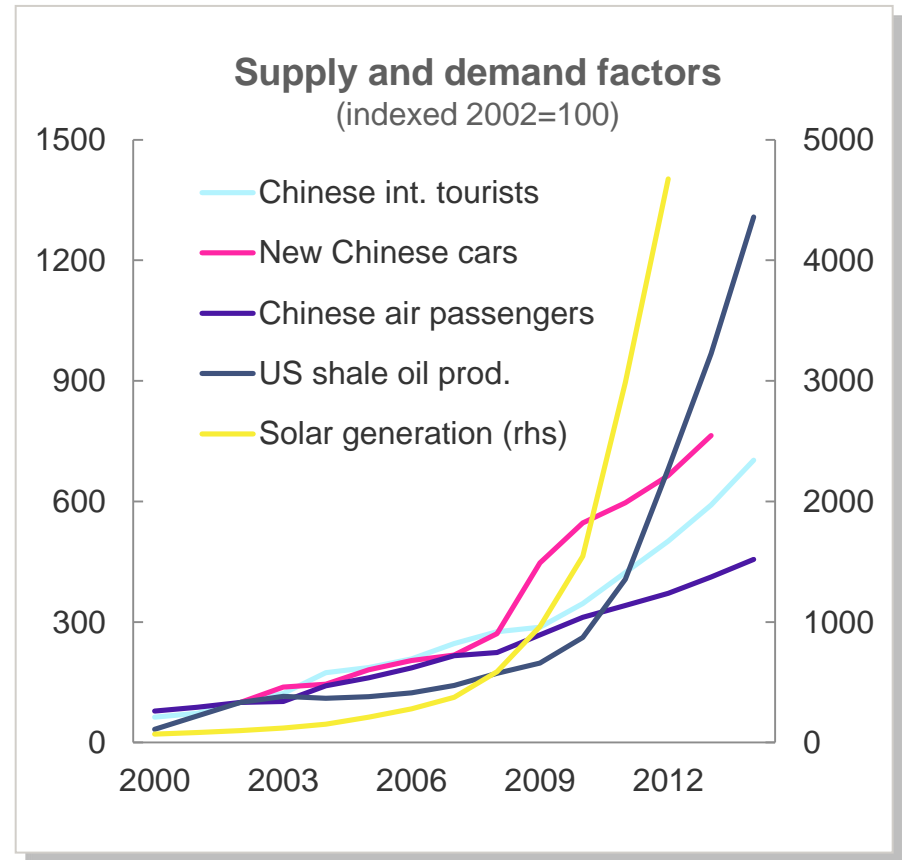
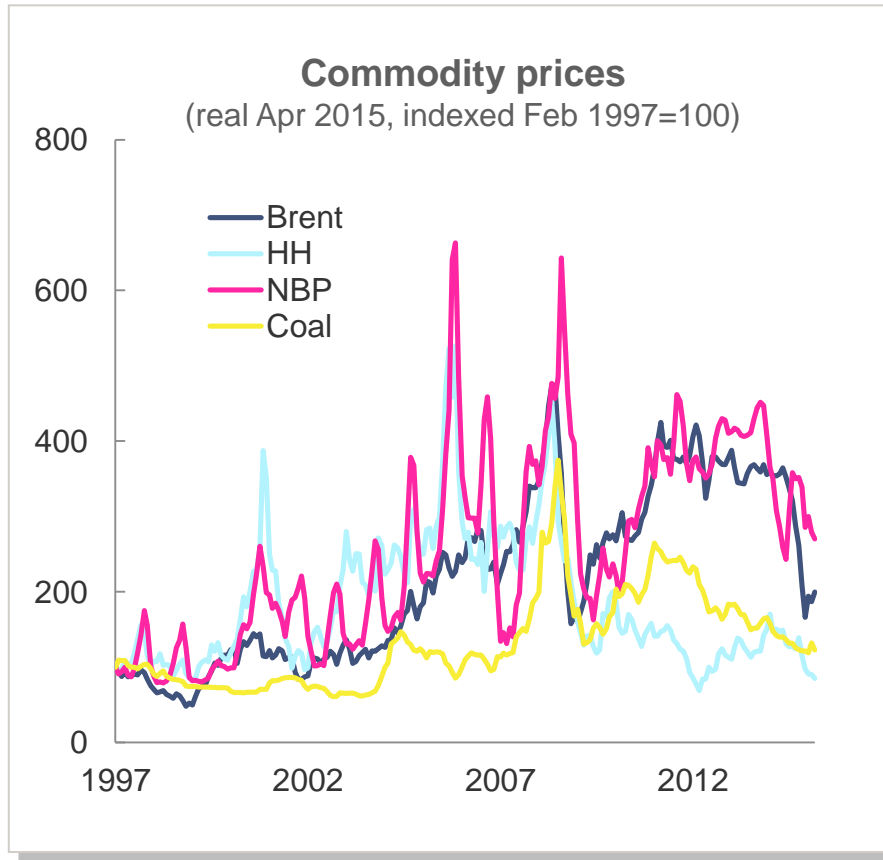
Energy Perspectives 2015

Long-term macro and market outlook

IGU workshop, «What Does COP 21 Mean for the Role of gas?»
Cartagena, Columbia, 22 October 2015
Runar Tjersland, Special Advisor

A world of volatility and change

Hope to be vaguely right, not precisely wrong...



Sources: Thomson Reuters Datastream, DOE, CEIC, IEA

Long-term forecasts are uncertain

Climate change, policy, technology, consumers and economy will decide



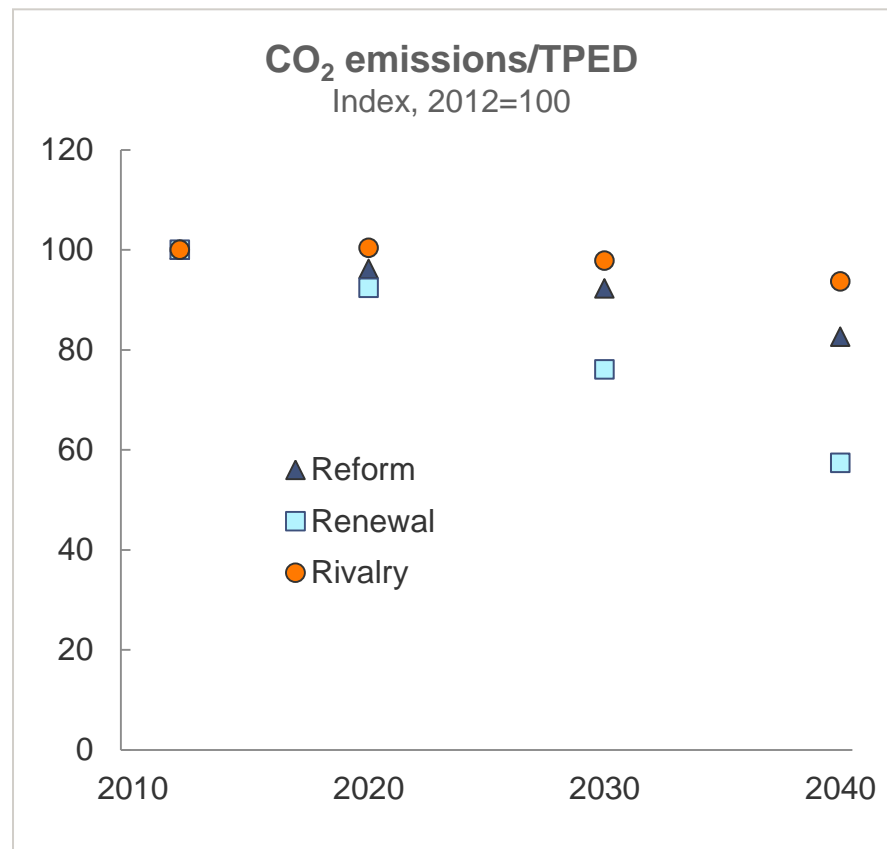
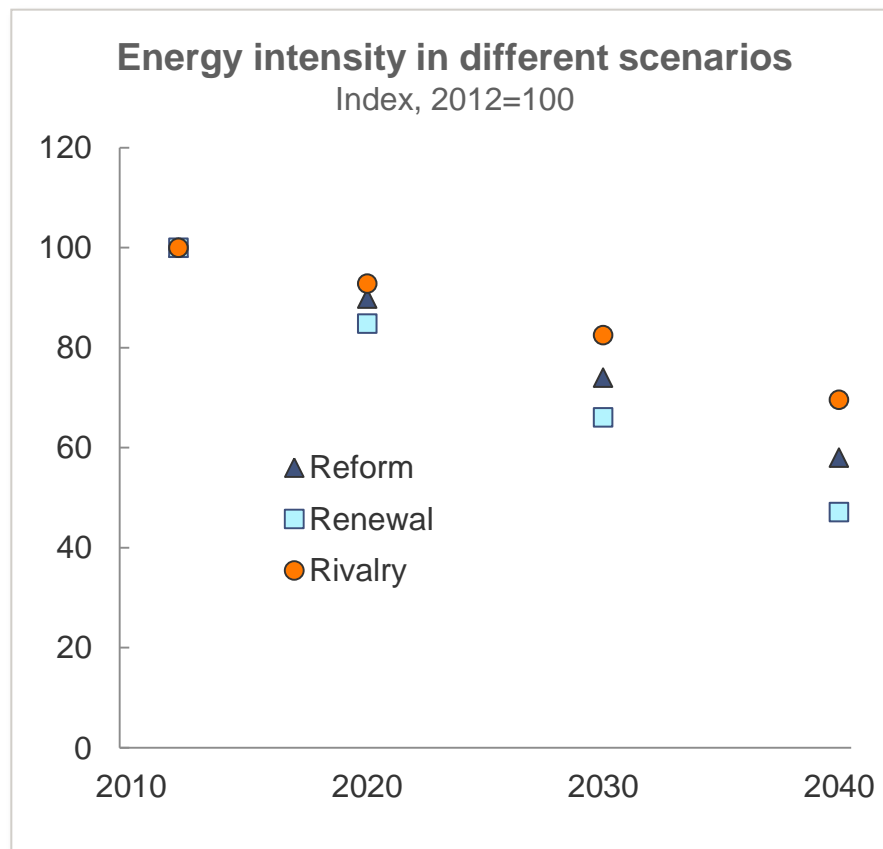
- Some known unknowns handled by constructing scenarios
 - Energy and climate policies
 - Economic growth
 - Energy efficiency
 - Relative costs and prices driving fuel mix
- A large number of other known unknowns:
 - Consumer behaviour
 - Cold fusion
 - Natural disasters (volcanoes etc.)
 - Climate change impact
- ... as well as the unknown unknowns ...

Sources: The Economist, Financial Times, Google, UN, Statoil, McKinsey & Company, National Geographic, twistedstifer.com

Several futures are possible



Three scenarios – stories about the future – have been established



Source: IEA (history), Statoil (projections)

One of the known knowns: Asia matters

Economic gravity moves (back) to the east, and so does energy demand

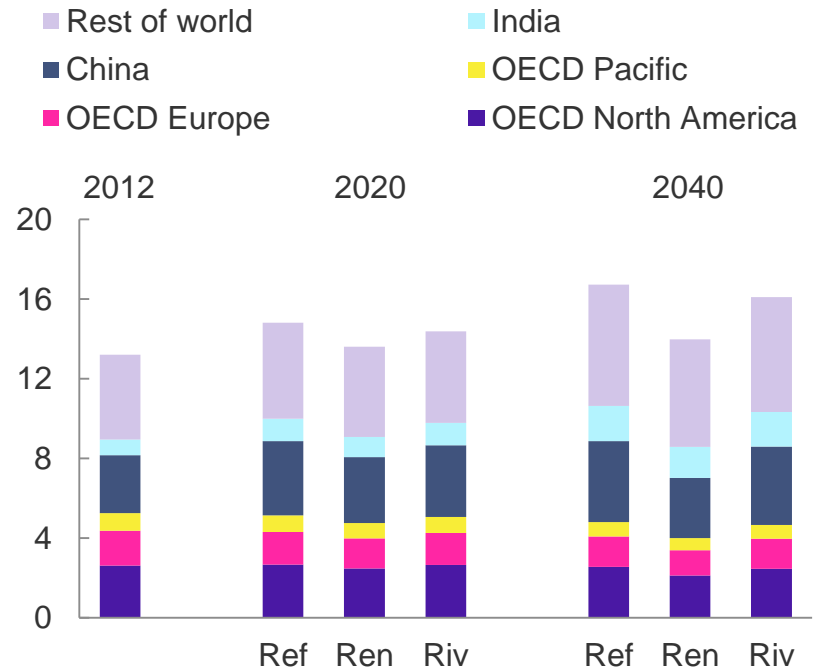
The global centre is in Asia



Sources: Reddit, IEA, Statoil (projections)

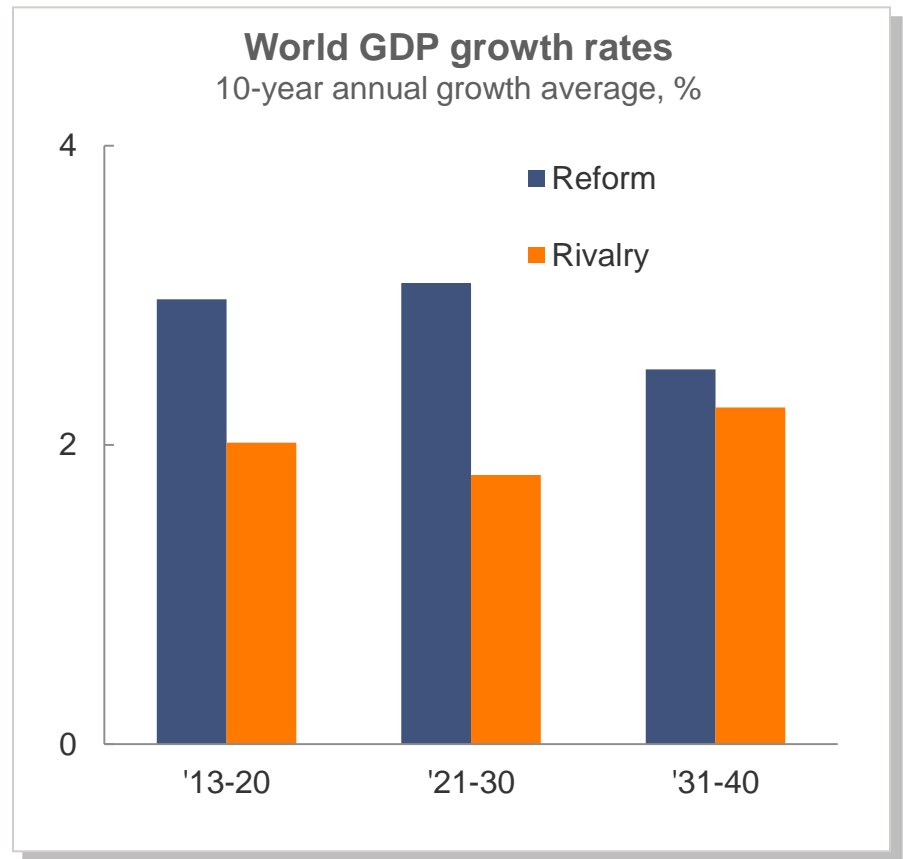
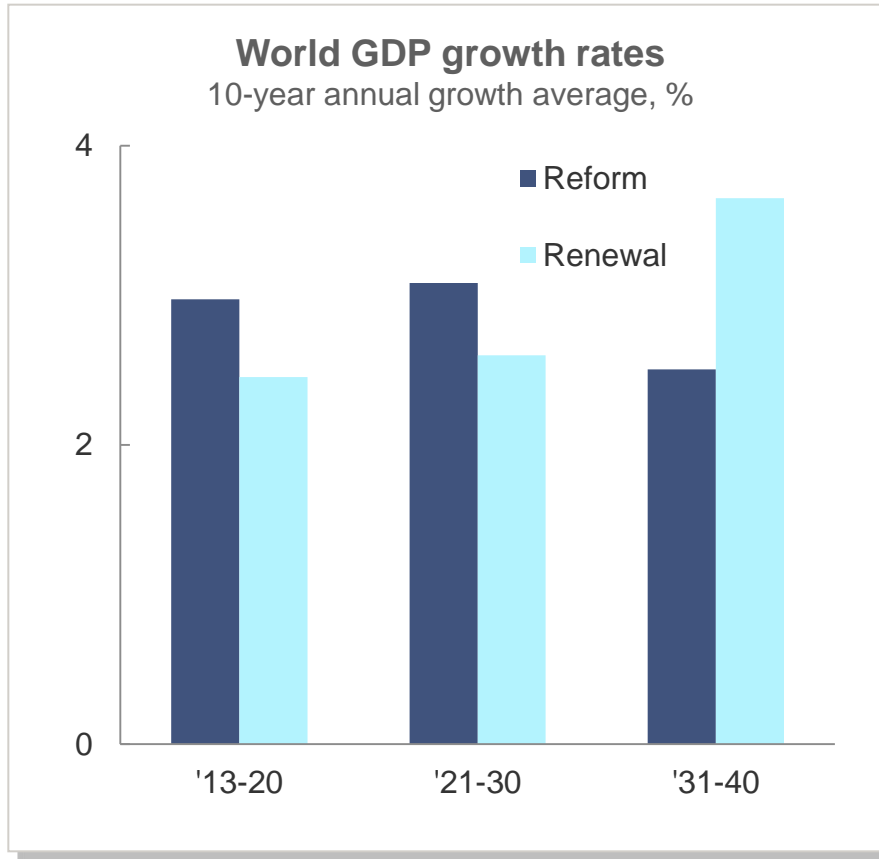
World energy demand per region

Bn toe



Growth is a key driver for energy demand...

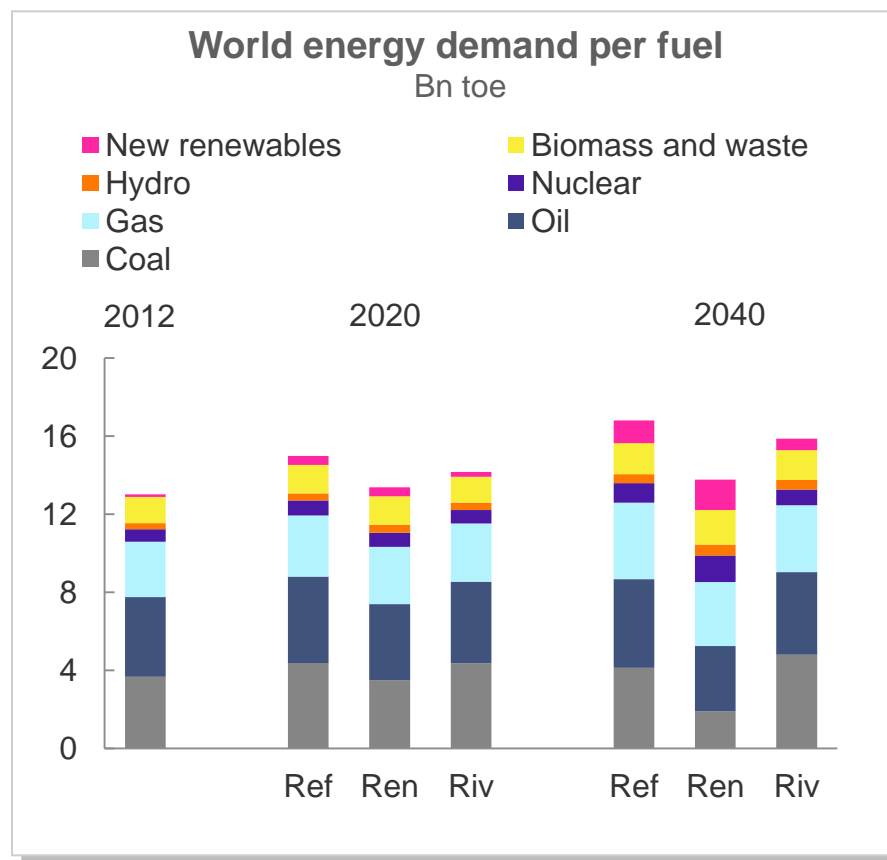
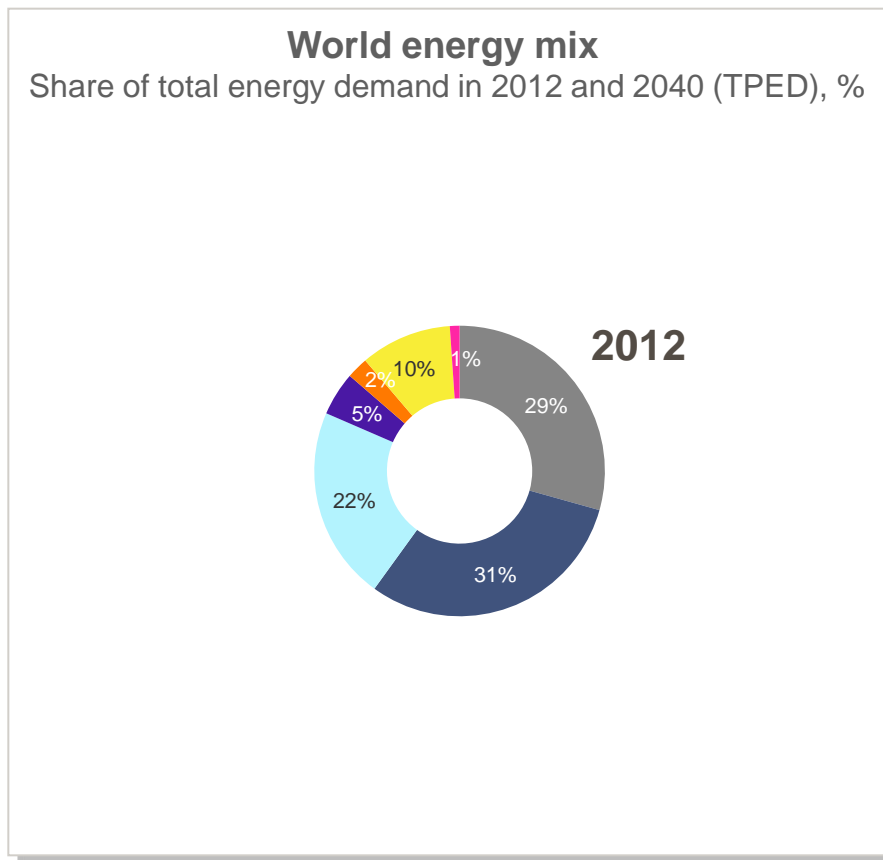
... and is different in alternative scenarios



Source: IEA (history), Statoil (projections)

Energy demand and energy mix differ

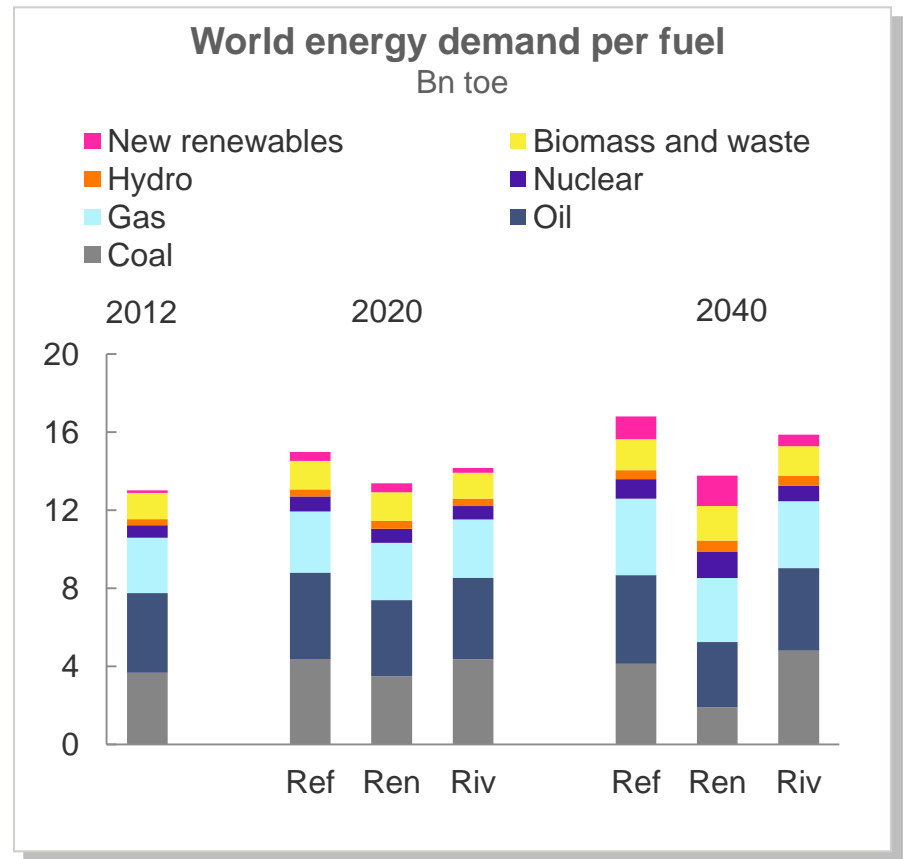
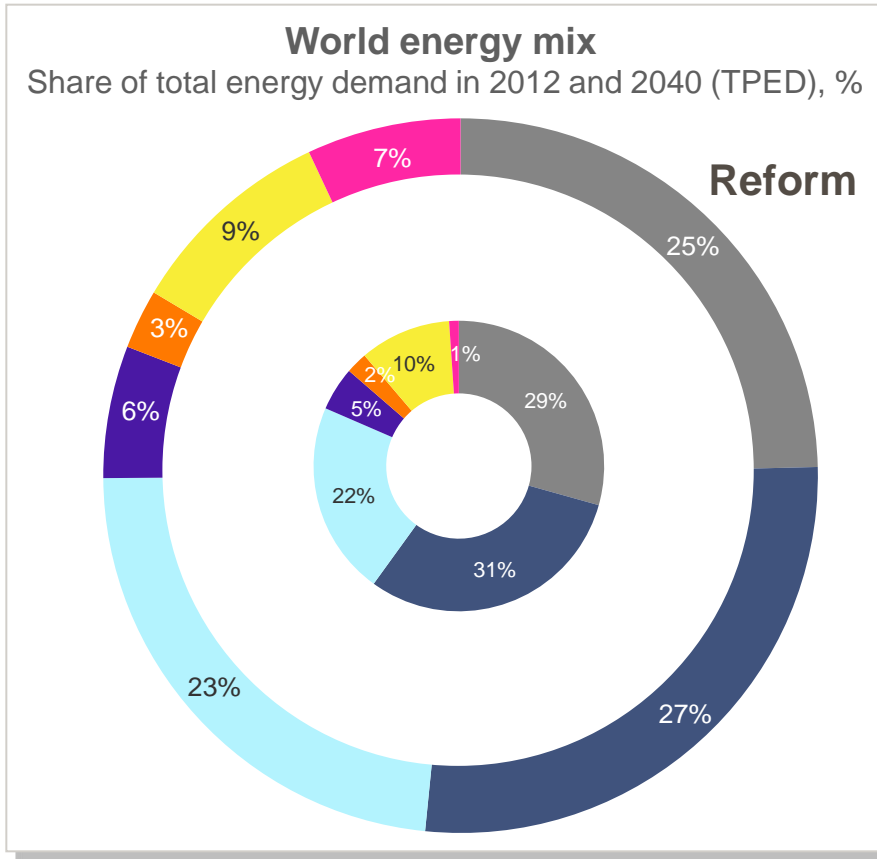
... depending on growth, efficiency, technology and policies



Source: IEA (history), Statoil (projections)

Energy demand and energy mix differ

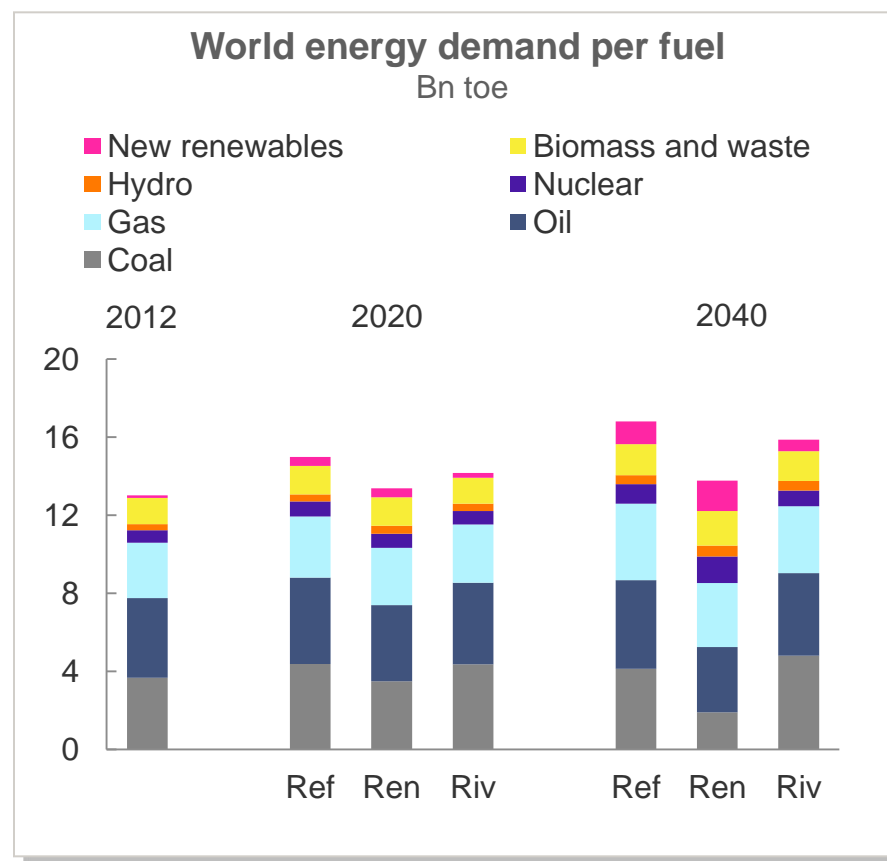
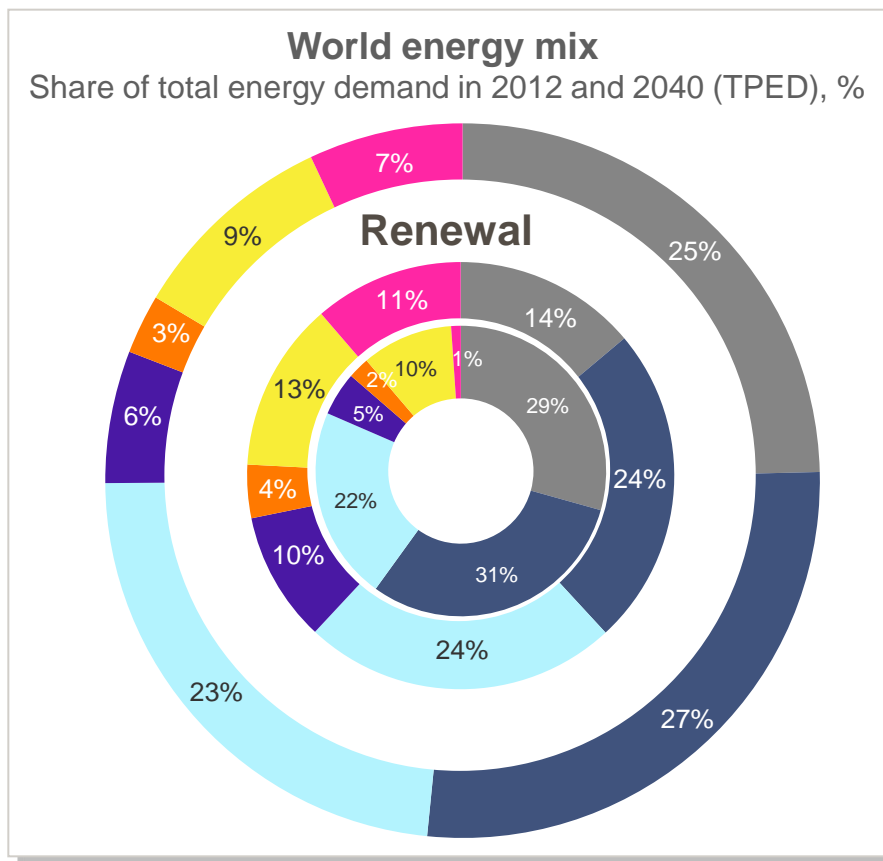
... depending on growth, efficiency, technology and policies



Source: IEA (history), Statoil (projections)

Energy demand and energy mix differ

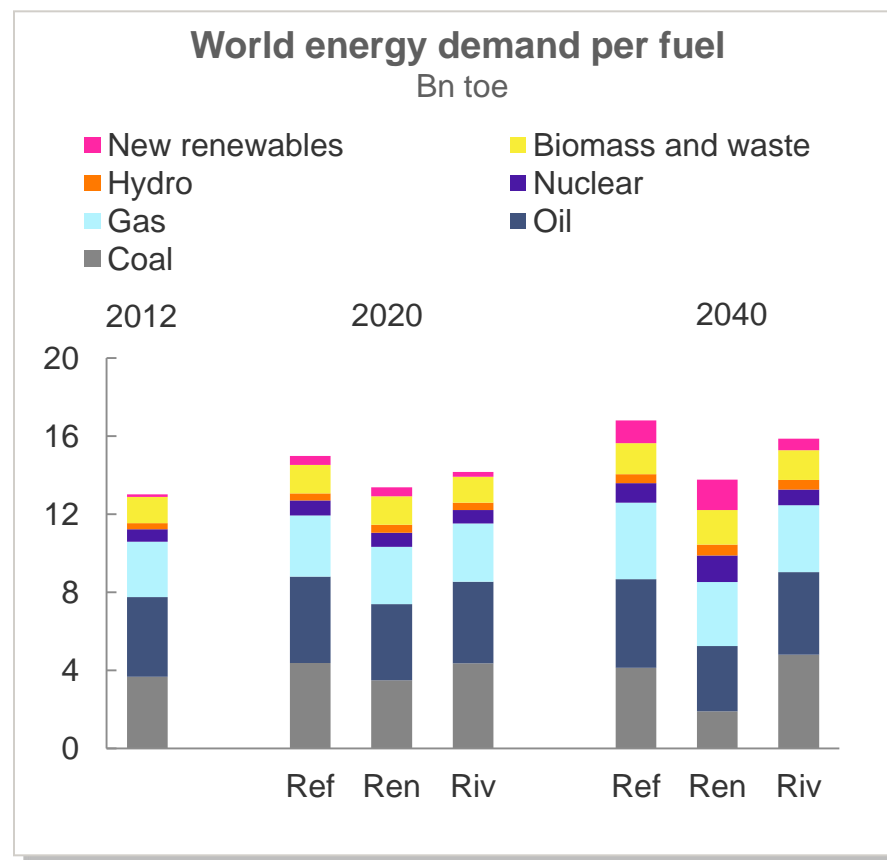
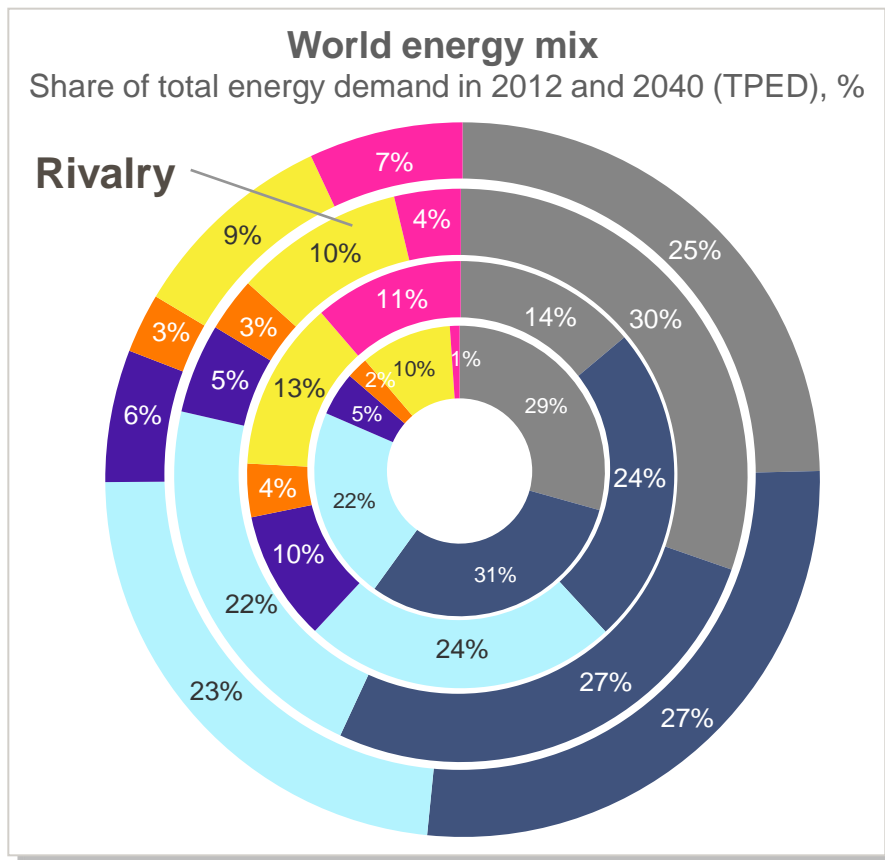
... depending on growth, efficiency, technology and policies



Source: IEA (history), Statoil (projections)

Energy demand and energy mix differ

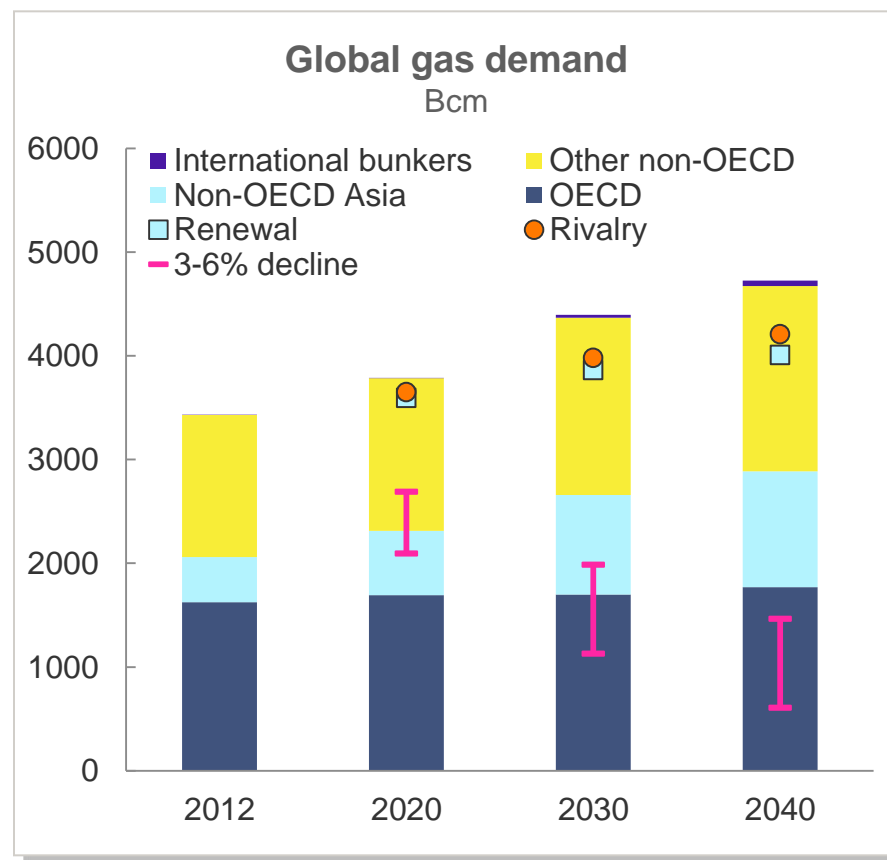
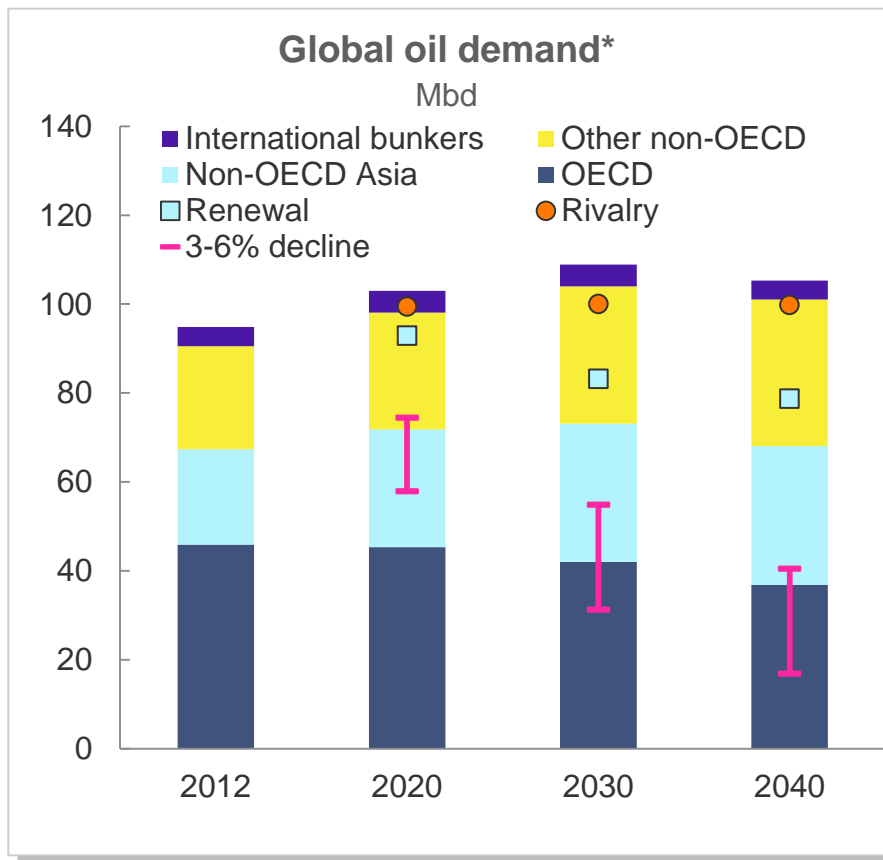
... depending on growth, efficiency, technology and policies



Source: IEA (history), Statoil (projections)

Oil and gas are here to stay

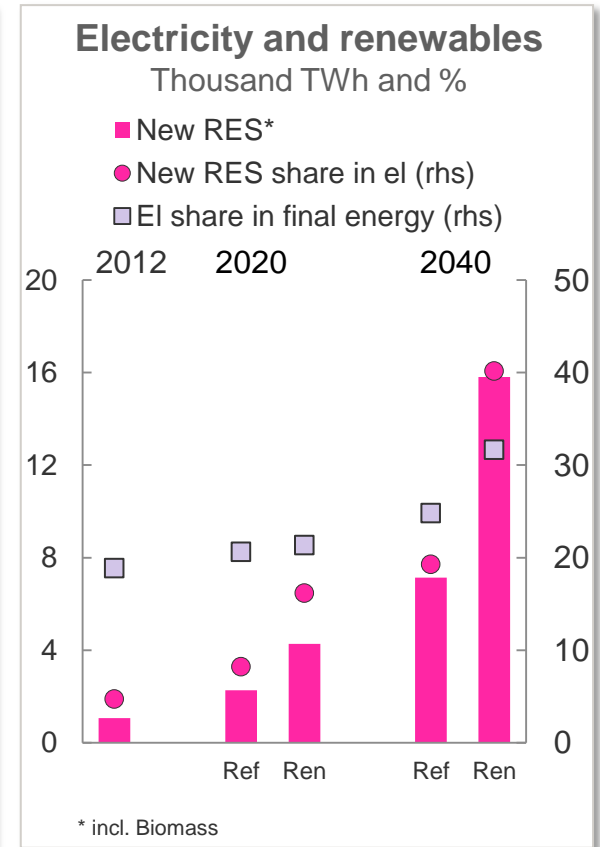
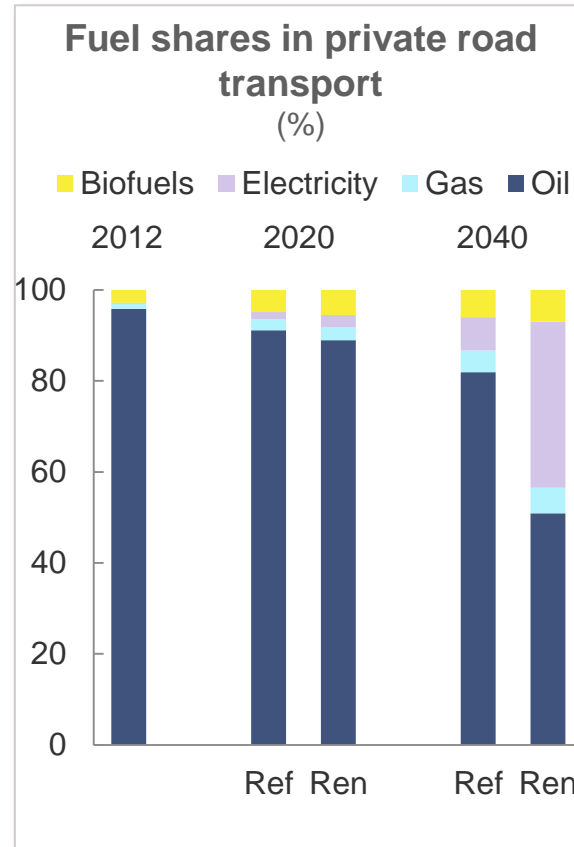
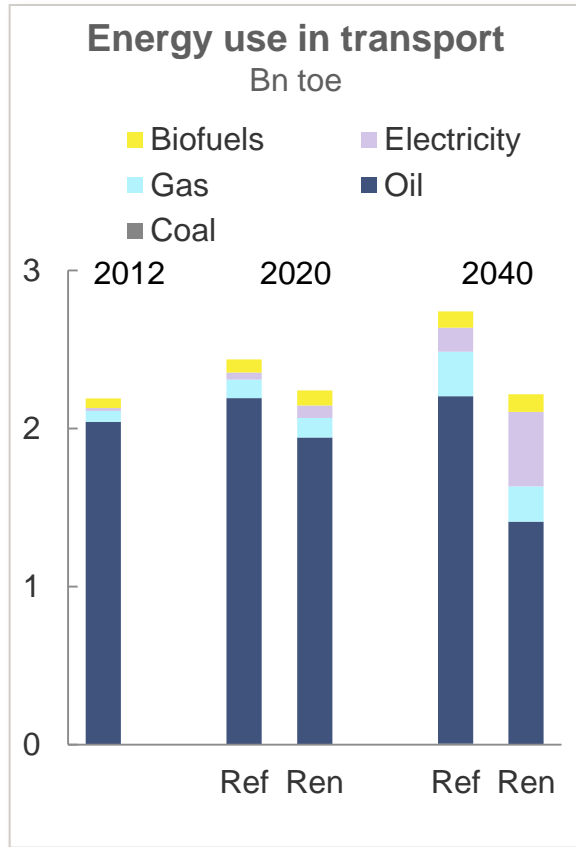
Considerable need for new investments, irrespective of scenario



* Excl. Bio-fuels
Source: IEA (history), Statoil (projections)

Renewal requires large changes

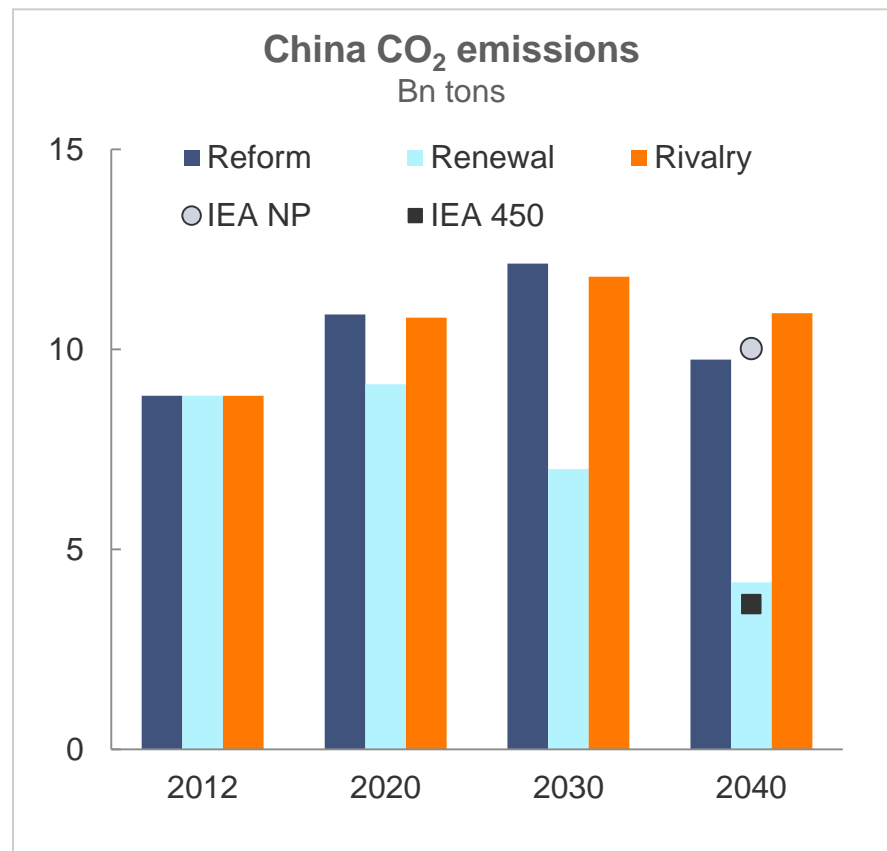
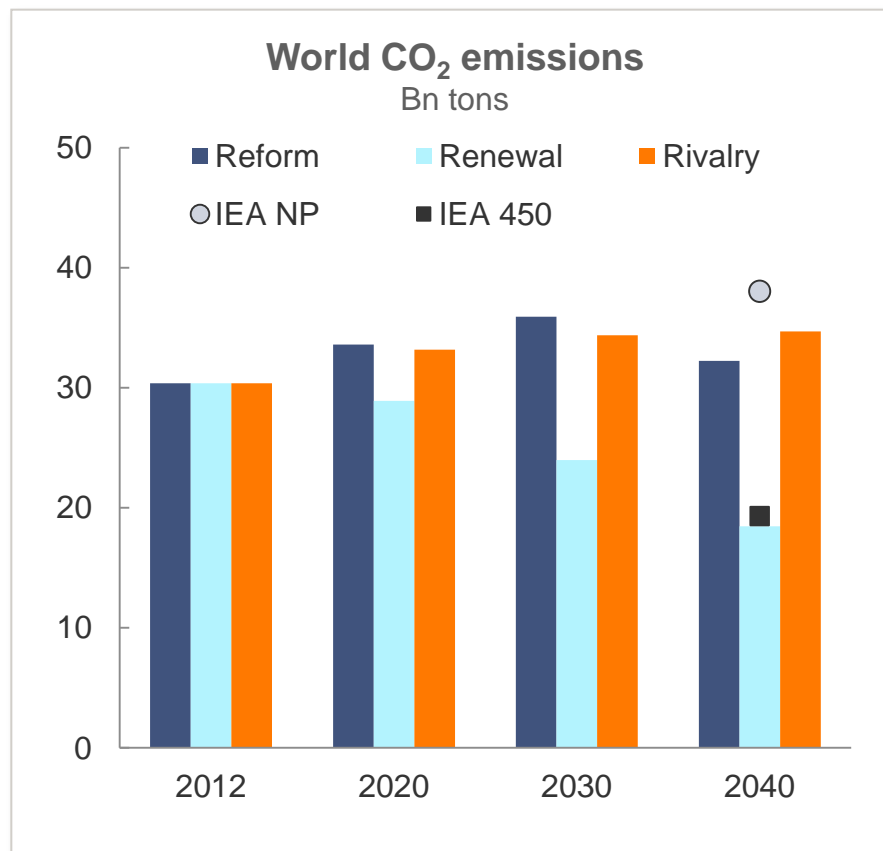
... in particular in transport and power – this is no walk in the park!



Source: IHS Global Insight and International Energy Agency (history), Statoil (projections)

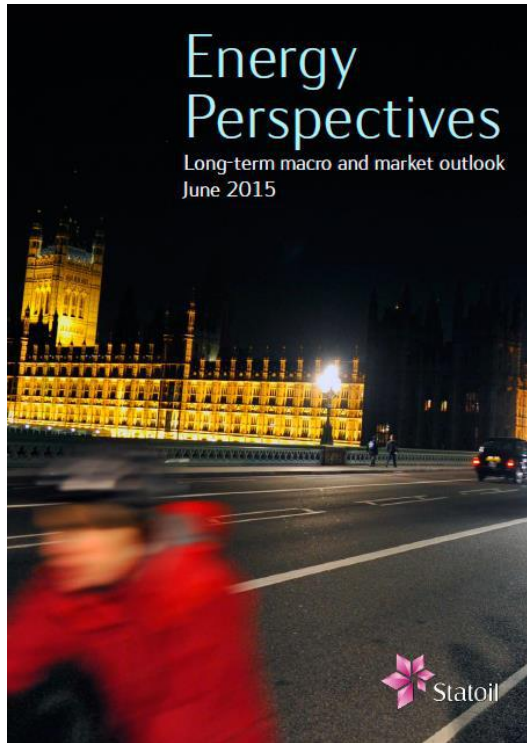
Energy related CO₂ emissions vary considerably

... driven by policy, energy intensity, and fuel mix

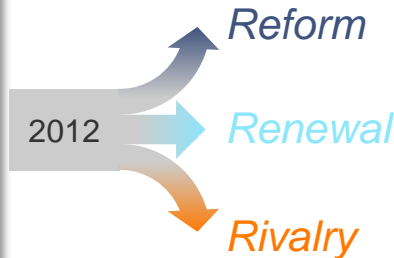


Source: Statoil, IEA WEO 2014

So, in summary ...



www.statoil.com/energyperspectives



- Three very different scenarios developed
- *Renewal* delivers on sustainability in several dimensions
 - VERY challenging – requires huge investments
 - 2-degree target achieved
 - Transformation of private transportation and electricity generation
 - Radical assumptions – coal significantly reduced, but oil and gas are here to stay, for decades
 - Oil and gas demand in 2040 ~ today's level
- *Reform* and *Rivalry* imply higher oil and gas demand, but an unsustainable development