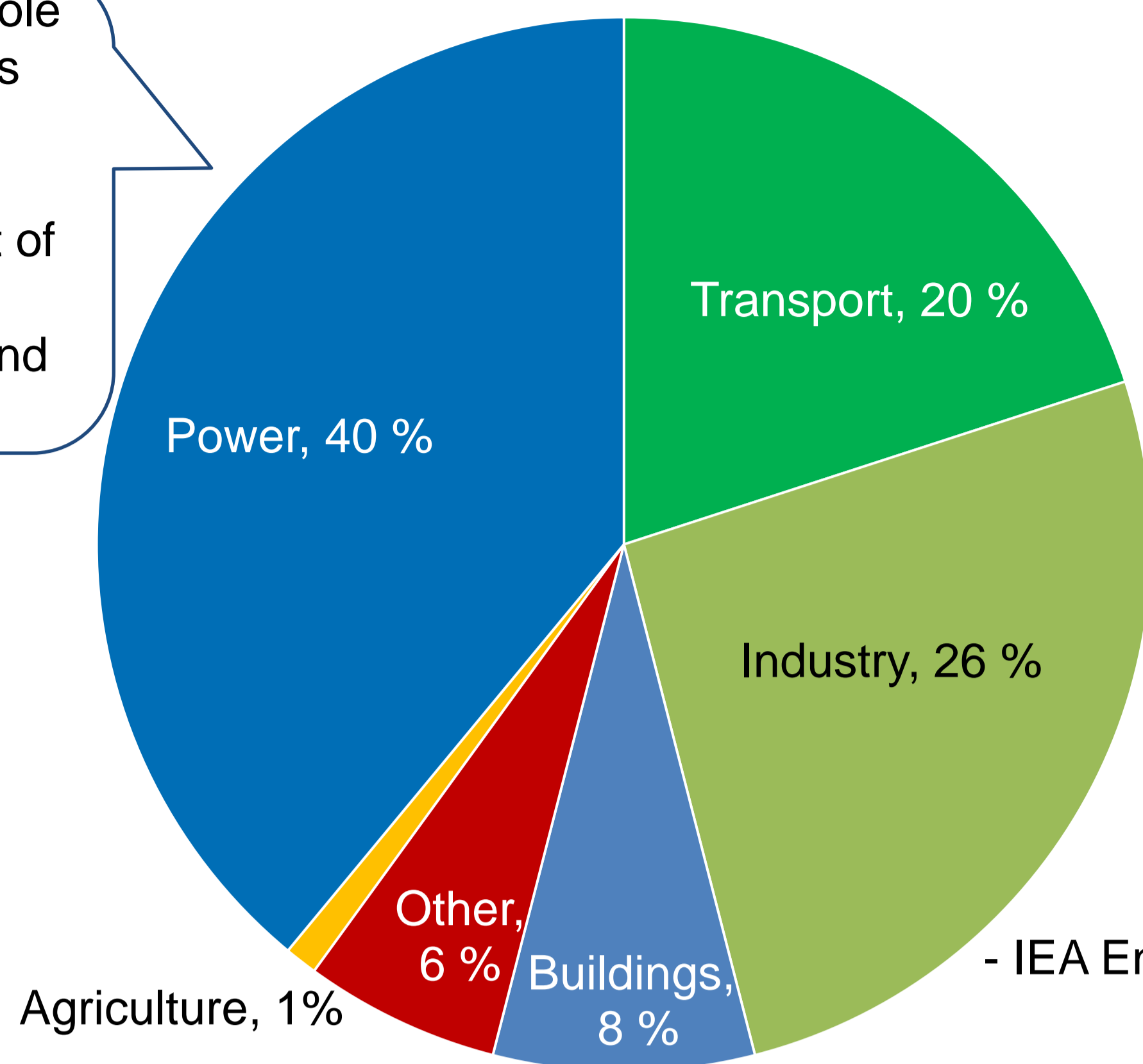


2011 CO<sub>2</sub> emissions: 33.8 gigatonnes

CCS should play a key role in curbing CO<sub>2</sub> emissions from fossil-based power generation, potentially reducing the overall cost of power sector decarbonisation by around US \$ 2 trillion by 2050



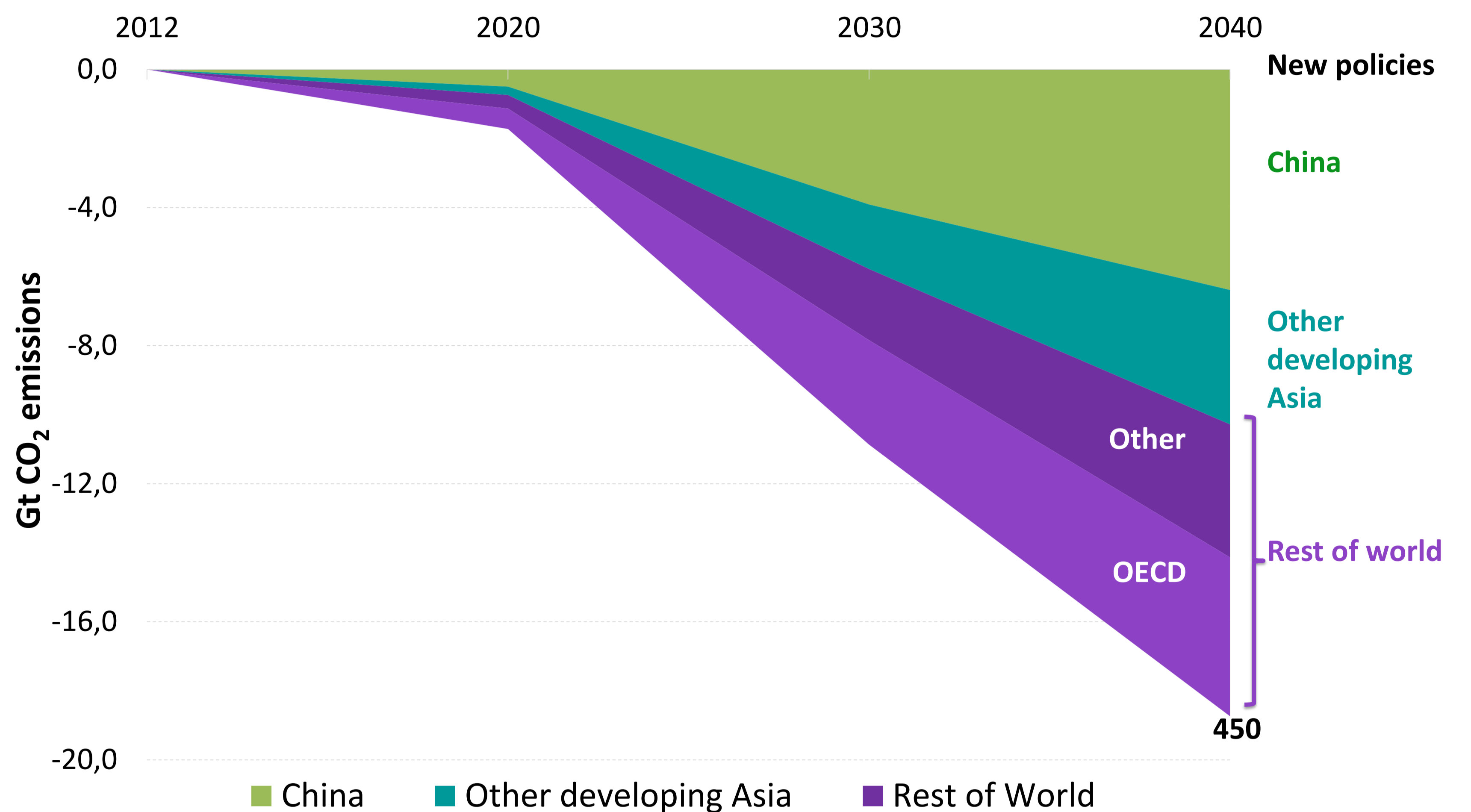
CCS is the only option available to reduce direct emissions from industrial processes at the large scale needed in the longer term

The reduction of CO<sub>2</sub> emissions must involve a range of activities: no single one can guarantee the necessary targets

- IEA Energy Technology Perspectives (2012 and 2014) -

Reduction in energy-related CO<sub>2</sub> emissions: 450 scenario relative to New policies

A reduction in CO<sub>2</sub> emissions is needed in many (all...) countries



- IEA World Energy Outlook (2014) -

Percentage increase in total discounted mitigation costs (2015-2100) in the case where certain technologies below are not be applied (median estimate)

2100 concentrations (ppm CO <sub>2</sub> eq)	no CCS	nuclear phase out	limited Solar / wind	limited bioenergy
450	138 %	7 %	6 %	64 %

- IPCC AR5 Synthesis Report -

- ➔ CCS is important both for reducing emissions from fossil fuels and also for combining with bioenergy to take CO<sub>2</sub> out of the atmosphere (BECCS or BioCCS)
- ➔ Removing CCS from the mix of mitigation technologies will increase the total costs by 138% - which is by far higher than removing any of the other technologies analysed (bioenergy, wind, solar, nuclear) - and it may not be possible to achieve 450ppm CO<sub>2</sub>eq (+2C) at all .....
- ➔ So we really do need CCS in the portfolio of low carbon energy technologies