Towards a Strategic Transport Research and Innovation Agenda

Transport Stakeholder Meeting

Introductory comments on Transport Decarbonisation post-COP21

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Kuehne Logistics University

Brussels

23rd June 2016

Recent spike in average global temperature

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Climate change

Shattered records show climate change is an emergency today, scientists warn

Unprecedented temperature levels mean more heatwaves, flooding, wildfires and hurricanes as experts say global warming is here and affecting us now

Damian Carrington

@dpcarrington

Friday 17 June 2016 16.23 BST

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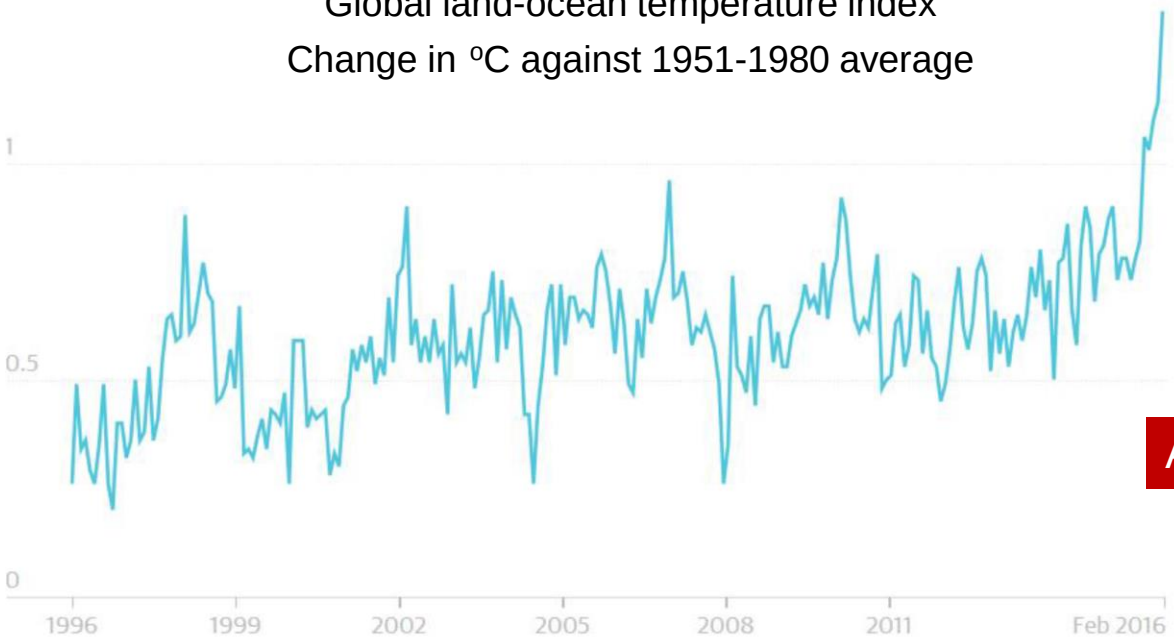
17th June 2016

Global land-ocean temperature index

Change in °C against 1951-1980 average

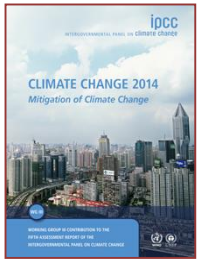


Average global temperatures over the past 13 months have been the highest on record

El Nino only partly responsible

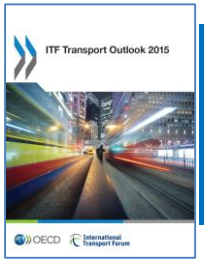
An imminent 'climate emergency'?

Scale of the Climate Change Challenge for Transport



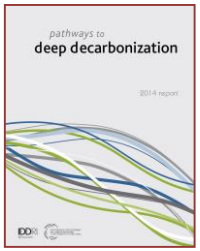
Transport:

2010: 6.5 bn tonnes of CO_{2e}
2050: BAU 12 bn tonnes of CO_{2e}
2050: 20 bn for <u>all</u> activity for 2° C limit
2050: retaining current 14% ⟶ 2.8 bn tonnes



Freight share of total transport emissions:

2010: 42%
2050 60%

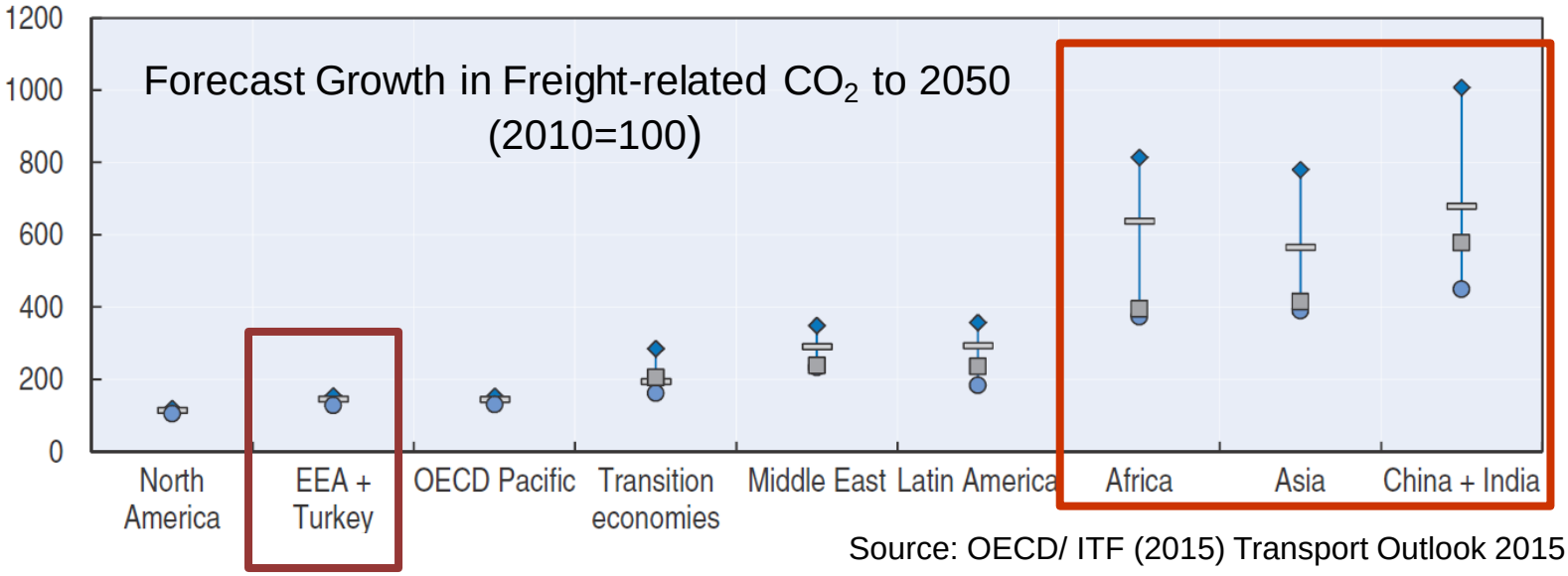


Freight share of total GHG emissions:

2010: 7%
2050: 16% (BAU)

One of the 'most challenging sectors' in which to achieve 'deep emission reductions'

Freight tonne-kms forecast to increase between 2.5 and 4.5-fold between 2010 and 2050 (ITF)



Source: OECD/ ITF (2015) Transport Outlook 2015

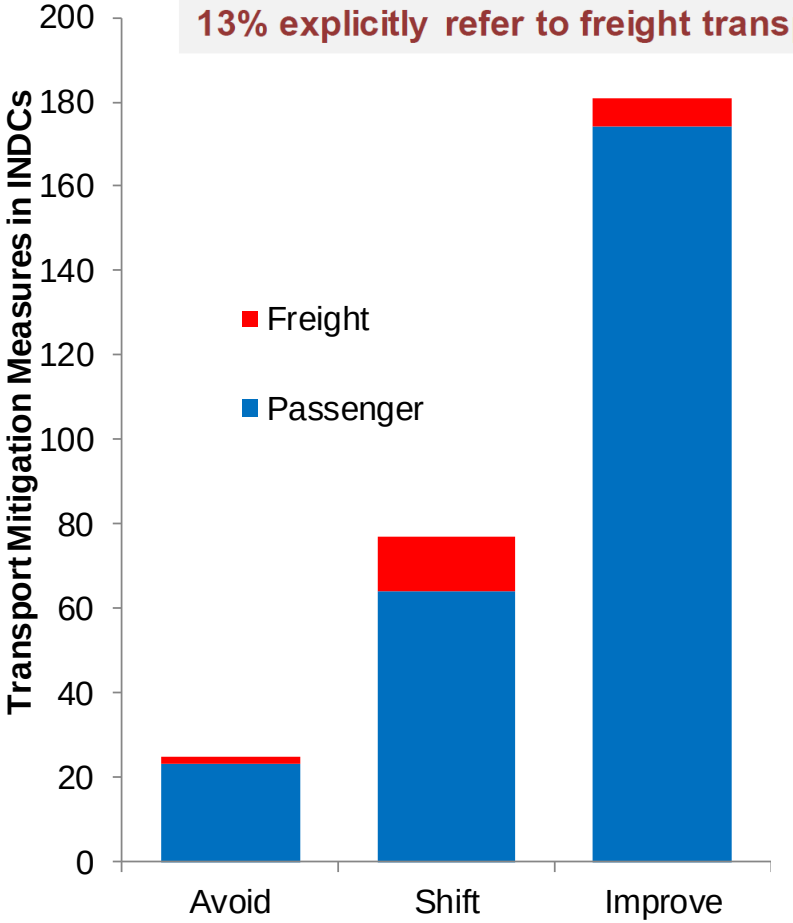
Given current freight forecast, to achieve 60% reduction in freight-related CO_2 emissions in the EU, average carbon intensity must fall to a **fifth** of its 1990 level.

UNFCC COP 21 Conference on Climate Change
December 2015

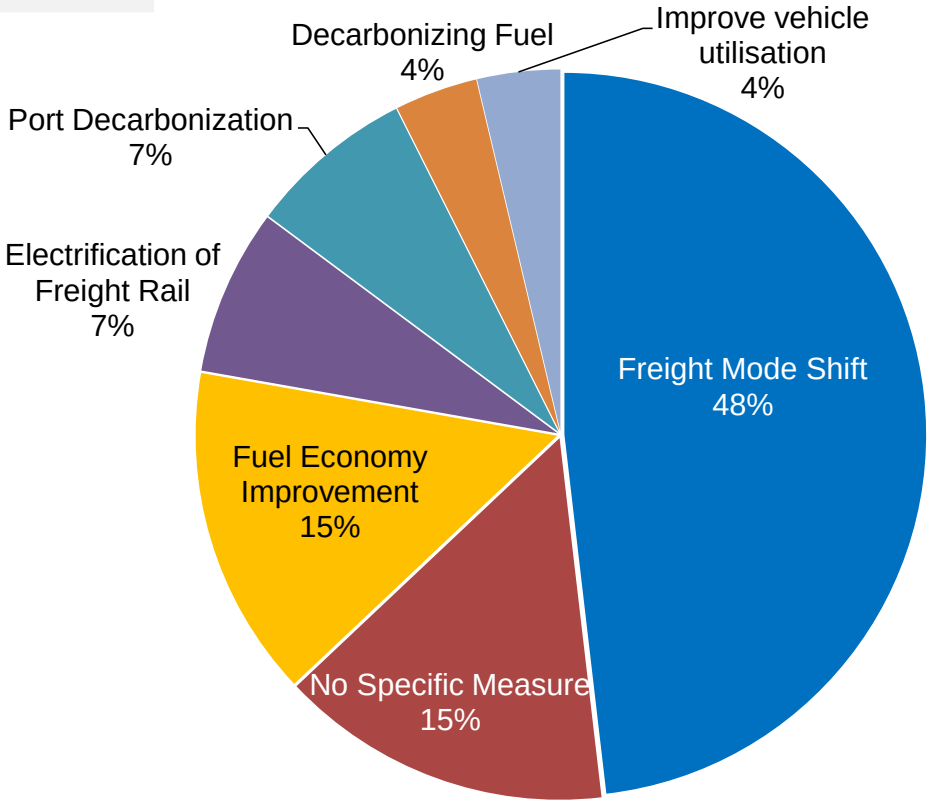
Intended Nationally Determined Contributions (INDCs)
Would result in 2.7° -3.4° C mean temperature rise by 2100

Climate Change Mitigation Measures Specified for Freight in INDCs

Content of 158 INDCs for185 countries analysed
43% explicitly refer to passenger transport
13% explicitly refer to freight transport

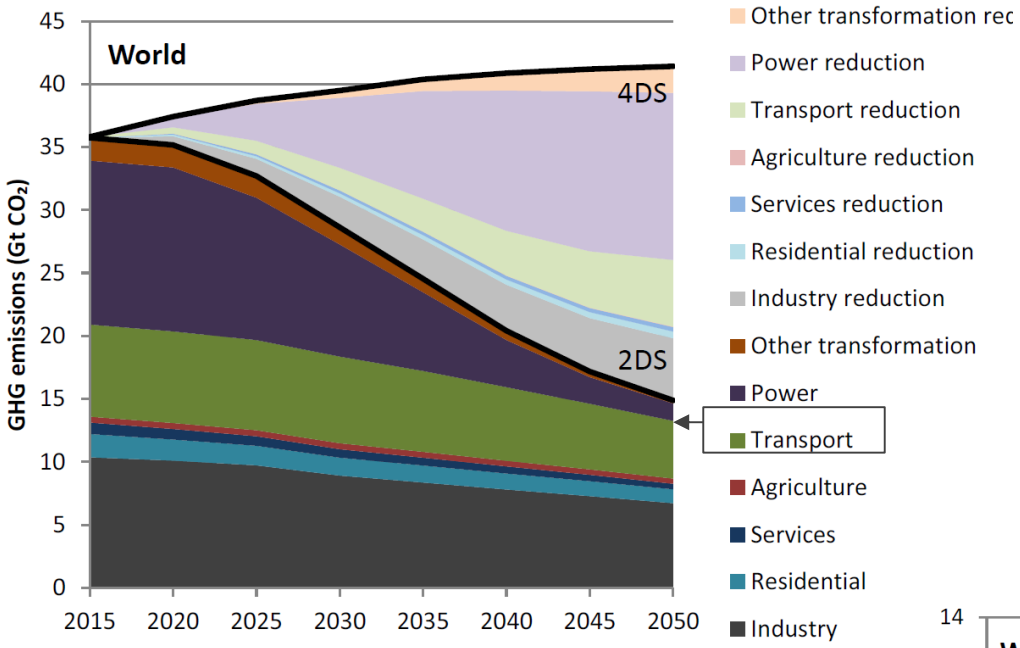


Analysis by Sudhir Gota



% of INDCs specifying particular green freight measures

International Energy Agency Projections



Transport = one of the most difficult and costly sectors to decarbonize

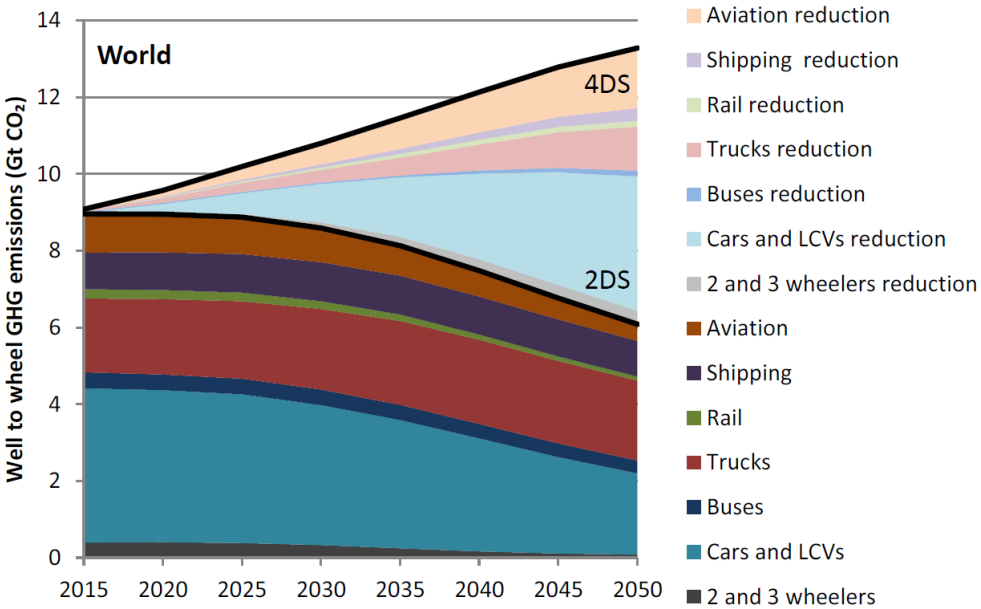
Main CO_2 reduction in the power sector

Combination of transport electrification and decarbonisation of electricity generation

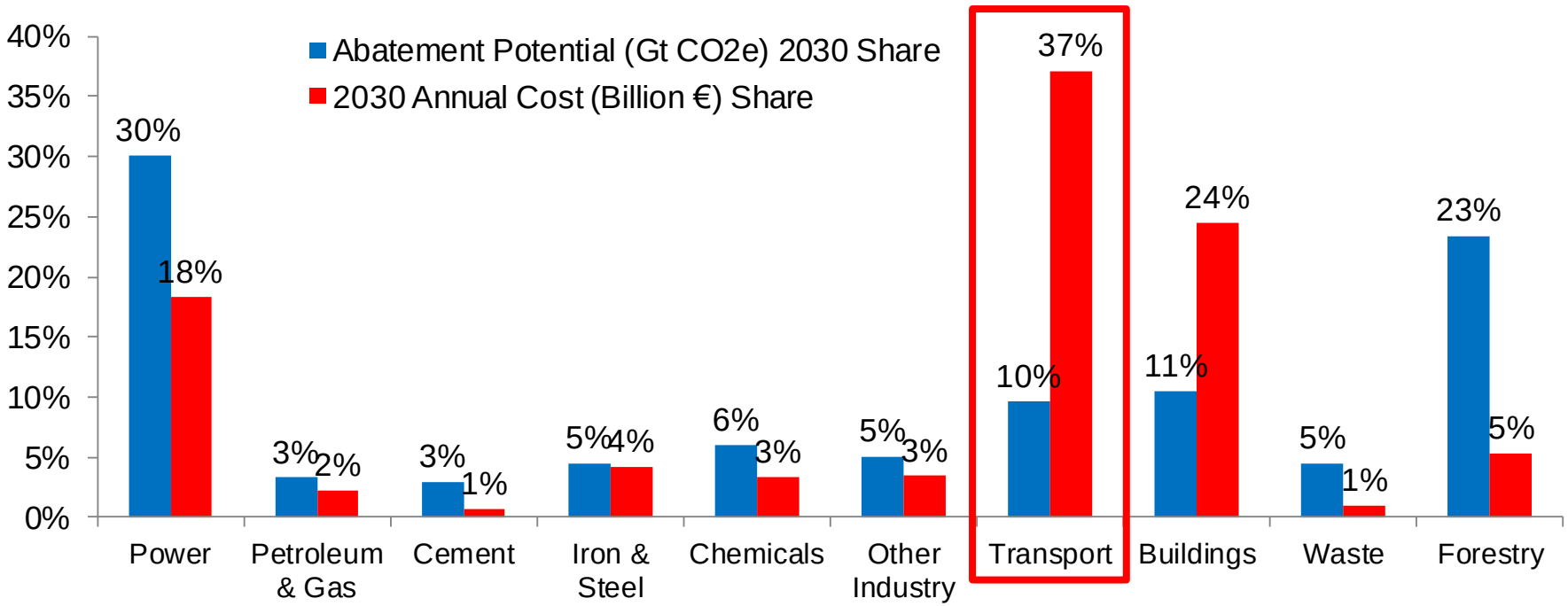
Shifting from a 4 degree scenario to a 2 degree scenario requires a 50% reduction in transport-related CO_2 emissions

Main reductions in cars / LCVs and planes.

Trucks and ships more difficult to decarbonise



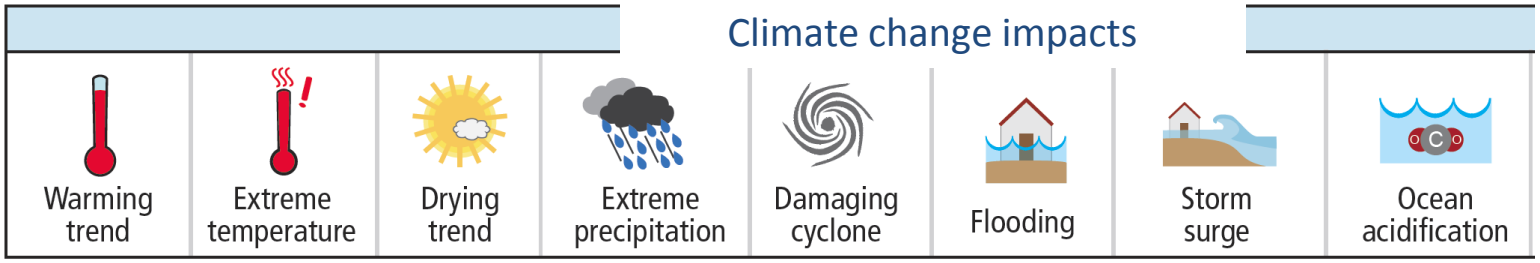
Sectoral Comparison of Carbon Abatement Potential and Cost by 2030



Source: McKinsey (2009) Pathways to a Low Carbon Economy

Impact of the decarbonisation of other sectors on the future demand for transport?

Relationship between Climate Change Mitigation and Adaptation



How will the need to climate-proof transport systems affect mitigation efforts?

How much extra transport will be generated by the adaptation of our built environment, construction of new settlements, redistribution of population etc?

May need to relax the assumption that climate change will be linear.

May need to intensify adaptation efforts at relatively short notice.

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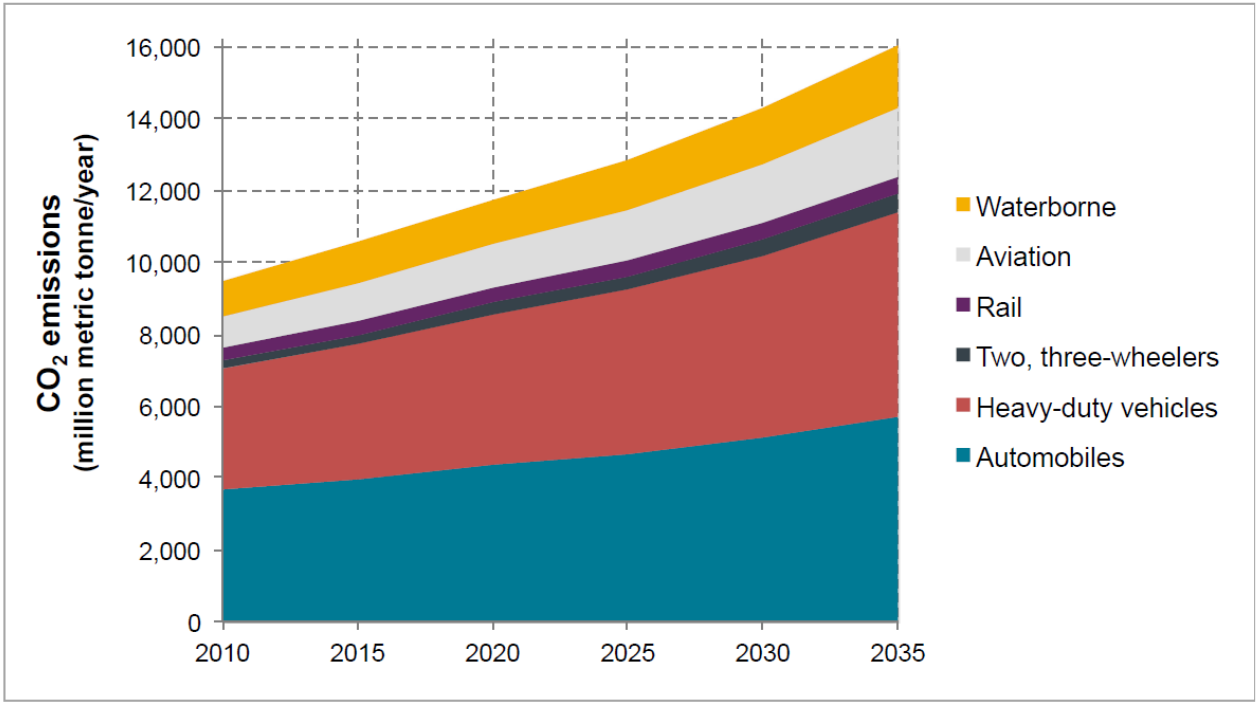
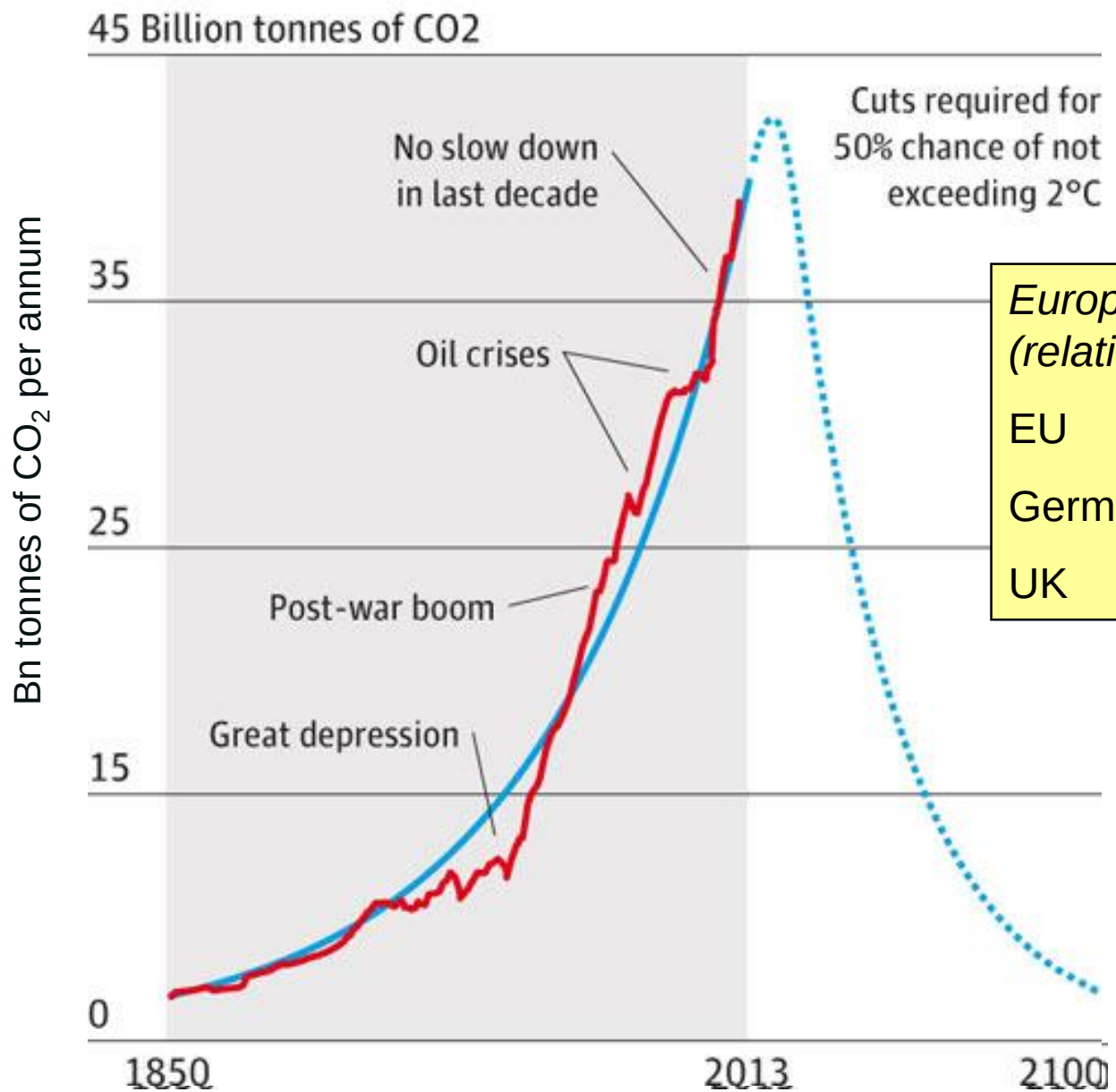
CO_2 Emissions from Heavy Duty Vehicles

- Outside EU and US, HDVs account for the largest share of transport energy use
- Global HDV energy use and CO_2 emissions forecast to grow by 72% between 2010 and 2030 (outpacing all other transport modes) (ICCT)



Source: ICCT Roadmap (2014)

The Scale of the Climate Change Challenge



European climate change targets (relative to 1990 base line):

EU
Germany
UK

*80% reduction in **total** CO_2 emissions by 2050*

Source: Clark, 2013