

Role of fossil fuel in transport

Stef Proost

KULeuven

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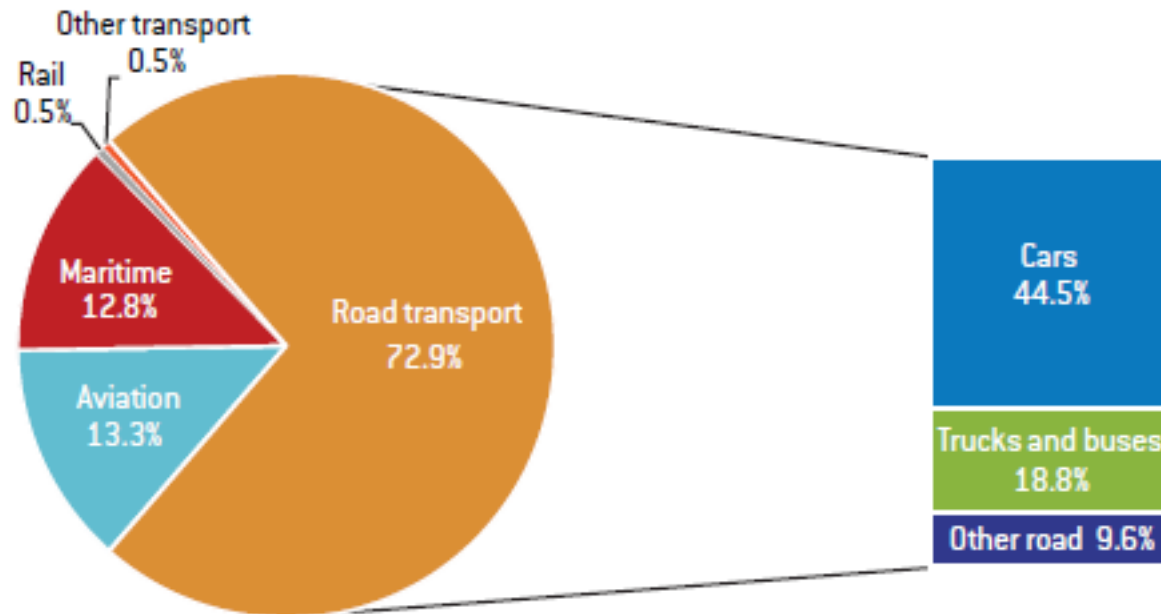
outline

- Some data
 - Transport sector is mainly road and uses oil
 - Transport activity is growing strongly mainly outside the OECD
 - Highest growth in road (car ownership outside OECD), aviation (x4) and international freight
- Some economics
 - Road taxes and carbon taxes
 - International climate agreements
- Where do we go?

GHG Emissions in transport sector in EU:

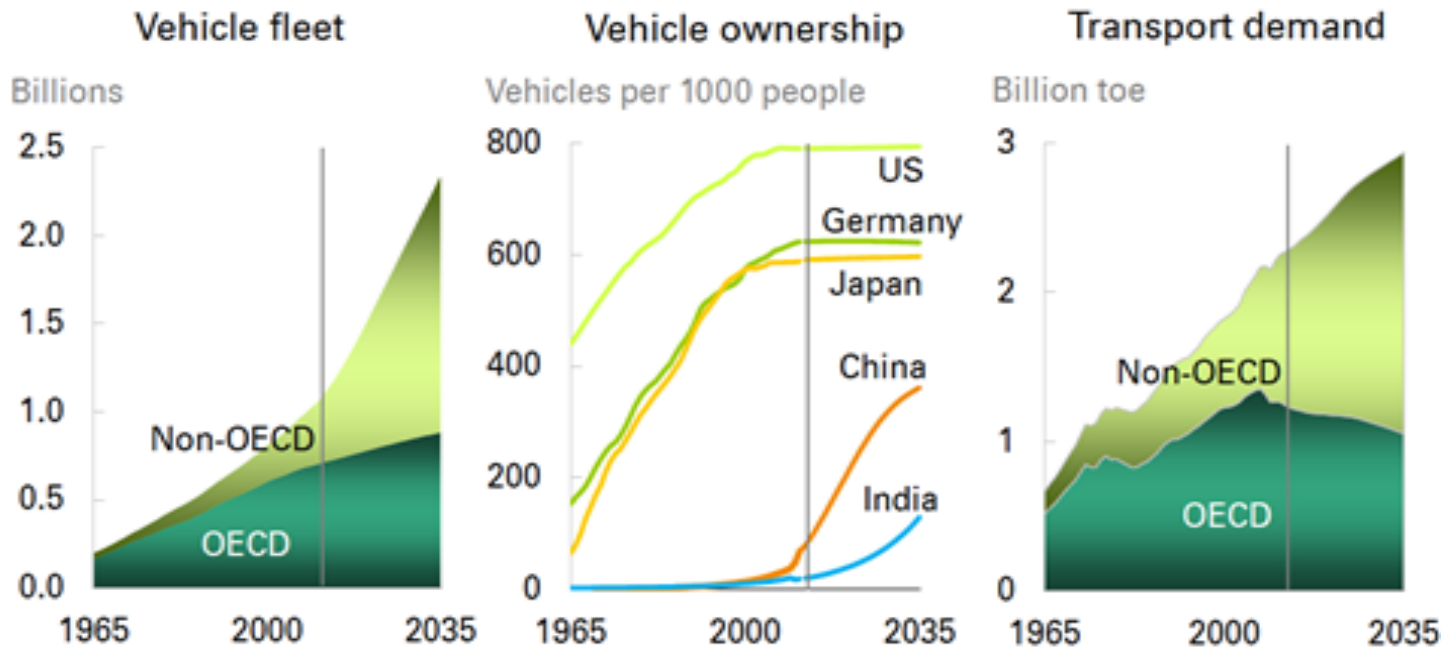
transport =25% of total GHG emissions

- mainly road, air and maritime using oil -

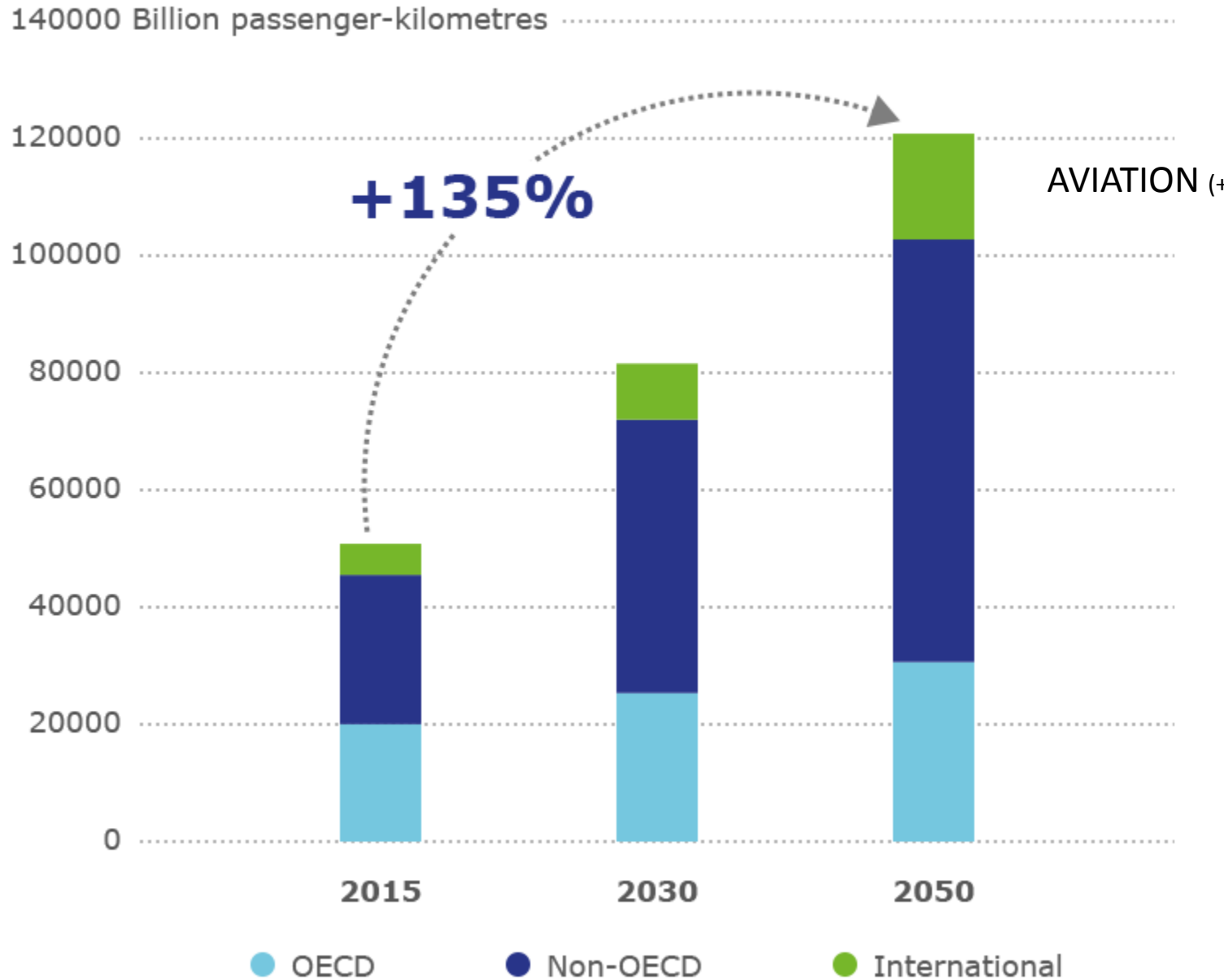


Transport activity is growing strongly outside OECD – road (cars, trucks)

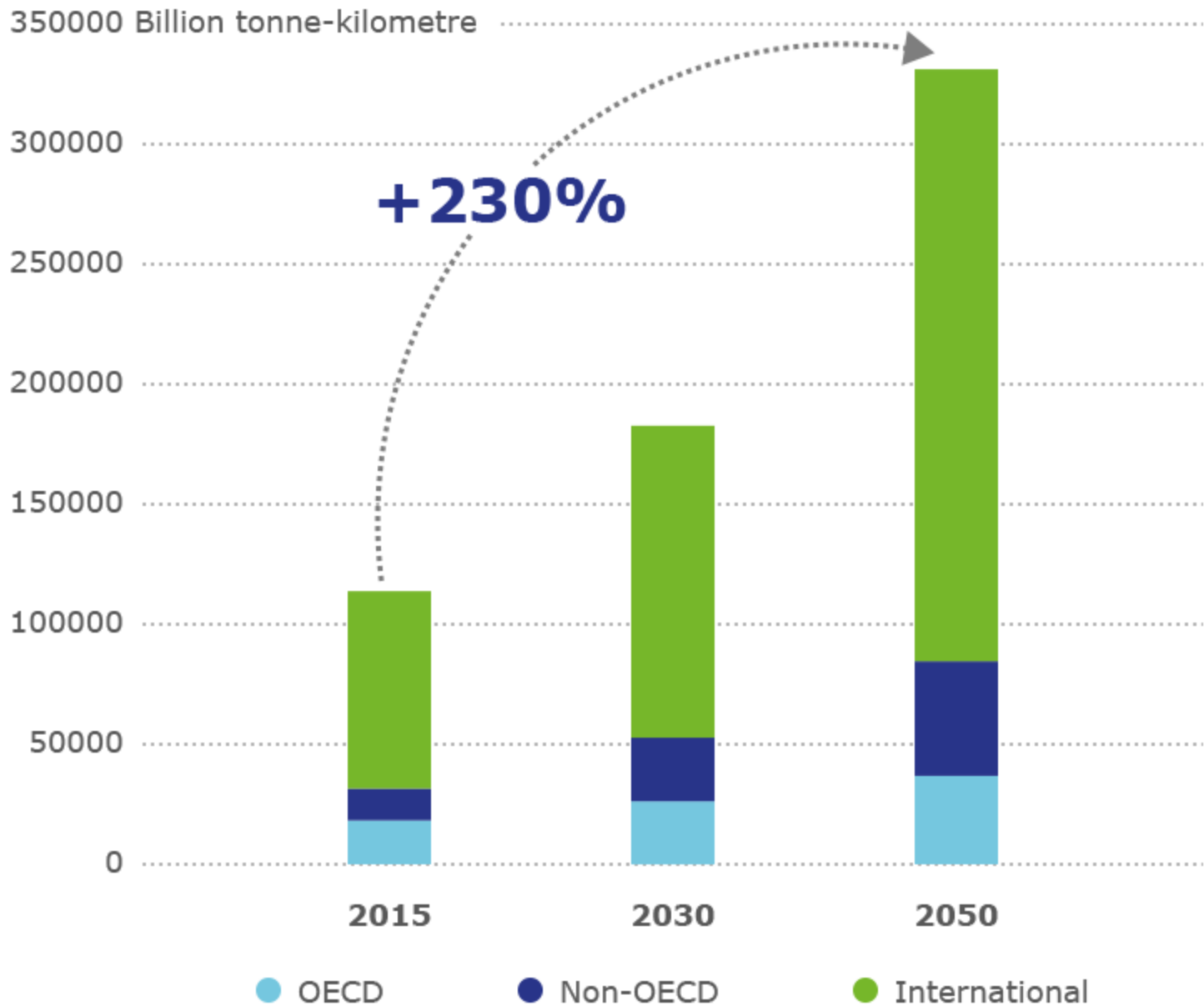
Vehicle numbers are set to grow rapidly in the non-OECD



Passenger transport volumes



Freight transport volumes



14000 Million tonnes

12000

10000

8000

6000

4000

2000

0

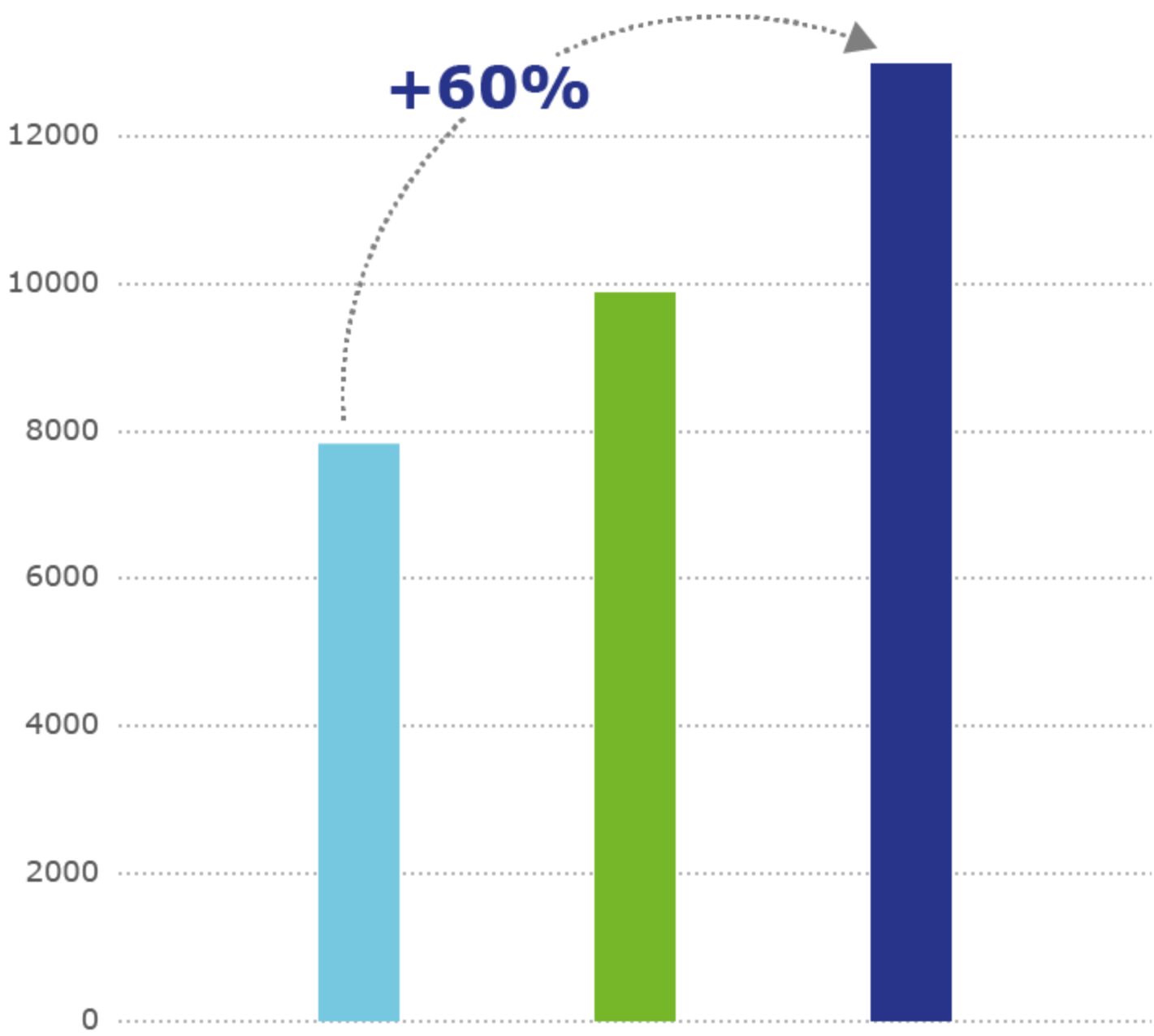
2015

2030

2050

+60%

GH



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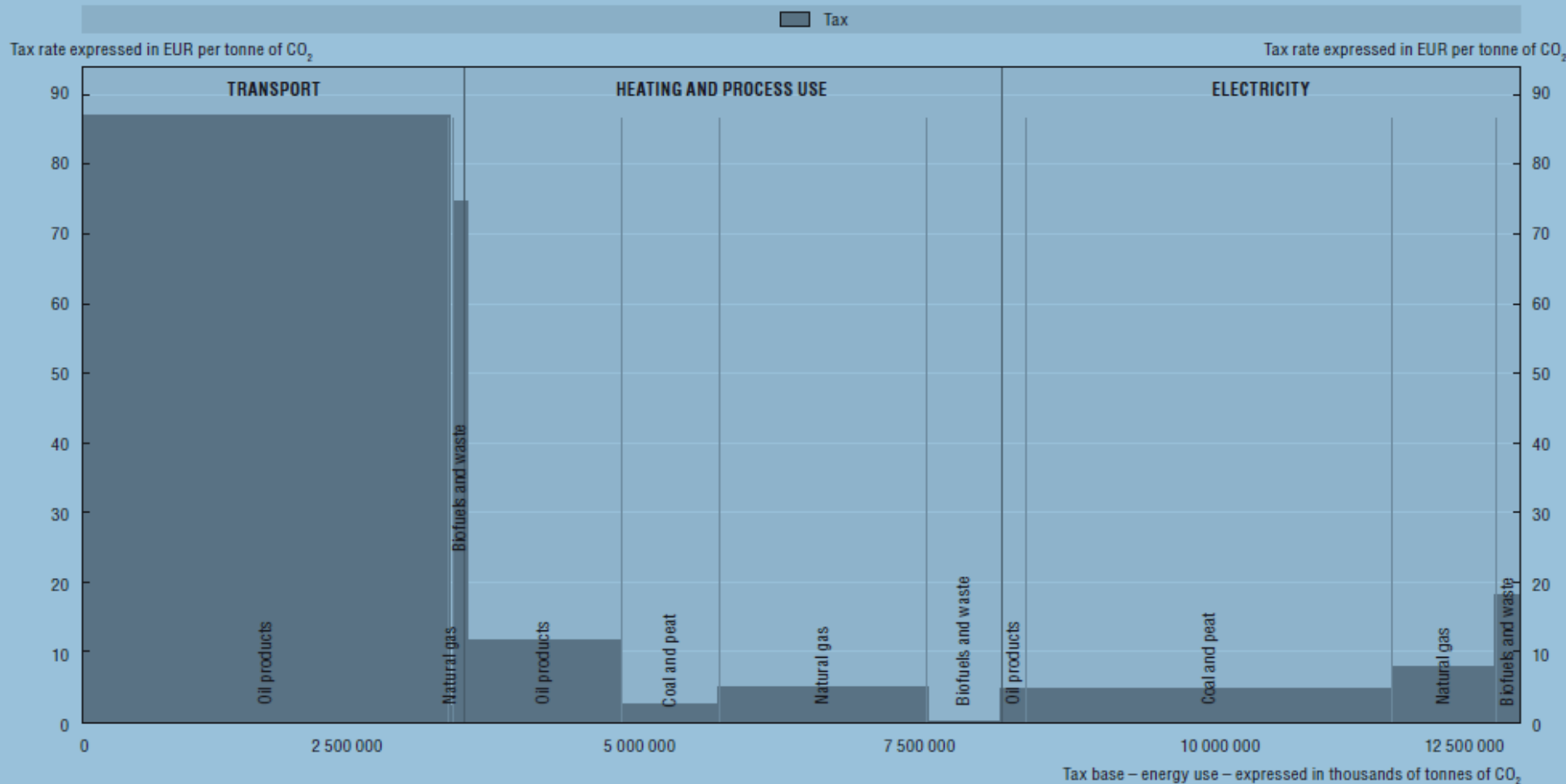
Road taxes, air pollution and climate change

- Conventional air pollution is progressively being taken care of by better fossil fuel engines and better fuels (gasoline: divided by factor is winning)
- For GHG, the cheapest way to reduce GHG is to use a common carbon tax or a common tradable permit system
- Many countries (EU, Japan, ..) have already a very high carbon tax (but they call it gasoline+diesel tax) compared to other sectors
- This means that in terms of cost-efficiency, addressing GHG emissions in other sectors is a priority
- The gasoline tax serves for the moment mainly to control the level of congestion – a more fuel efficient car increases congestion externalities

Road taxes and carbon taxes

tax rates in OECD per ton of CO₂ (source OECD TEU, 2015)

Figure 6. Taxation of energy in the OECD area on a carbon content basis



Source: OECD calculations. Tax rates are as of 1 April 2012 (except 1 July 2012 for AUS); emissions are based on data for 2009 from IEA (2011a).

Climate issue and international negotiations

- Climate is a world issue and we need to agree internationally to cut emissions
- But international agreements (Kyoto, Paris) do not deliver what they promise because there is no sanction mechanism
- Then unilateral reductions in oil demand by some regions (EU, Japan) risk to lead to postponing emissions rather than to reducing emissions because of the large rent in the oil price: the cheap oil will be sold to other countries and over a longer time span.

Where to go 1?

- CAR technology is developing rapidly – what can we expect?
 - EU+Japan high gasoline prices and strict emission standards forces car manufactures to develop fuel efficient cars – this technology spills over to the rest of the world and reduces emissions world wide – it buys time in terms of GHG emissions
 - Road pricing will substitute high fuel excises
 - When electric cars are fuelled by renewable energy and can compete with gasoline cars that pay the extraction cost plus a 30 \$/ton of CO2 gasoline tax (rather than the +200 \$ tax now) - the remaining oil will be left in the ground

Where to go 2?

- TRUCK technology is catching up but diesel trucks are more difficult to substitute than gasoline cars
 - Natural gas (US)+Biofuels and Hydrogen are options
 - But also diesel fuel carries already a high carbon tax (100\$/ton of CO₂)
 - So as it stands now, they will be slower to switch to carbon free fuels
- Aviation (difficult to substitute) and maritime transport (more easy to substitute) are not taxed at all because of international fuel tourism
 - Among the last to substitute

Summing - up

- Substituting fossil fuels in cars will be slow because
 - Climate change economics tells us that there are cheaper options to reduce GHG
 - Oil exporters will protect their rents and make sure they sell their oil reserves by price decreases
- Substituting fuel use in trucks and air transport will be even slower because
 - It is technically more difficult