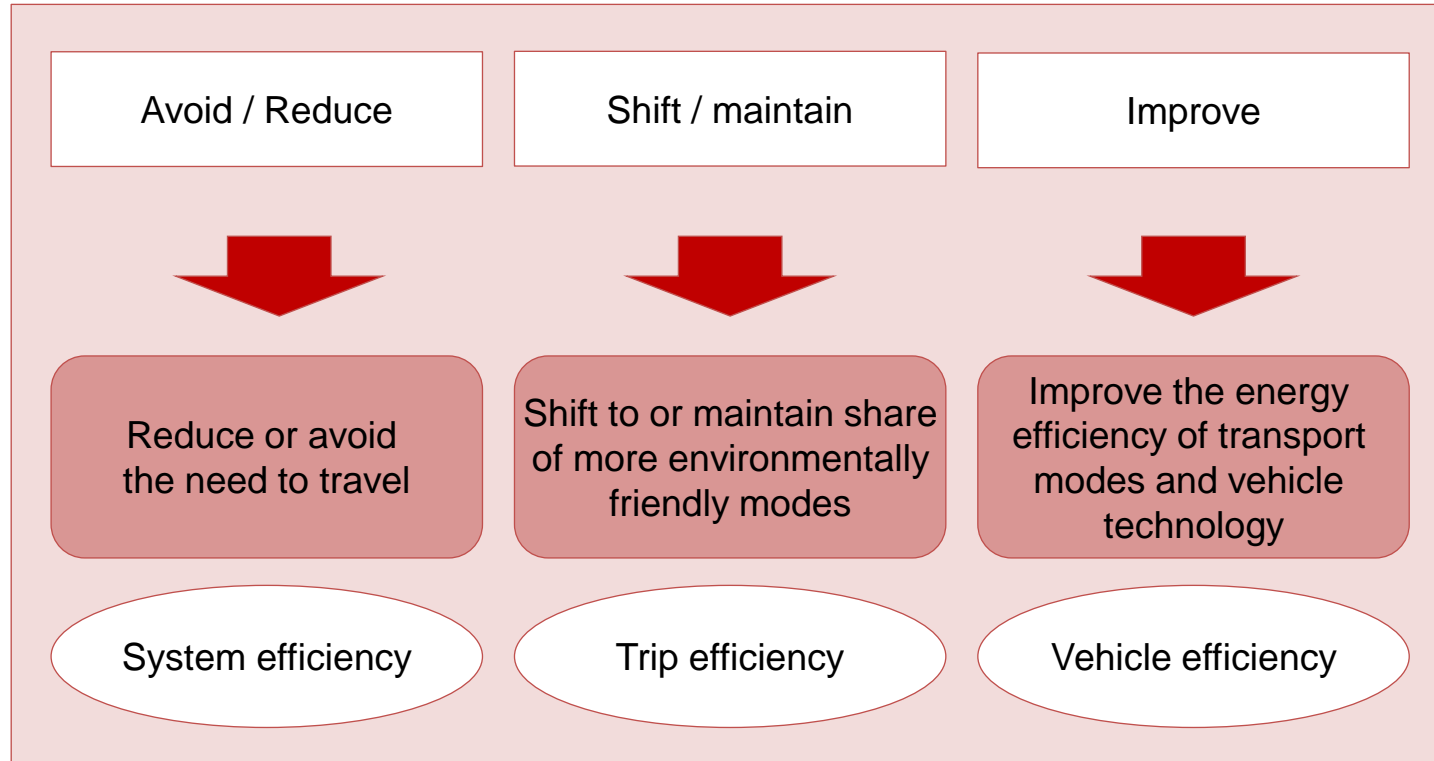


# Ricardo-AEA

## Introduction to policies and measures in transport

Daniel Forster and James Harries, Ricardo-AEA

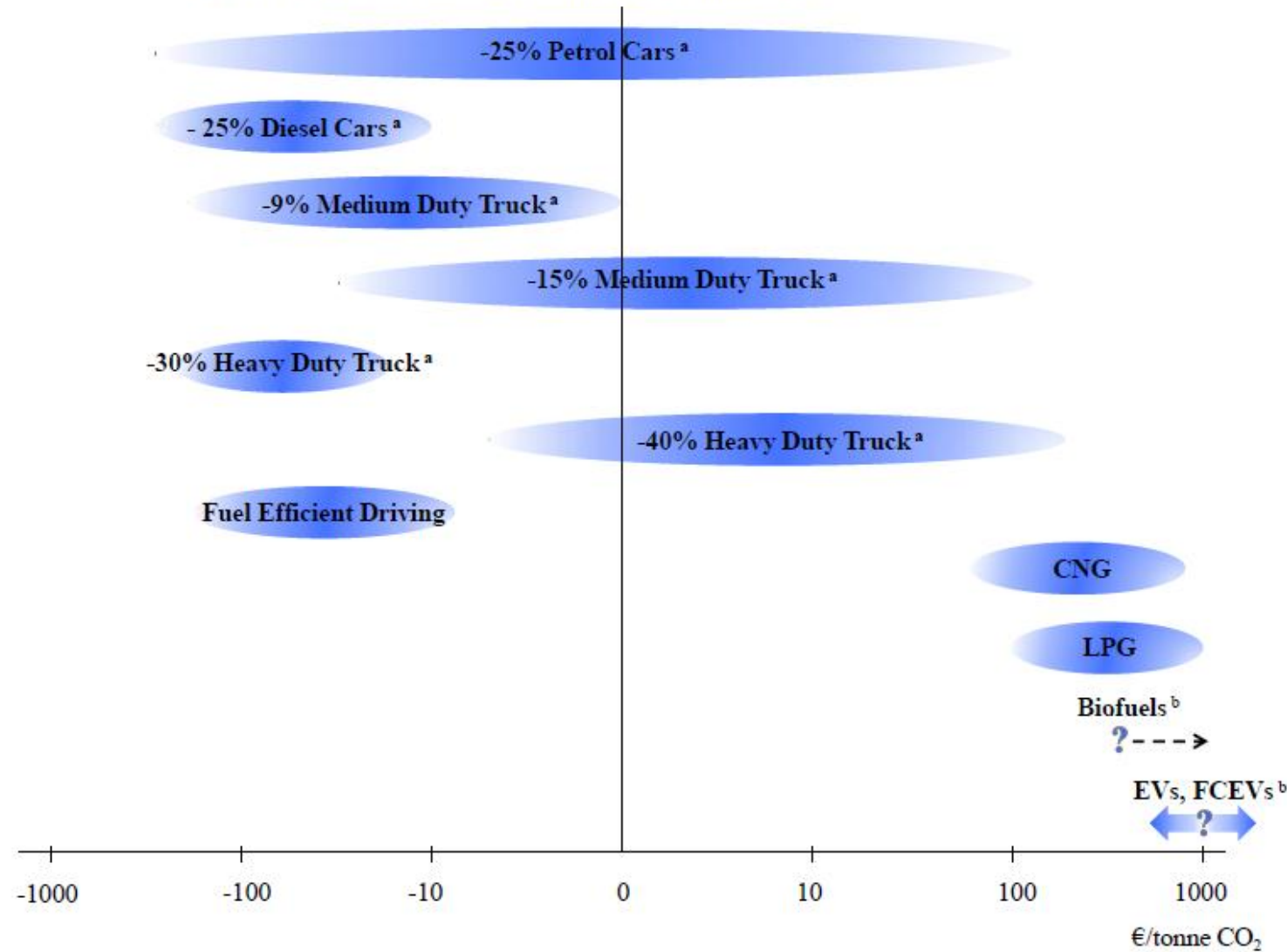
Objective of policy – Avoid, Shift, Improve



Other considerations:

- Timescale – short term vs long term
- Abatement potential and costs
- National circumstances

Figure 1: Indicative ranges of short term (2020) abatement costs of various technical and behavioural GHG reduction options for passenger cars and HGVs



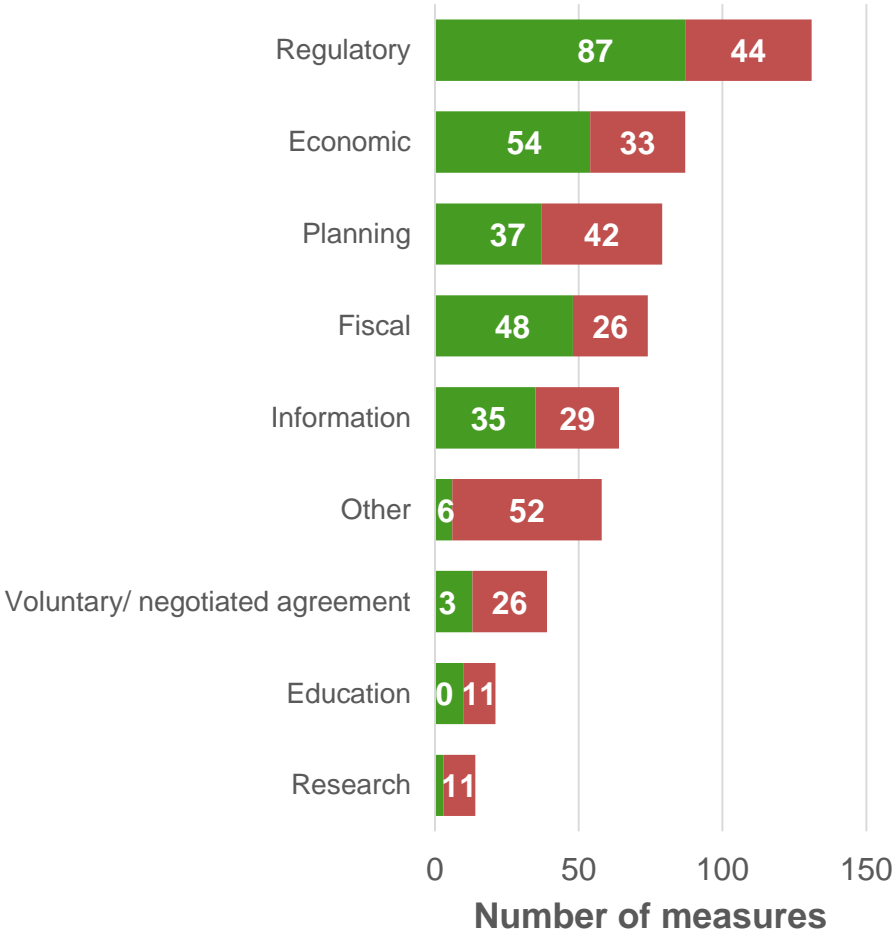
Source: <http://www.eutransportghg2050.eu/cms/assets/Uploads/Reports/EU-Transport-GHG-2050-II-Task-8-FINAL-29July12.pdf>

# Transport policies across EU by type of instrument

All Member States

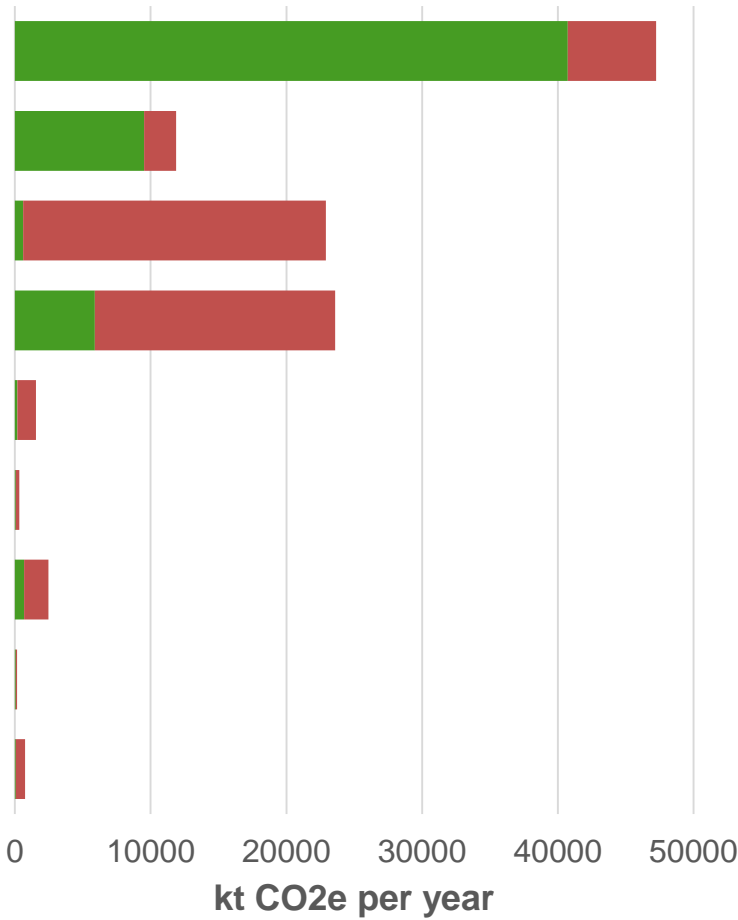
Number of policies

■ EU-wide ■ National



CO<sub>2</sub> savings in 2020

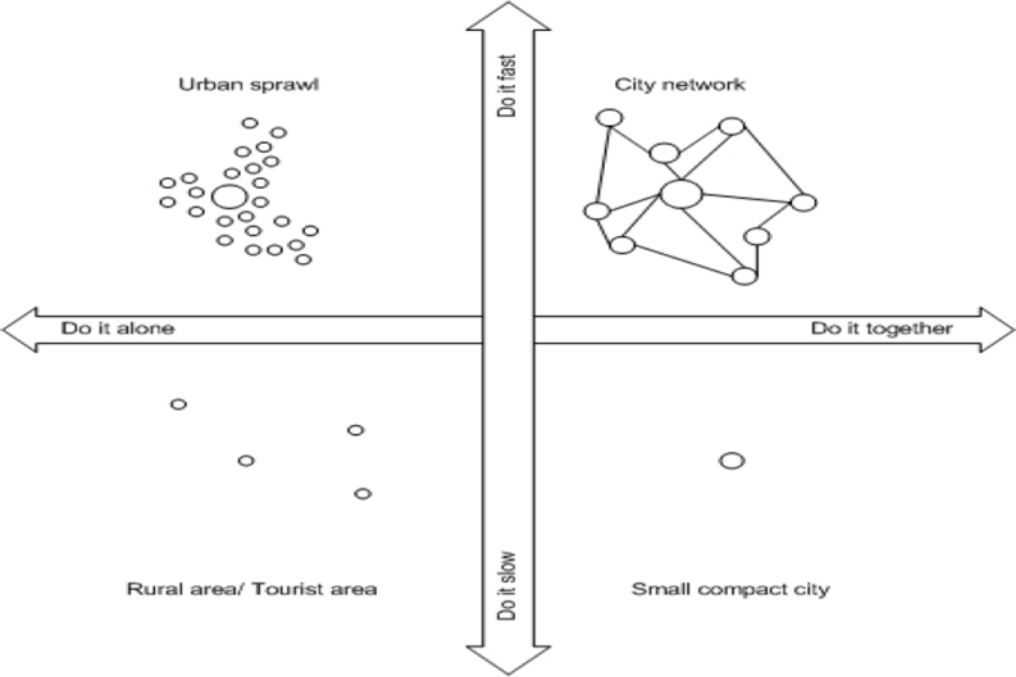
■ EU-wide ■ National



# Member State circumstances and context

JRC Technical Report – quantifying the effects of sustainable urban mobility plans

- <http://ftp.jrc.es/EURdoc/JRC84116.pdf>

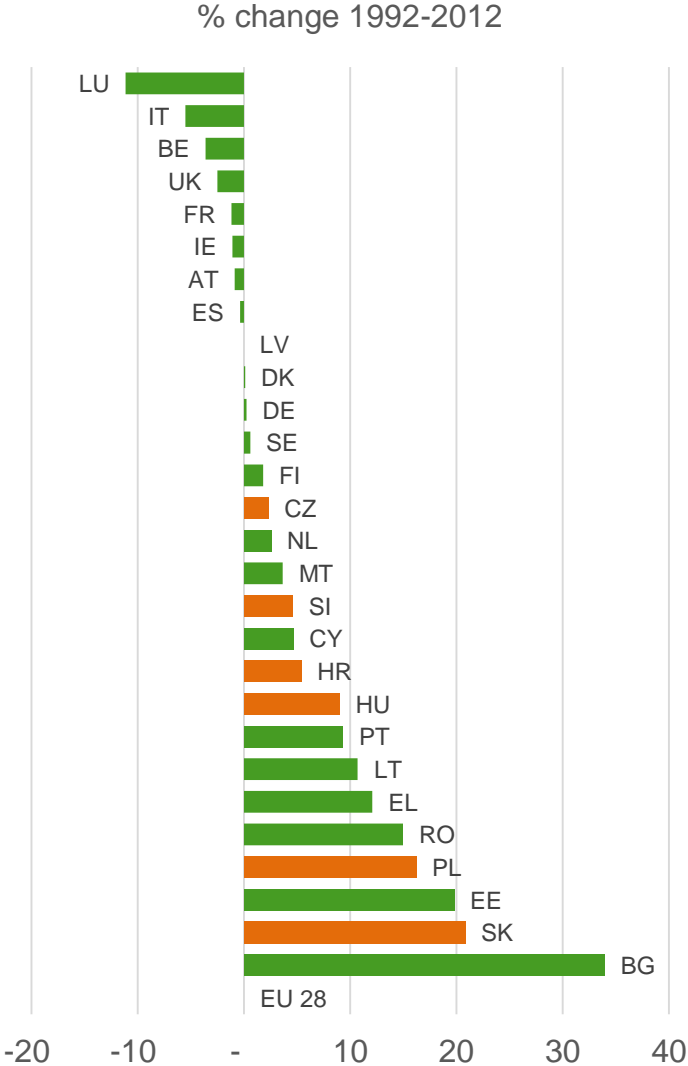
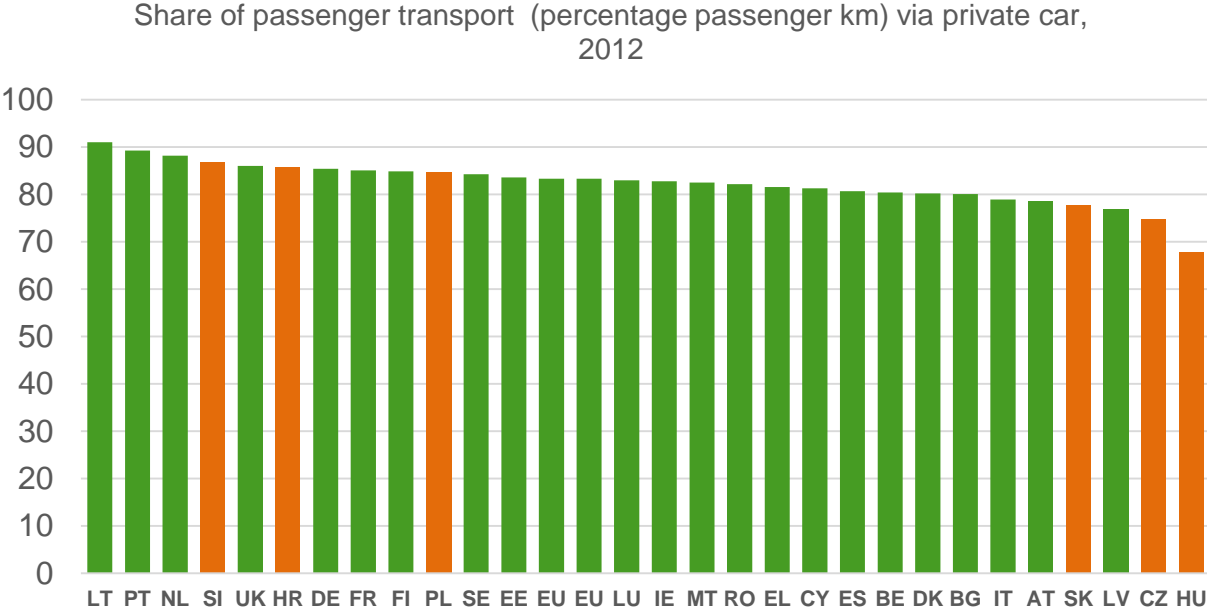


Measure	City Network	Urban Sprawl	Tourist / Rural	Small
Investment and maintenance, including safety, security and accessibility	LOW	MED	LOW	LOW
Public transport coverage (line density, stop density, walking distances between stops) & public transport frequencies.	LOW	LOW	MED	MED
Interoperable ticketing and payment systems	LOW	LOW	LOW	LOW
Taxi Services (individual and collective)	LOW	LOW	LOW	MED
Dedicated walking and cycling infrastructure investment and maintenance & Bike sharing schemes	LOW	MED	LOW	LOW
Improvement of the efficiency of city logistics by the use of ICT	MED	LOW	LOW	LOW
Measures to improve the energy efficiency and environmental performance of vehicles and/or use of alternative modes.	MED	LOW	MED	LOW

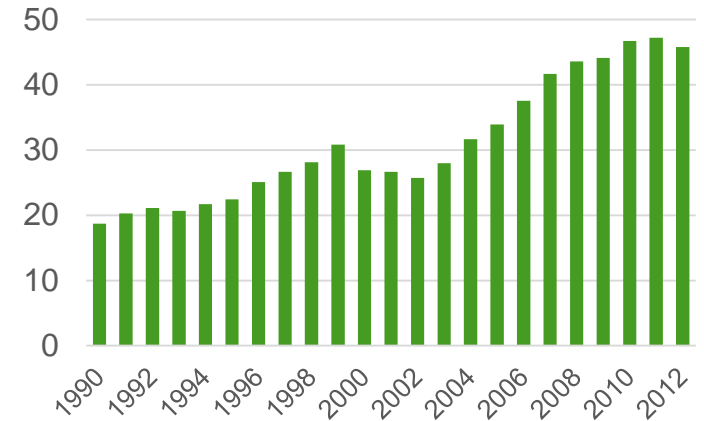
- **Public transport services**
  - Dedicated walking and cycling infrastructure & bike sharing schemes
- **City logistics and distribution**
  - Improvement of the efficiency of city logistics by the use of ICT
- **Mobility management**
  - Car sharing & carpooling schemes
- **Integration of transport modes**
  - Park and Ride areas
- **Road transport**
  - Reallocation of road space to other modes of transport, e.g. dedicated bus lanes
- **Marketing campaigns and education**
  - Information and marketing campaigns
  - Promotion of eco-driving
- **Access restriction schemes**
  - Low emission zones
- **Introduction of clean technologies and alternative fuels**
  - Investment in infrastructure for alternative fuels

# Key trend: Passenger cars are increasing their popularity in eastern Europe

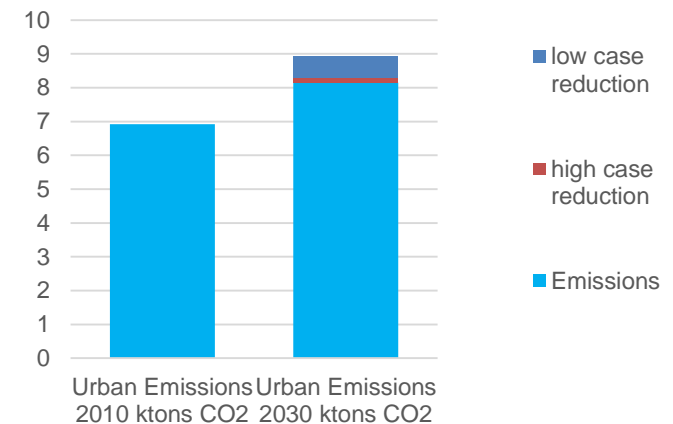
- The use of passenger cars for personal movement has increased substantially in the last 20 years
- The 6 countries analysed have all increased car use above the EU average



- Emissions from transport have increased since 1990 (both in absolute and relative term) and will continue to increase.
- The share of passenger transport via private car has increased by 16 percentage point between 1992 and 2012 – now it stands at 73%
- There is currently no ownership tax and fuel taxes are below EU average
- Urban transport emissions are expected to increase substantially by 2030, even with the implementation of ambitious reduction strategies (JRC, 2013)



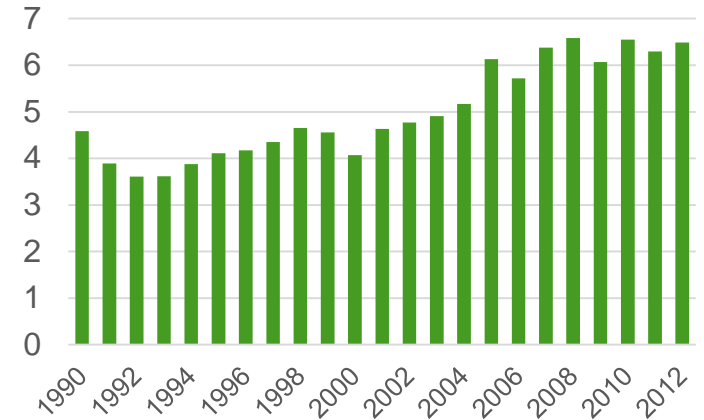
**Emissions from Road transport (million tonnes CO2 eq)**



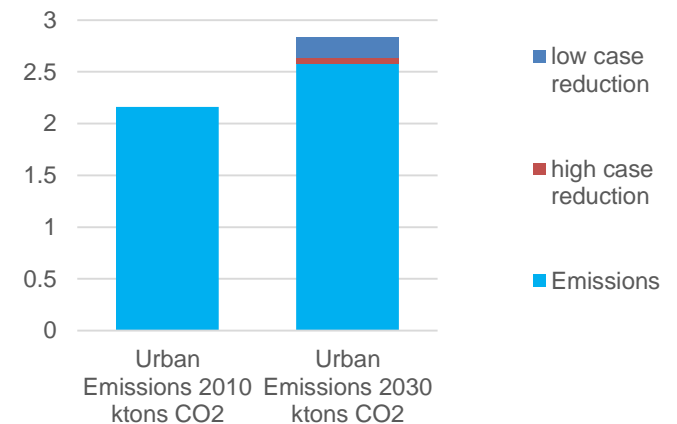
**Urban emissions - potential CO2 reductions in 2030 (million tonnes CO2 eq)**



- Emissions from transport have increased in the last 20 years, even though since 2011 they have actually started decreasing.
- At the same time, the relative share of emissions from transport among Slovakia total emissions is increasing
- The share of passenger transport via private car has increased by 21% between 1992 and 2012 (second highest increase in Europe) – now it stands at 79%
- Registration and ownership taxes for private cars are very low

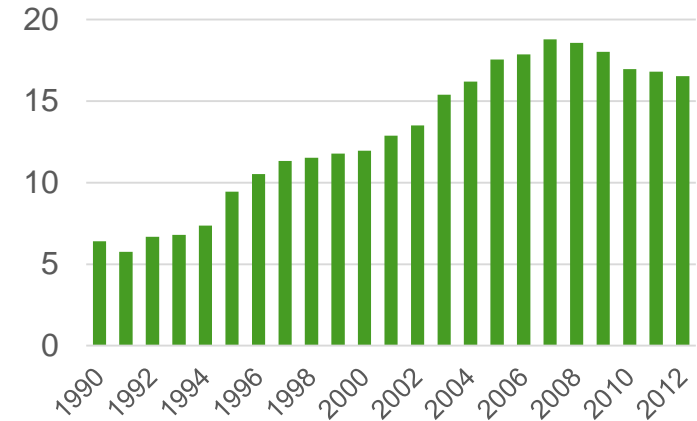


**Emissions from Road transport (million tonnes CO2 eq)**

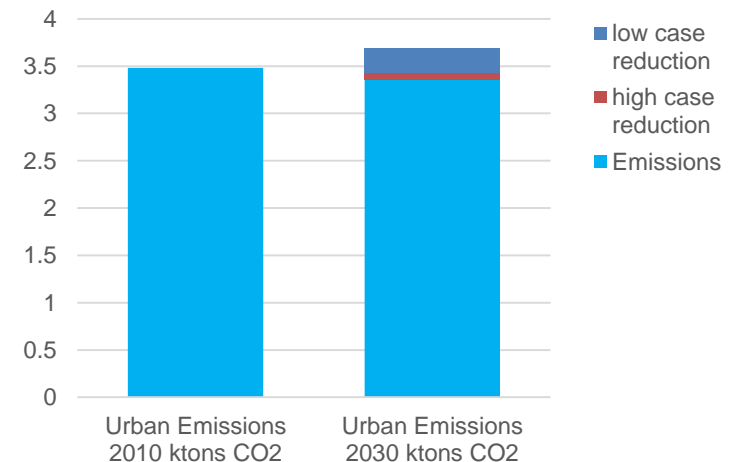


**Urban emissions - potential CO2 reductions in 2030 (million tonnes CO2 eq)**

- Emissions from transport have increased in the last 20 years, but they are decreasing since 2008.
- The share of passenger transport via private car has increased by 2 percentage points between 1992 and 2012, and there is still a relatively low use of private transport for personal movement
- Total emissions from urban transport are set to increase, but the increase can be compensated by policy options (JRC, 2013)

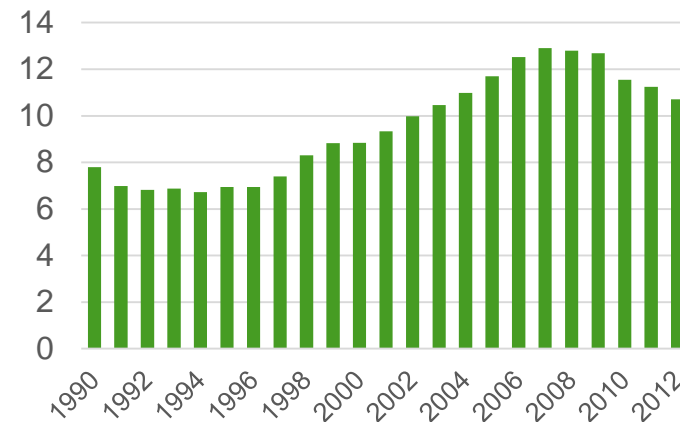


Emissions from Road transport (million tonnes CO2 eq)

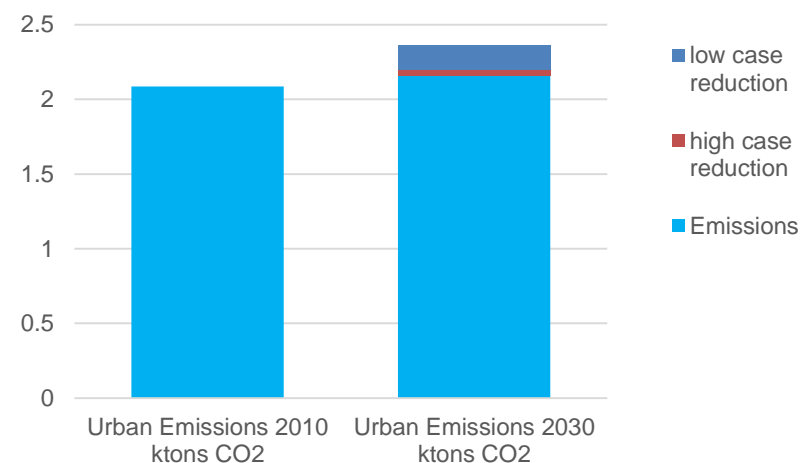


Urban emissions - potential CO2 reductions in 2030 (million tonnes CO2 eq)

- National Transport Strategy under development, includes targets for 2020, 2030, and 2050 with an action plan for 2014-2020.
- Hungary has the lowest share of passenger transport via private car in EU, even after a 10 percentage point increase in the last 20 years
- Emissions from urban transport will stay substantially the same (JRC, 2013)

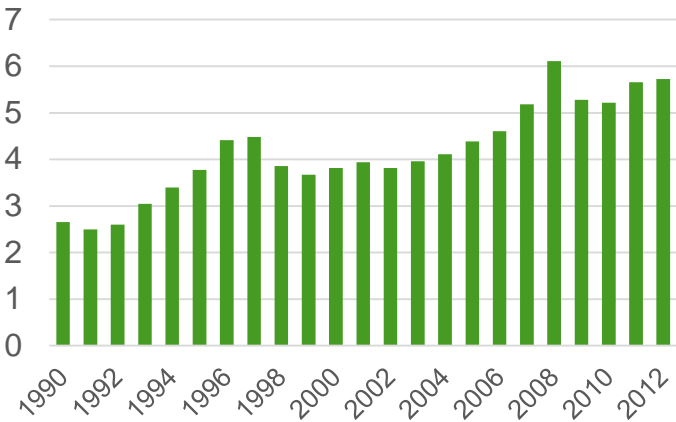


**Emissions from Road transport (million tonnes CO2 eq)**

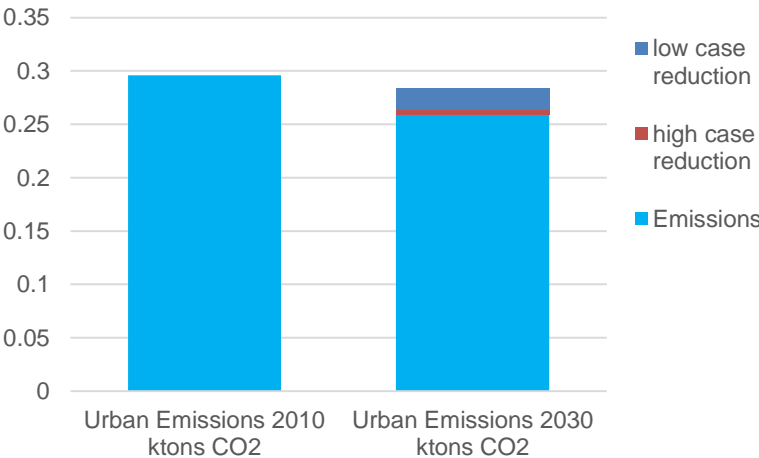


**Urban emissions - potential CO2 reductions in 2030 (million tonnes CO2 eq)**

- High share of transport via road, increased by 5 percentage points in the last 20 years
- Urban emissions are predicted to decline, even without the deployment of new policies (JRC, 2013)

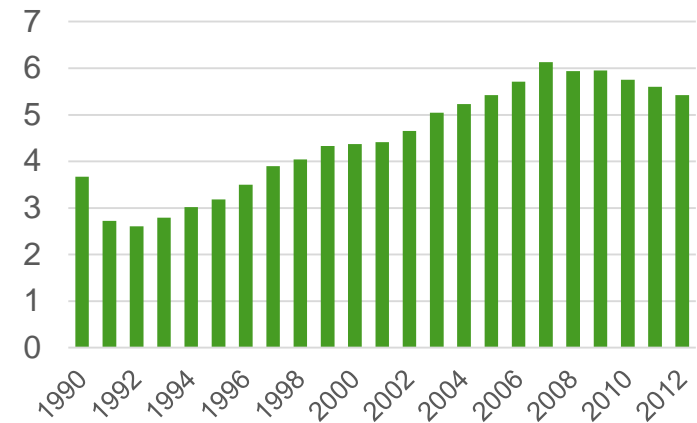


Emissions from Road transport (million tonnes CO2 eq)

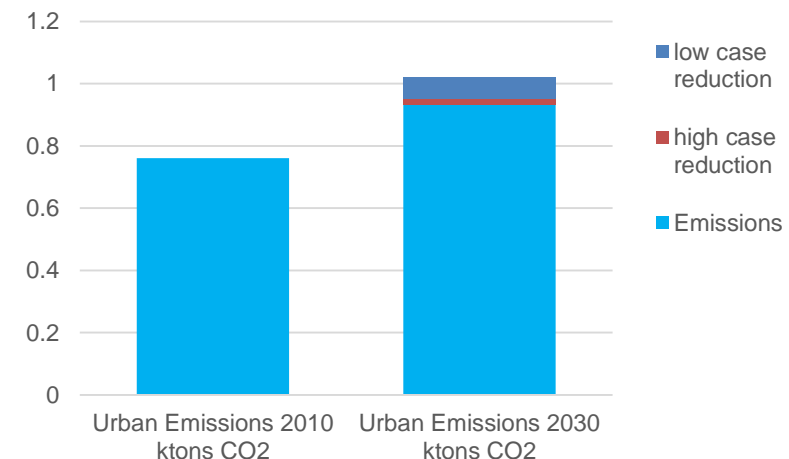


Urban emissions - potential CO2 reductions in 2030 (million tonnes CO2 eq)

- Croatia will see a substantial increase in Urban emissions from transport, while overall total transport emissions have been decreasing since 2006
- Croatia has a rather high share of passenger km via road (86%), after the increase seen in the last 20 years
- New policies are trying to reverse these trends, focusing on rail transport and urban schemes



**Emissions from Road transport (million tonnes CO2 eq)**



**Urban emissions - potential CO2 reductions in 2030 (million tonnes CO2 eq)**

# Any questions?

## **James Harries**

Ricardo-AEA Ltd  
The Gemini Building  
Fermi Avenue  
Harwell, Didcot,  
OX11 0QR

**T:** 01235 75 3272  
**E:** james.harries@ricardo-aea.com  
**W:** www.ricardo-aea.com



	ALL Member States	
	Number of related measures	Projected savings 2020 (kt CO <sub>2</sub> e)
National-level Policies	165	66,603 <i>(% of the total transport emissions in 20XX)</i>
Transport: Regulation on CO <sub>2</sub> from cars 2009/443/EC	19	28,847
EU ETS directive 2003/87/EC as amended by Directive 2008/101/EC and Directive 2009/29/EC	8	24,864
Biofuels Directive (Directive 2003/30/EC)	15	20,079
RES Directive 2009/28/EC	18	12,127
The interoperability of the rail system within the Community (Directive 2008/57/EC)	1	5,700
Fuel Quality Directive 2009/30/EC	4	5,385
Infrastructure charging for heavy goods (revised Eurovignette) 2006/38/EC	9	4,561
End-use efficiency and energy services 2006/32/EC	20	4,470
Clean and Energy efficient road transport Directive 2009/33/EC	36	4,196
Taxation of energy products and electricity (Directive 2003/96/EC)	13	4,119
Regulation on CO <sub>2</sub> from vans No 510/2011	12	1,719

Note, based on data reported by Member States, Incomplete data set



## Target

- Draft bill introducing 6 % reduction target for GHG emissions from fuel and electricity consumed in transport by 2020 compared to 2010. Entities selling or using liquid fuels or electricity used in vehicles have to submit monitoring reports showing they comply with the obligation

## Biofuels

- Support for biofuels and lower-carbon fuels (eg. natural gas) and tax relief for alternative fuel vehicles.
- Tax relief for LPG and biocomponents and promotional prices of gaseous fuels. Funding investments for the production of bio-components, liquid biofuels or other renewable fuels.
- Obligation to increase the share of biocomponents/biofuels in transport fuels (introduction of 10% ethanol petrol)

## ICT and modal shift

- Working on a more efficient and safe rail traffic management system and investing in the modernisation of rail vehicles and infrastructure and electrification of systems.
- Ad hoc activities to promote use of public transport: integrated tickets on designated routes, tickets zone, park and ride:
- Local schemes
  - Static multi-modal route planner (Poznan region).
  - Mobile phone based ticketing application both for long-distance and urban trips by public transport. (Wroclaw)
  - public bike rental system and Online DRT bus scheme (Krakow)

- Slovakia levies an annual vignette for cars and a distance-based road toll for heavy-duty vehicles on specific highways and EURO 6 standards are expected to be introduced in 2015.

## **Biofuels and energy efficiency**

- The transport sector has a biofuel energy content target, an obligatory minimum biofuel quota (3.3% for petrol and 5.4% for diesel) and supports the use of biofuels with reduced excise duties. A Decree is in place determining the requirements for quality of fuels and maintaining the operational evidence on fuels. It defines higher share of biofuel in gasoline and mineral oil, and the duty of providing information on the share of biofuels in transport petrol and diesel.
- Regulation in place to reduce emissions from air conditioning systems in motor vehicles

## **Electric mobility and modal shift**

- A strategy published by the Slovak Association for Electromobility (SEVA) in March 2013 seeks to promote and identify the potential for electric mobility was subsequently adopted by the Ministry of Economy and a joint memorandum between the government and SEVA was signed.
- National Cycling Strategy: Recognition of cycling transport as equivalent transport mode and integration with other modes

## Taxes and incentives

- Incentives for efficient driving and the purchasing of efficient cars, e.g. registration fee charged on vehicles which do not fulfil the EURO 3 vehicle standard and ownership taxes for passenger cars and freight vehicles based on engine size, and weight and number of axles, respectively. No road tax for electric, hybrid, CNG and LPG cars
- EU grant for energy-efficiency measures in transport may be used to replace the oldest and most polluting buses with a total of 154 buses on compressed natural gas (CNG) and construct 10 new CNG filling stations.
- A time-based vignette system for passenger cars, a distance based fee for heavy-duty vehicles and an ownership tax on vehicles for business use are also in place
- Registration tax: Registration fee dependent on EURO emission class of vehicle
- Ownership tax: On vehicles for business use (based on weight and axles) for passengers (based on engine size).

## Biofuels

- The Clean Air Act represents a significant emissions reduction policy and requires a minimum biofuel content (4.1% for gasoline and 6.0% for diesel). Pure biofuels as well as the biofuel content of mixed fuels are exempt from consumption tax
- Biofuel blending obligation: 4.1% for petrol and 6% for diesel, non-compliance fine 1.6€/litre

## Modal shift

- Measures to promote modal shift to more sustainable modes of transportation, e.g. 'Park and Ride', 'Bike and Ride', combined freight systems. Integrated transport system (ITS) with preference for public transport vehicles in most large cities. The National Cycling Strategy is a programming document, in which the Czech Republic commits itself to support cycling and to build bike trails.

## Taxes and incentives

- Measures incentivising the purchasing of efficient cars (e.g. registration tax based on EURO emission standards and engine capacity) but depreciated for second-hand cars.
- Registration tax Registration fee dependent on EURO emission class and engine size of vehicle
- Fuel Tax at the same rate of taxation for diesel and petrol
- E-toll system introduced in 2013 for heavy vehicles of more than 3.5 t is expected to generate more taxes than the former road tariff system.

## Biofuels

- Biofuels and hydrogen are promoted through a biofuel quota of 4.9% for both petrol and diesel, as well as a reimbursement of excise duties on biofuels in the case of vehicles used in the mining industry and water management not driving in public traffic.

## Modal shift

- Modal-shift and increased railway use is promoted through modernisation of trains, railway stations and infrastructure and reduced prices on regional train connections. Moreover, timetables and routes for intercity buses are being optimised. Financial support provided to purchase new CNG buses for public transport.
- Supporting Purchasing CNG buses for Public Transport: Financial support by the government to purchase CNG fuelled buses

## Taxes

- Registration tax partly based on CO<sub>2</sub> emissions and ownership tax based on the engine volume. Additionally, an annual environmental pollution tax, a time-based national vignette system for passenger cars, light trucks and motorcycles, and a distance-based toll for heavy-duty vehicles apply.
- Petrol is taxed at EU average, but it is the highest rate in the new Member States. The tax rate for diesel is significantly lower but this is partly outweighed by the higher CO<sub>2</sub> tax so that diesel is taxed above EU average.
- Eco Fund: for the purchase of efficient/electric vehicles

## Biofuel

- Biofuel quota obligations (4.1% for petrol, 6.0% for diesel) and incentives to purchase electric vehicles, provided mainly by the Eco Fund. Tax exemptions on biofuels existed, but were abolished in April 2014 due to finance consolidation efforts.

## Modal shift

- EUR 8 million allocated for “Park and Ride” measures from the EU cohesion fund.
- Public transport subsidies are available for students and there are efforts to synchronise public transport and establish public transport zones.
- Some city centres have been closed for car traffic and new public bus lines are being implemented.
- Increased investment in railway lines. Ljubljana is also planning to extend the hours during which drivers must pay for parking in the city centre and have monthly parking options for season ticket holders at some parking areas.

## Taxes

- Registration tax on vehicles, based on market value, ownership tax on passenger cars, based on the engine power and the age of the vehicle, special registration duty on cars depending on CO<sub>2</sub> emissions. If the vehicle emits less than 120 g CO<sub>2</sub>/km, taxes decrease significantly, while those with emissions above 130 g CO<sub>2</sub>/km are subject to a higher tax. Grants provided for exchanging highly polluting vehicles for new, cleaner ones.
- Programme to decrease the negative traffic impact on the environment: covers measures aiming to reduce the harmful gases emissions from the traffic sector and includes grant funds for replacement of non-ecological vehicles for passenger and goods with new vehicles with EURO 4 and EURO 5 standard

## Biofuels

- The Act on Biofuels for Transport sets a minimum biofuels content requirement of 10.05% by 2020. Cash incentive for biofuels producers in the form of payments per litre of biofuels produced and placed on the Croatian market. Blending of biofuels into petrol and diesel increased by 2020 (from 1.45% to 9.18%).

## Planning and modal shift

- Planned investments in railroads and river transportation in the Strategic Plan of the Ministry of Maritime Affairs, Transport and Infrastructure for the period of 2014-2016. Several initiatives to increase the attractiveness of rail transport.
- Planning to require the buyers of public transport vehicles in public procurement to take into consideration the energy consumption and the environmental impacts of the vehicles to be purchased.
- Carpooling in Zagreb, "Car-for all" portal: Increase of carpooling within private companies and university
- Park and Ride: Combining car parking with public transport use in cities