

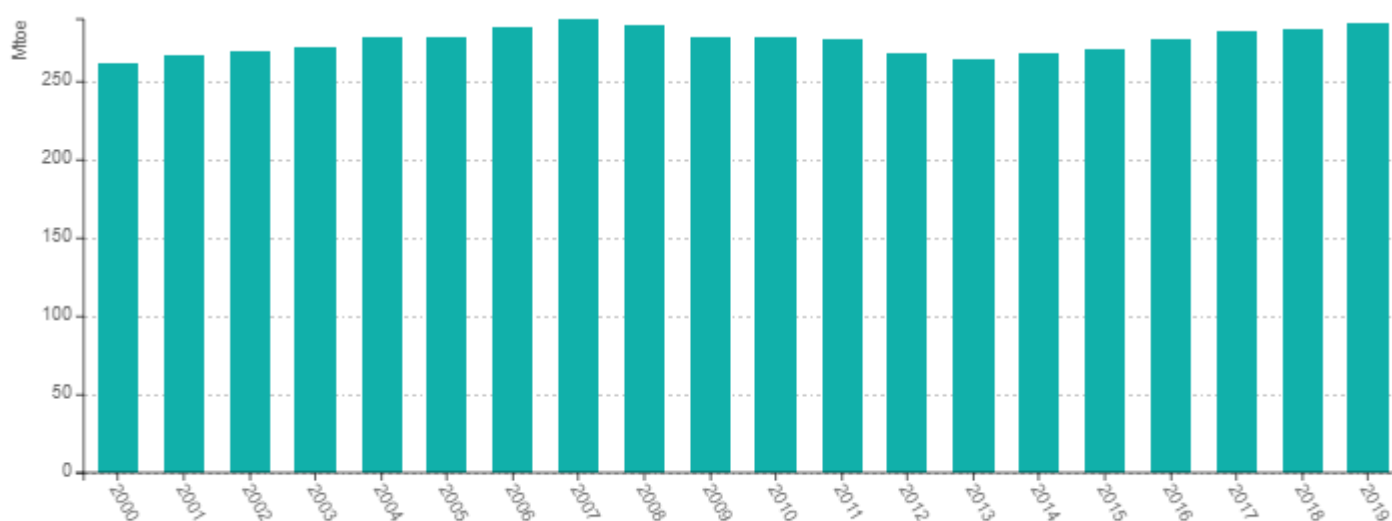
Sectoral Profile - Transport

Energy consumption

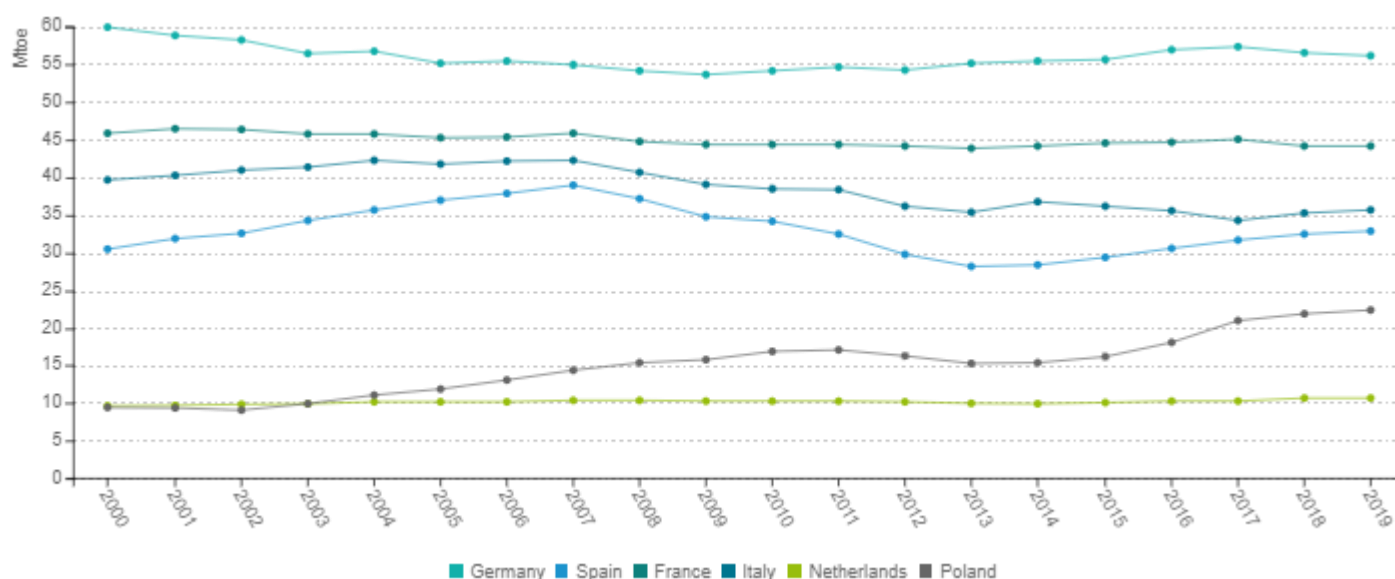
Overview

- The energy consumption of transport is growing again since 2014 at EU level with the economic growth rebound (+1.4%/year), which contrasts with the previous period impacted by the economic crisis (-1.6%/year from 2007 to 2013). This is mainly due to an increasing consumption in some large EU countries, with even a significant increase in Poland (6.6%/year) and Spain (2.6%/year).
- In 2019, the energy consumption of transport of the EU was 10% above its 2000 level.

Energy consumption trends in transport in the EU



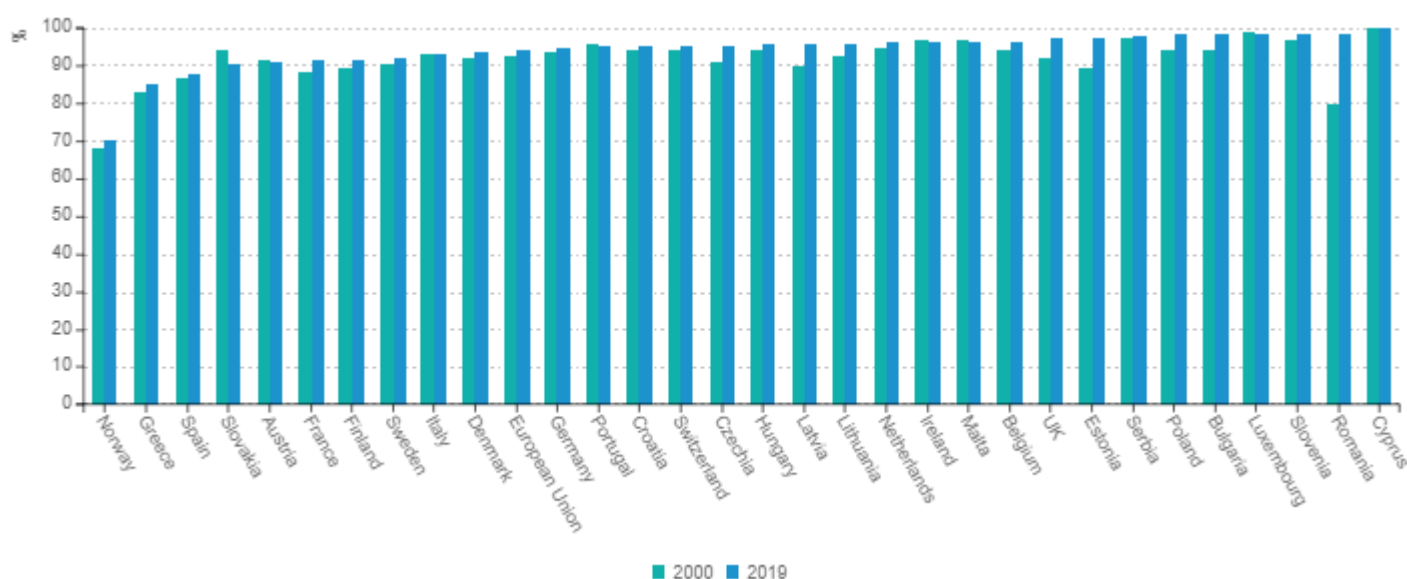
Energy consumption of transport in selected countries



Share of road in transport energy consumption

- Road transport absorbs almost 94% of the final energy consumption of transport (excluding international air) in the EU (range 70-100%).
- Slightly increasing share of road transport at EU level (+1.4 percentage point between 2000 and 2019), with an increasing share in 3/4 of EU countries.

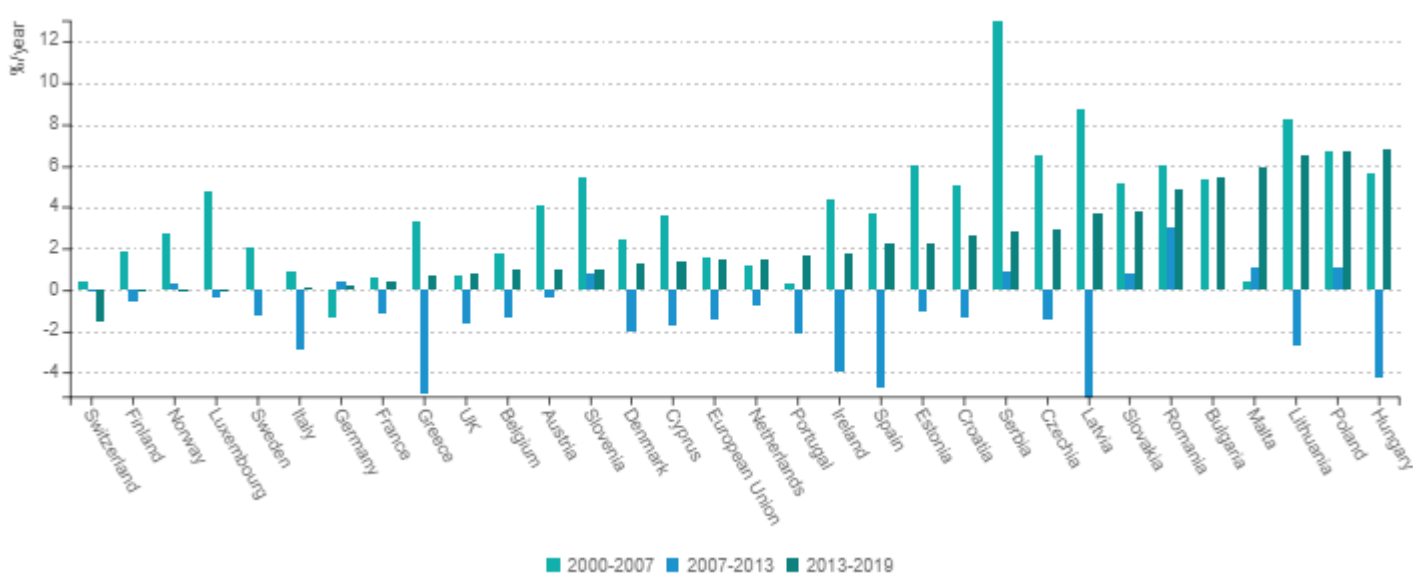
Share of road in transport energy consumption



Trends in road transport

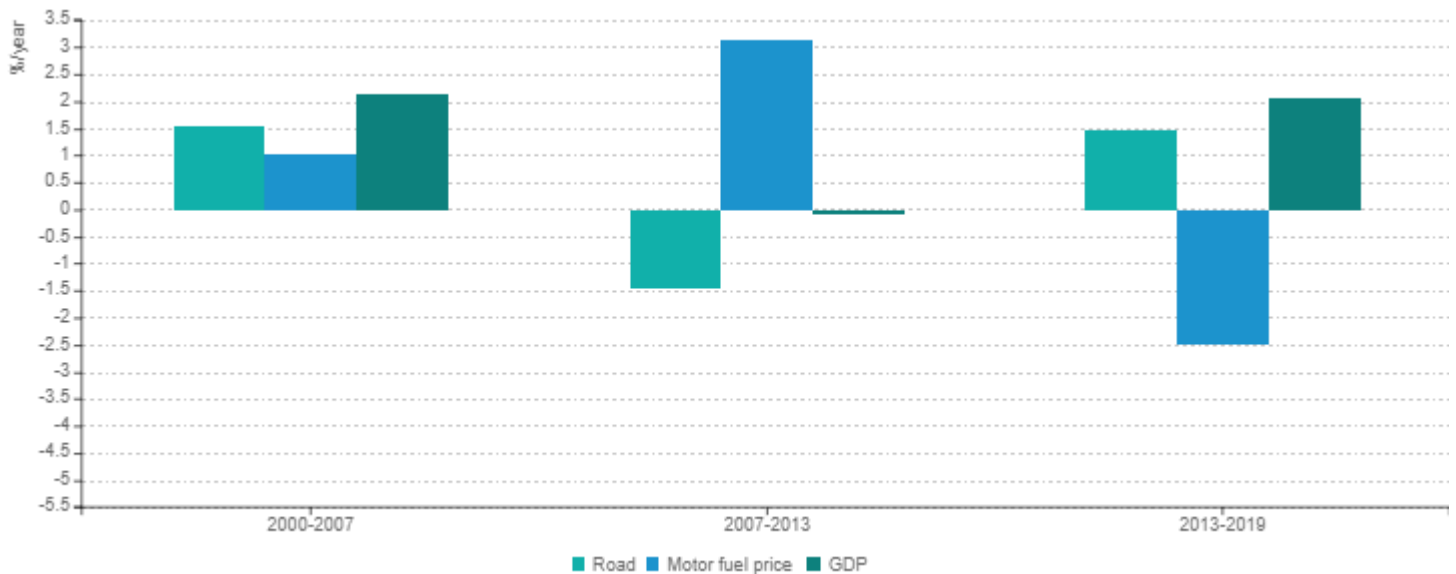
- The consumption of road transport has been increasing in almost all countries except Finland, Luxembourg and Sweden since 2013.

Energy consumption trends in road transport



- Since 2013, road consumption is increasing again (1.5%/year). This trend is mainly explained by the economic growth rebound (2.1%/year increase of the GDP) and significant decrease of motor fuel prices (-2.5%/year).
- Before that, consumption of road transport decreased between 2007 and 2013 (-1.4%/year), after a rapid progression between 2000 and 2007 (1.5%/year) despite increasing motor fuel prices.

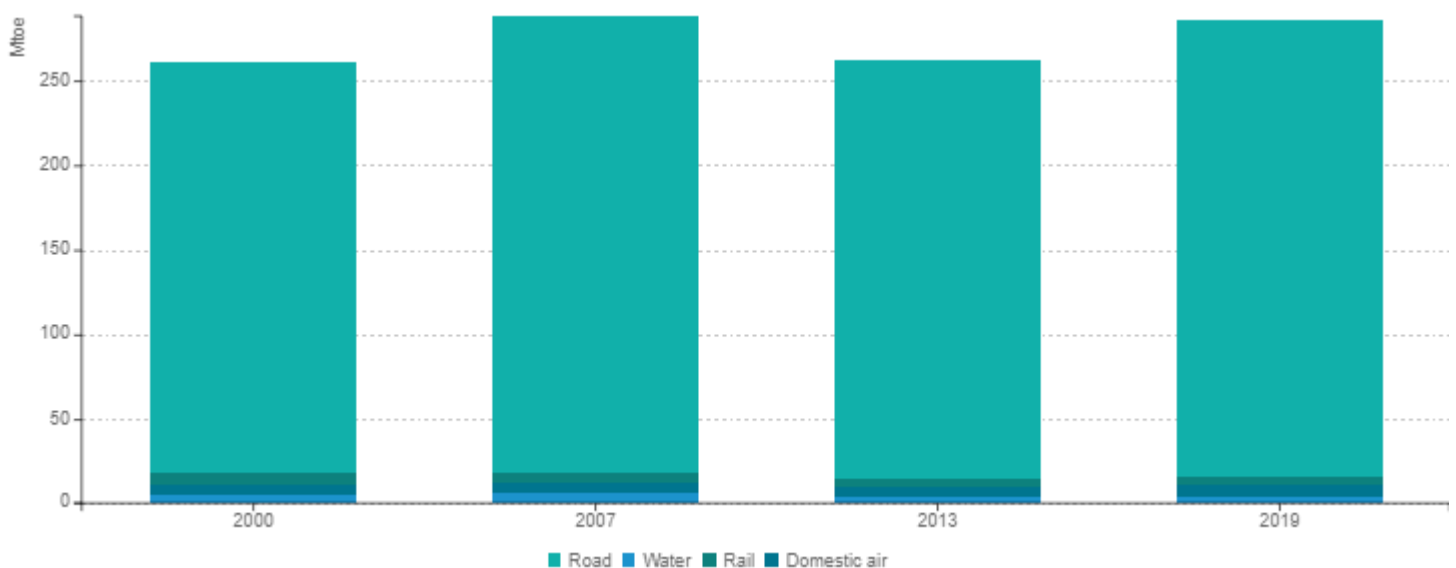
Energy consumption of road transport, fuel prices and GDP (EU)



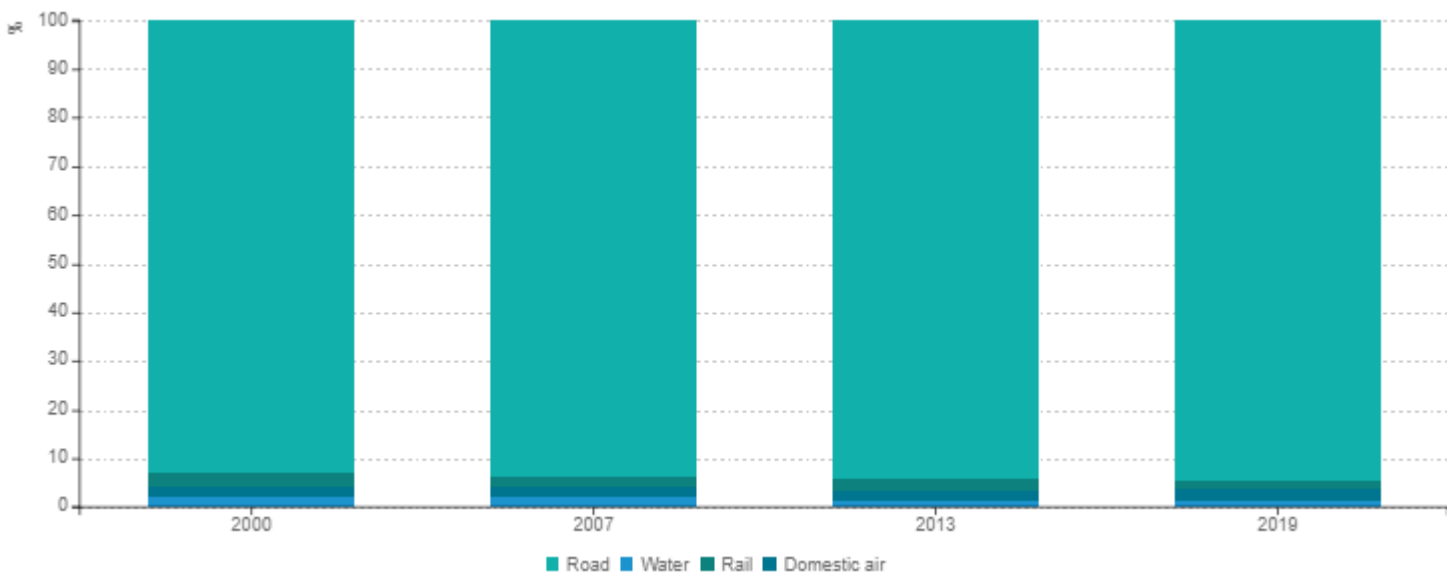
Consumption by mode

- While the share of road transport has slightly increased since 2000, the share of rail and water has decreased (from 2.8% in 2000 to 1.8% in 2019 for rail and from 2% in 2000 to 1.5% in 2019 for water transport). The share of domestic air transport has been stable (2%).

Energy consumption by mode (EU)



Share of energy consumption by mode (EU)

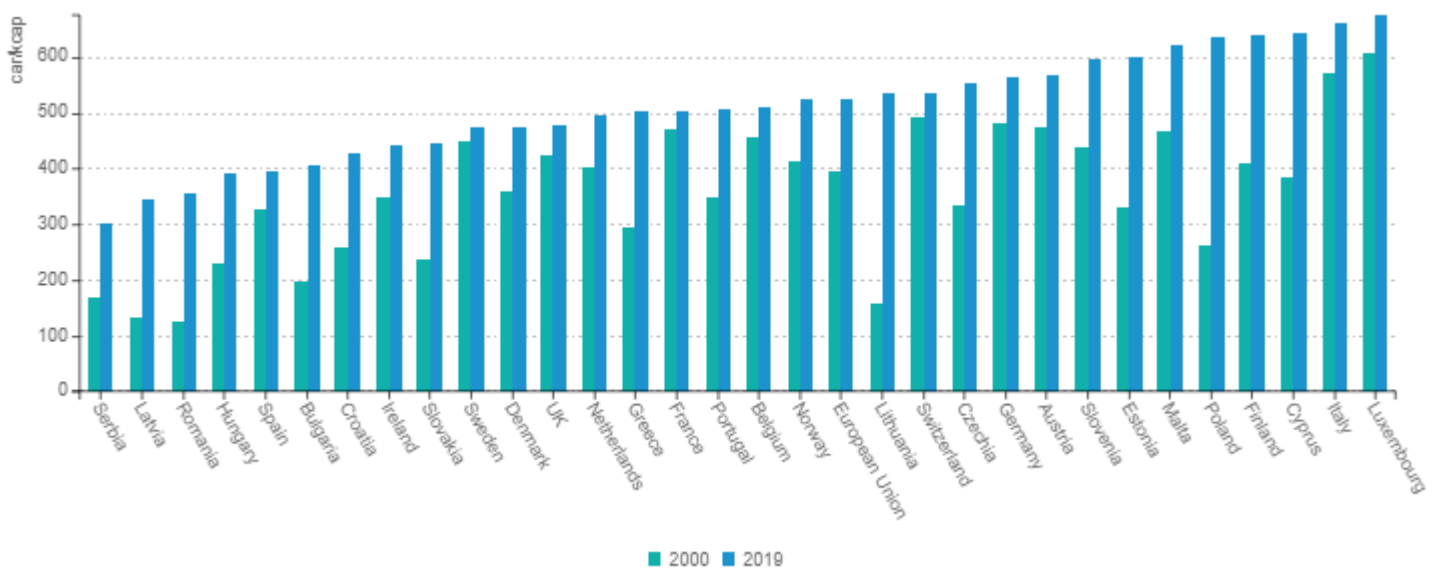


Cars

Number of cars per capita

- Very rapid growth of car ownership in less developed EU countries because of their lower equipment level, with 4 countries with a progression above 4%/year (Latvia, Lithuania, Poland and Romania).
- Slower progression in other EU countries due to saturation, especially in Sweden, France, Luxembourg and Belgium.

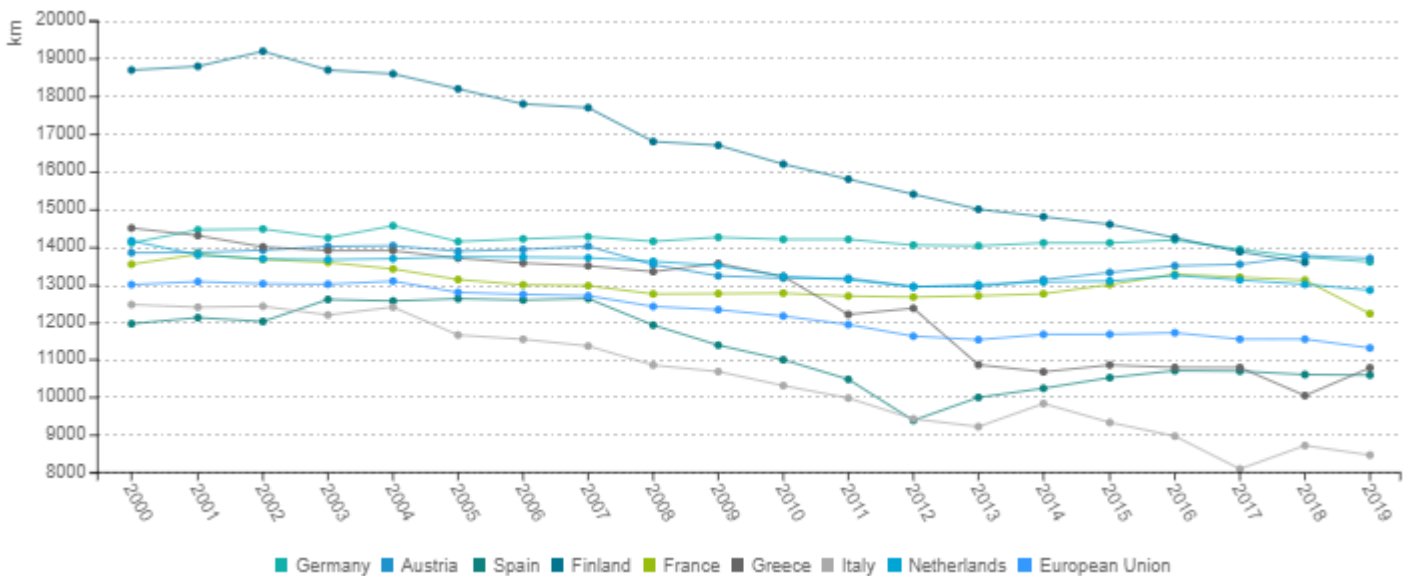
Number of cars per capita



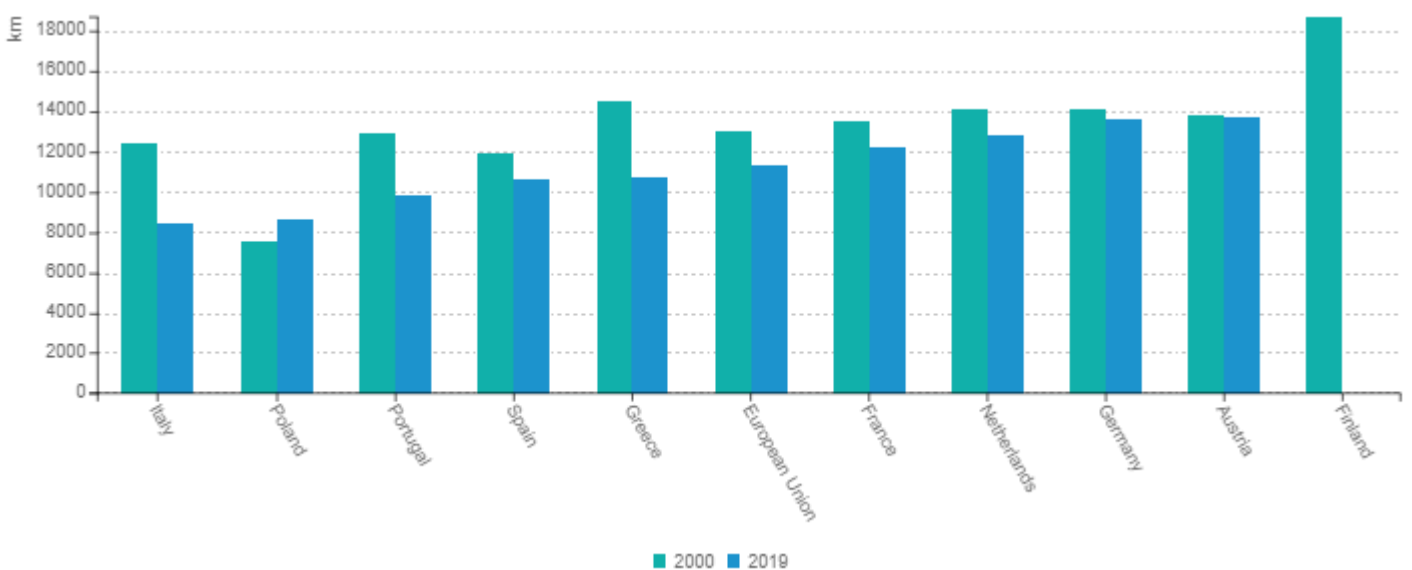
Change in distance travelled by car

- Decrease in distance travelled by car between 2000 and 2019 in most countries (around -1,700 km/year at EU level) with a very sharp reduction above 20%/year in Finland, Greece, Italy and Portugal; it has however increased in Poland and Croatia.
- Large discrepancy of the average annual distance travelled by car between countries: around 16,400 km/year for Ireland; around 7,700 km/year in Italy, and on average 11,300 km/year for the EU.

Change in distance travelled by car



Change in distance travelled by car for selected countries

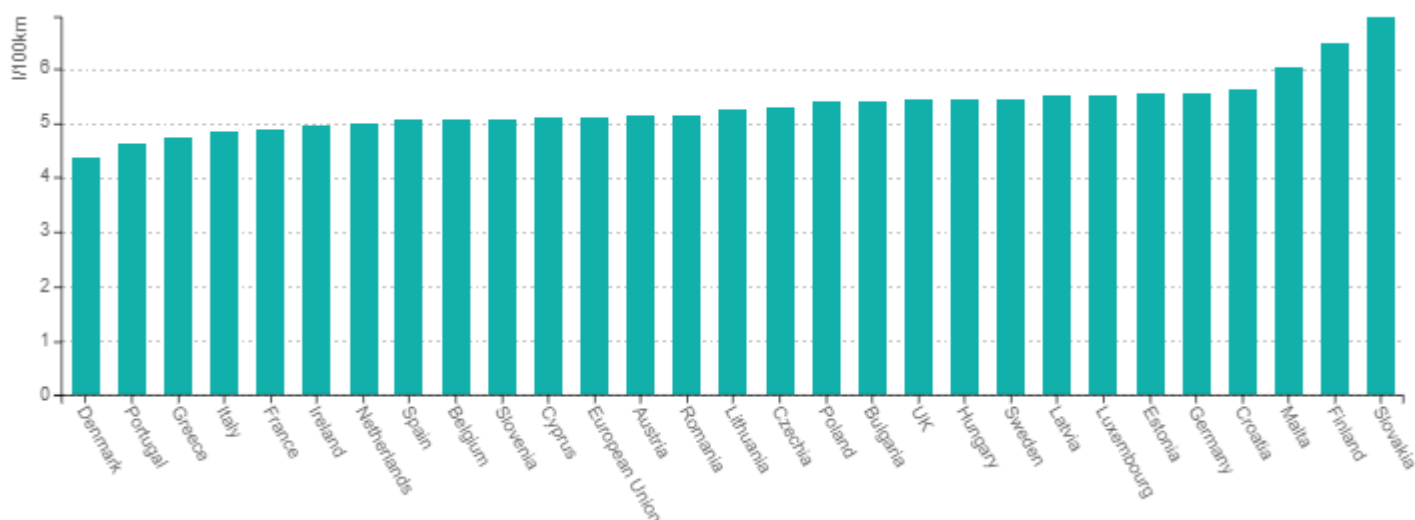


Specific consumption

Specific consumption of new cars by country

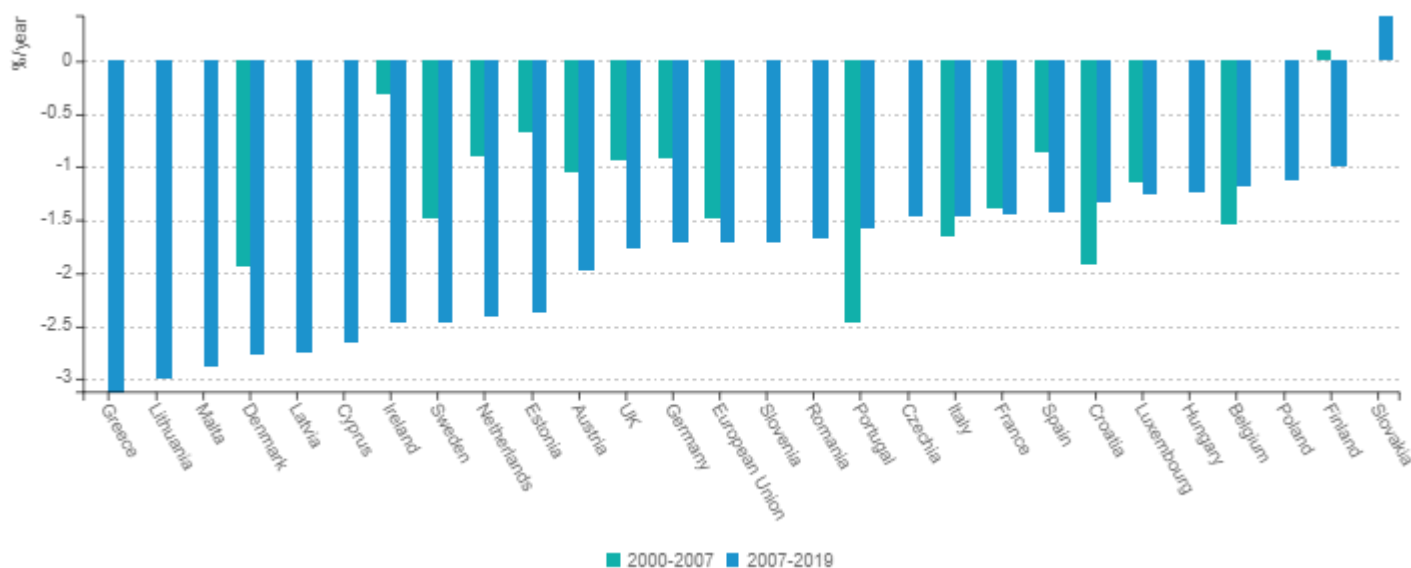
- Average specific consumption of new cars is below 5.5 l/100km in most EU countries, with Denmark and Portugal in the lower range (4.4l/100km and 4.6l/100km, respectively).
- At EU level, new cars consume 1.9 l/100km less in 2019 than in 2000 (5.1 l/100km compared to 7 l/100km).

Specific consumption of new cars (2019)



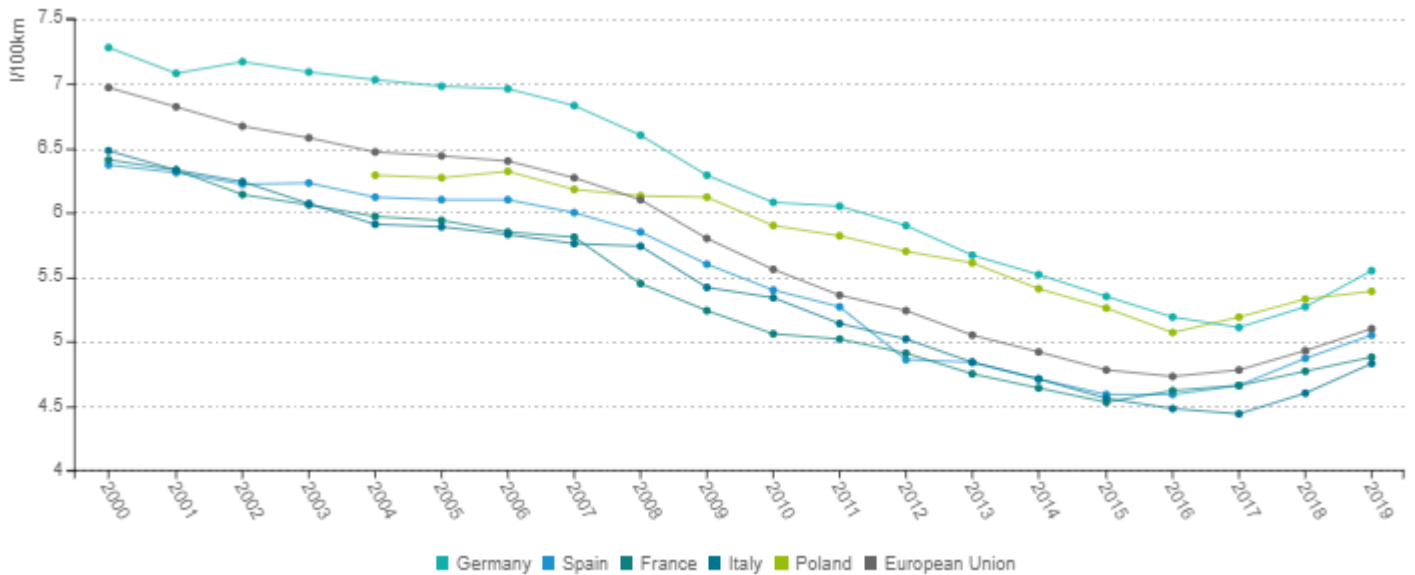
- Reduction of new cars specific consumption was the strongest between 2007 and 2016 (3.1%/year compared to 1.5% between 2000 and 2007 at EU level), as a result of EU regulations (labeling and standards), national fiscal incentives and rising fuel prices.

Trends in specific consumption of new cars



- However, since 2016, the average consumption of new cars is in an ascending rate (+2.6%/an), that can be explained by a larger share of SUVs in new cars sales (with higher specific consumptions) and also a higher share of gasoline cars, which specific consumption is higher than diesel cars.

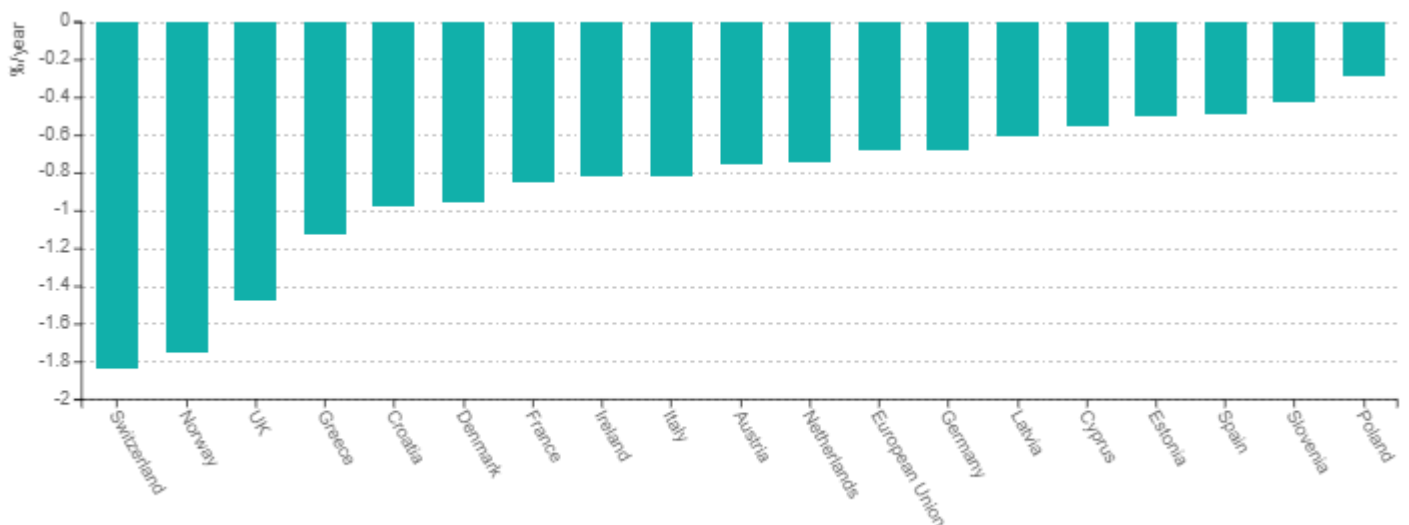
Long term specific consumption trends of new cars



Trends in specific consumption of cars by country

- Decrease of the average specific consumption of the car stock (l/100km) in all countries, by 0.7%/year on average at EU level since 2000.
- Different trends across countries: from -1.1%/year in Greece to -0.3%/year in Poland.
- Large difference between countries regarding the level of l/100 km due to more or less efficient cars: from 5.5 l/100km in Luxembourg to 9.4 l/100km in Latvia in 2019.

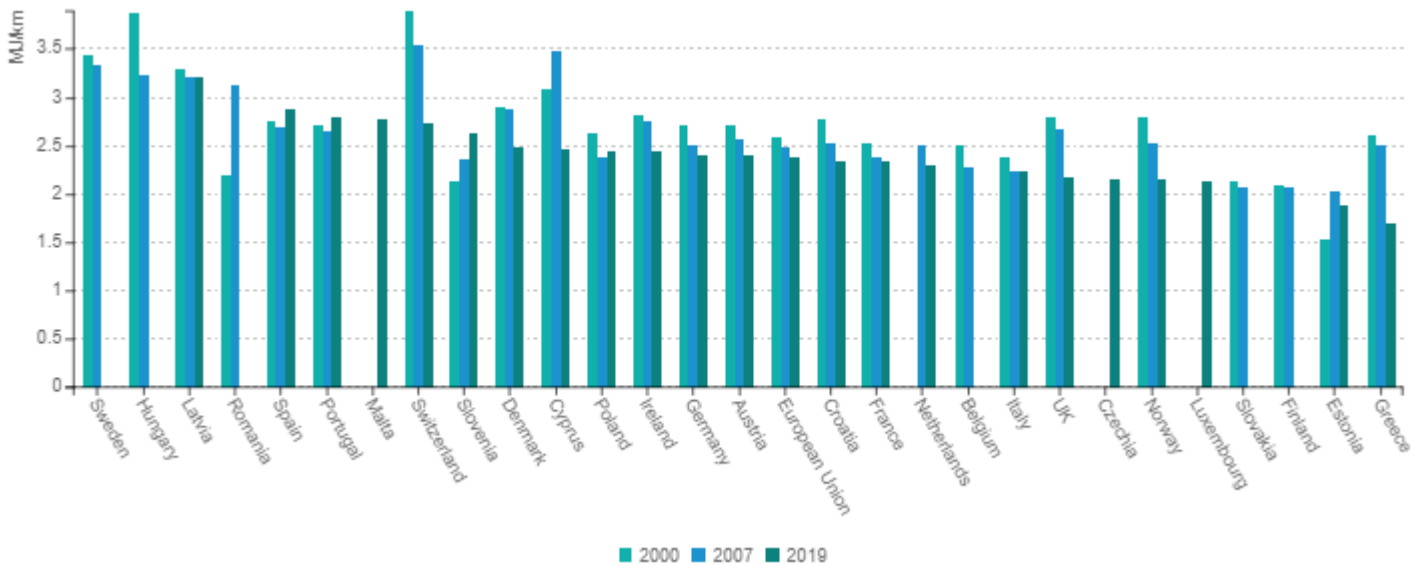
Trends in specific consumption of cars by country (2000-2019)



Energy consumption of cars per km

- Decreasing trends in energy consumption of cars per km (-8% on average at EU level between 2000 and 2019), except for Slovenia (+24%), Estonia (+23%), Spain (+5%), Portugal (+3%) and Romania. In Poland, it decreased between 2000 and 2007 (-9%) but has increased since then (+3%).

Energy consumption of cars per km

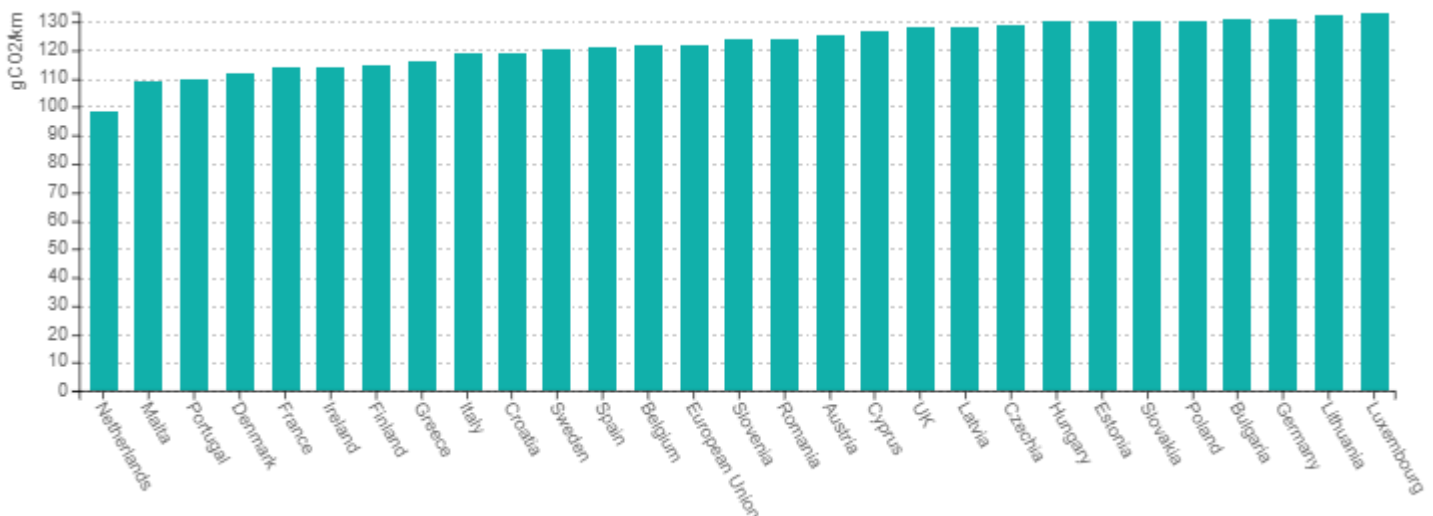


Specific CO2 emissions

Specific CO2 emissions of new cars

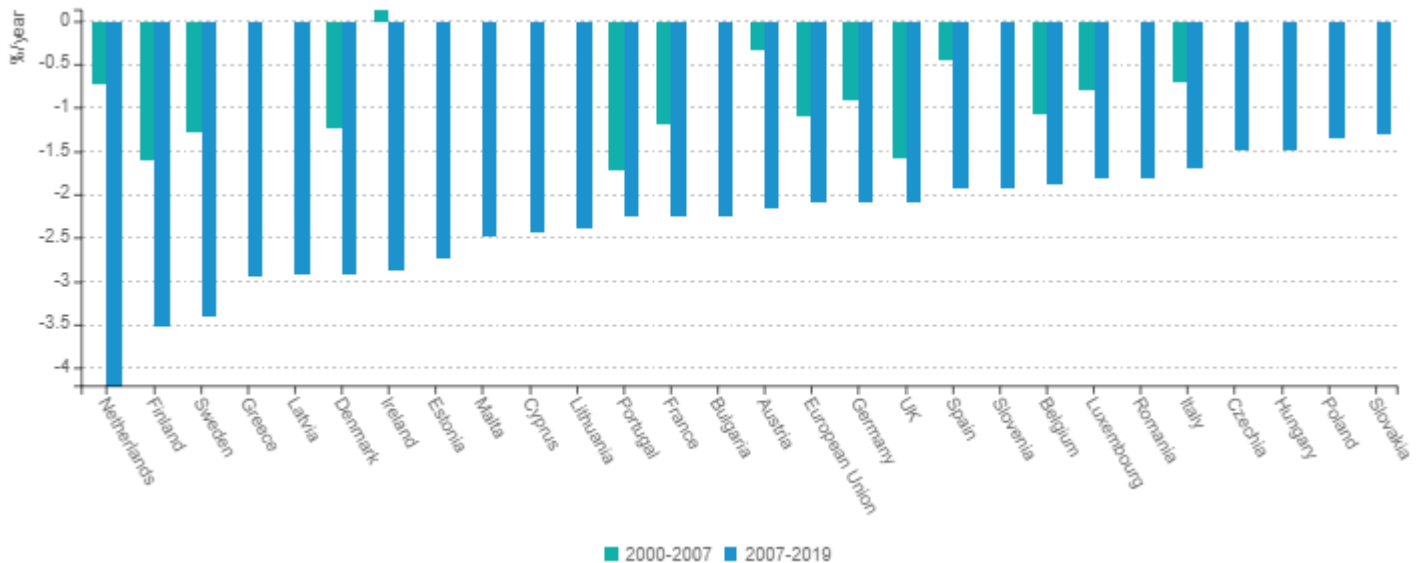
- Large discrepancy in the specific emissions of new cars among countries: a 20% gap between the two extreme groups of countries: from less than 110 gCO₂/km (Netherlands, Malta and Portugal) to more than 130 gCO₂/km (Luxembourg, Lithuania, Germany and Bulgaria). 122 gCO₂/km for EU average in 2019.
- 10 EU countries below 120 gCO₂/km: Netherlands, Malta, Portugal, Denmark, France, Ireland, Finland, Greece, Italy and Croatia.
- In 2018, all EU countries except Estonia and Luxembourg were below the mandatory limit of 130 gCO₂/km since 2015 for cars manufacturers. However, in 2019, 5 more EU countries are again above this limit: Bulgaria, Lithuania, Poland, Germany and Slovakia. No country has yet reached the 95 gCO₂/km target for 2021.

Specific CO2 emissions of new cars (2019)



- Rapid progress since 2007 in all countries, especially in the Netherlands, Finland and Sweden (above 3%/year). Progress due to the spread of smaller vehicles, with the implementation of national policies and standards for car manufacturers.

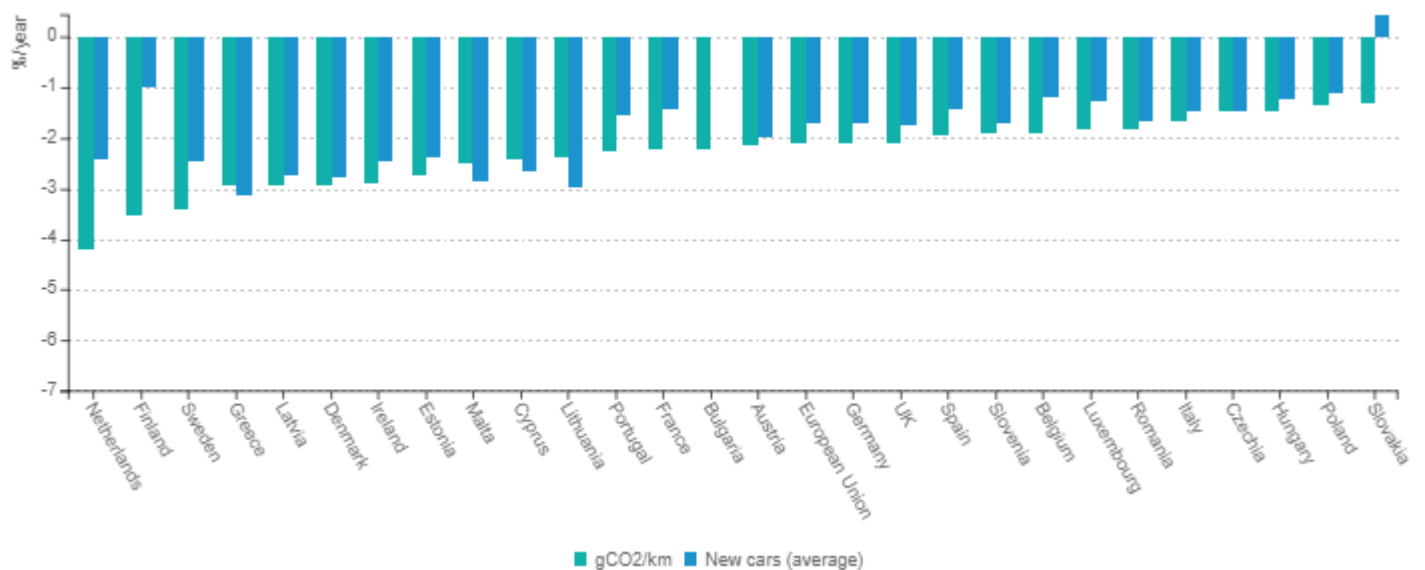
Trends in the specific emissions of new cars



Specific emissions vs consumption of new cars

Trends in specific energy consumption in l/100 km and specific CO₂ emissions in gCO₂/km are very close for most countries. In 40% of the countries, however, the specific energy consumption is decreasing slightly faster than specific emissions.

Specific emission vs consumption of new cars (2007-2019)

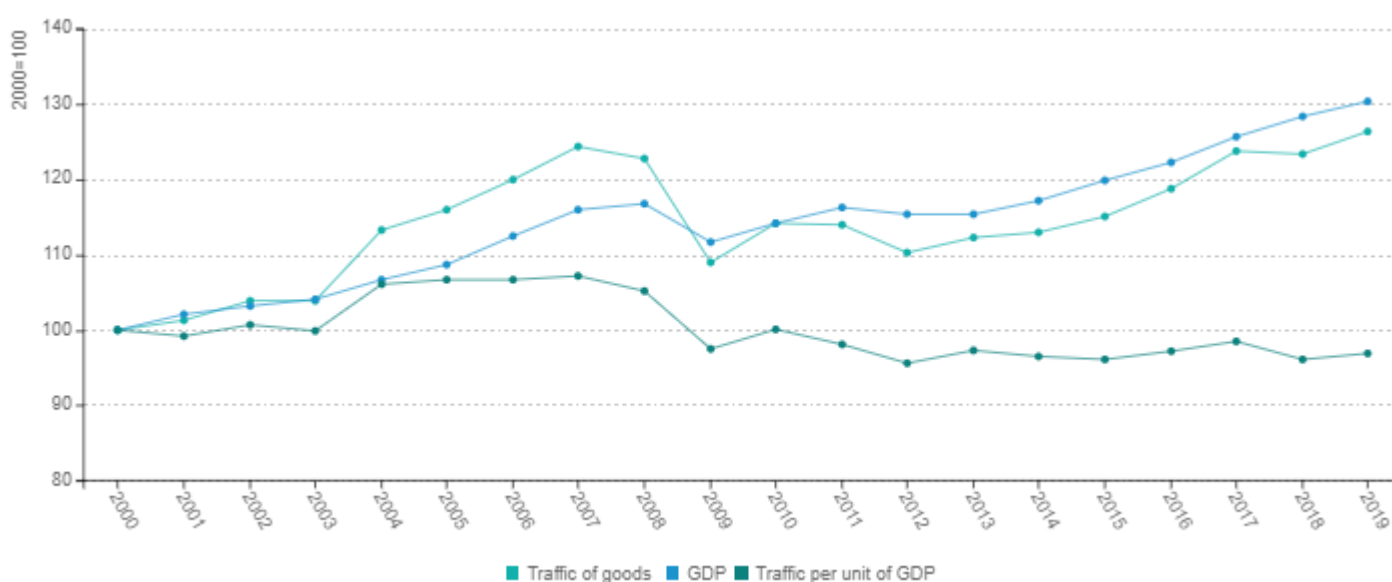


Transport of goods

Trends in freight traffic

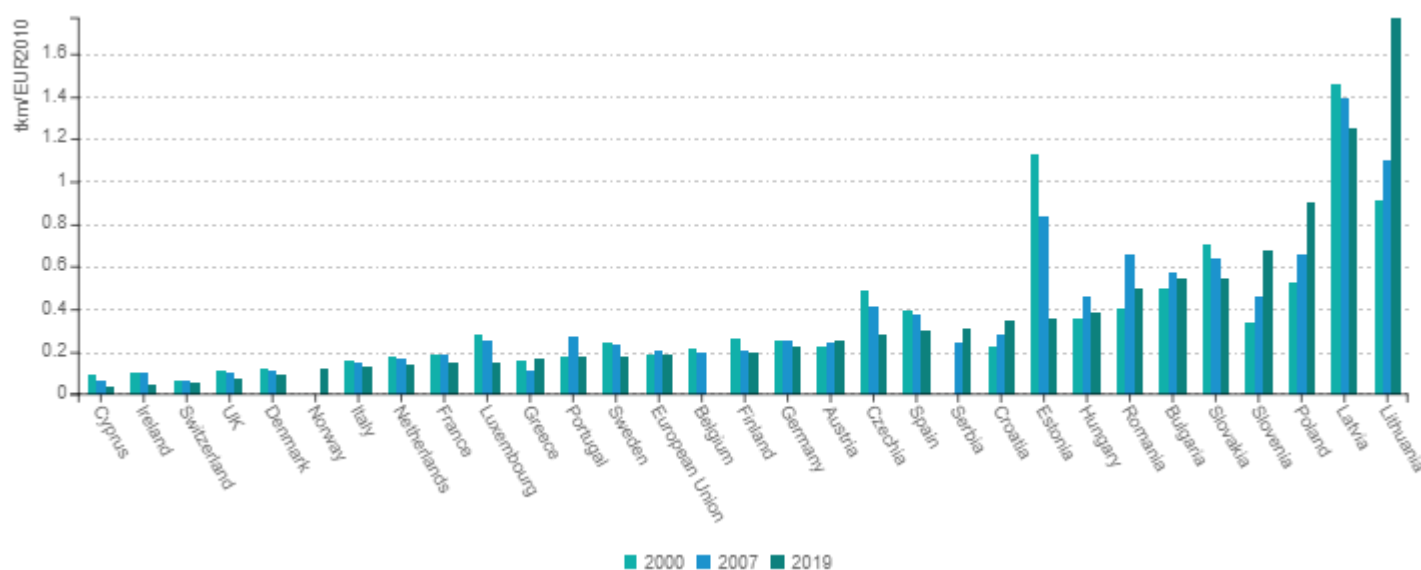
- Increasing traffic of goods since 2013 (2.5%/year), with a good correlation with GDP.
- There was a sharp decrease of freight traffic between 2007 and 2009 during the financial crisis (-6.4%/year).

Trends in freight traffic and GDP (EU)



- In the majority of the EU MS (17), a reduction in traffic intensity (traffic per unit of GDP) has been observed since 2000, with 4 of them showing a reduction of more than 3% per year (Estonia, Ireland, Cyprus, Luxembourg).
- In 5 EU MS, there is a steady increase since 2000 of the traffic intensity, while in 6 other countries there has been an increase before the crisis and a decrease after.

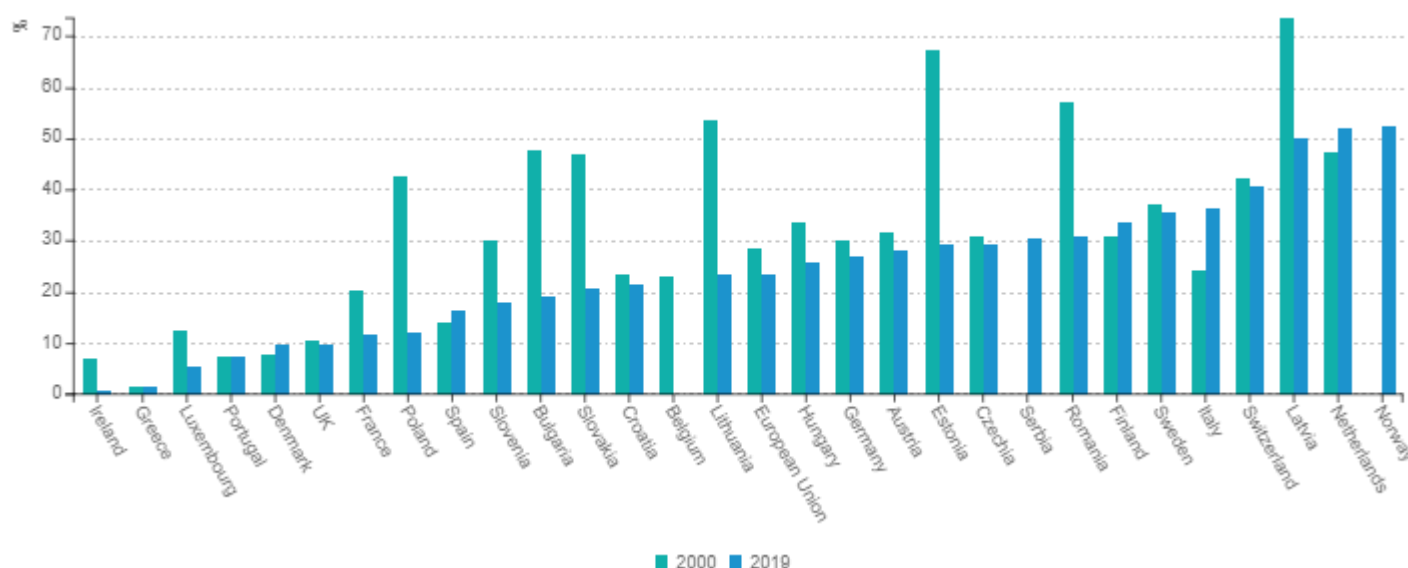
Freight traffic per unit of GDP



Share of rail and water in total goods of traffic

- The share of rail and water in the traffic of goods is decreasing in two thirds of EU countries (18), despite the policies implemented to promote rail or water transport (-4.9 points at EU level).
- At EU level, 24% of goods traffic was carried by rail and water transport in 2019.
- Latvia, the Netherlands and Italy have the highest share of rail and water among EU countries (>40%) while the highest progression is observed in Italy, thanks to water transport.

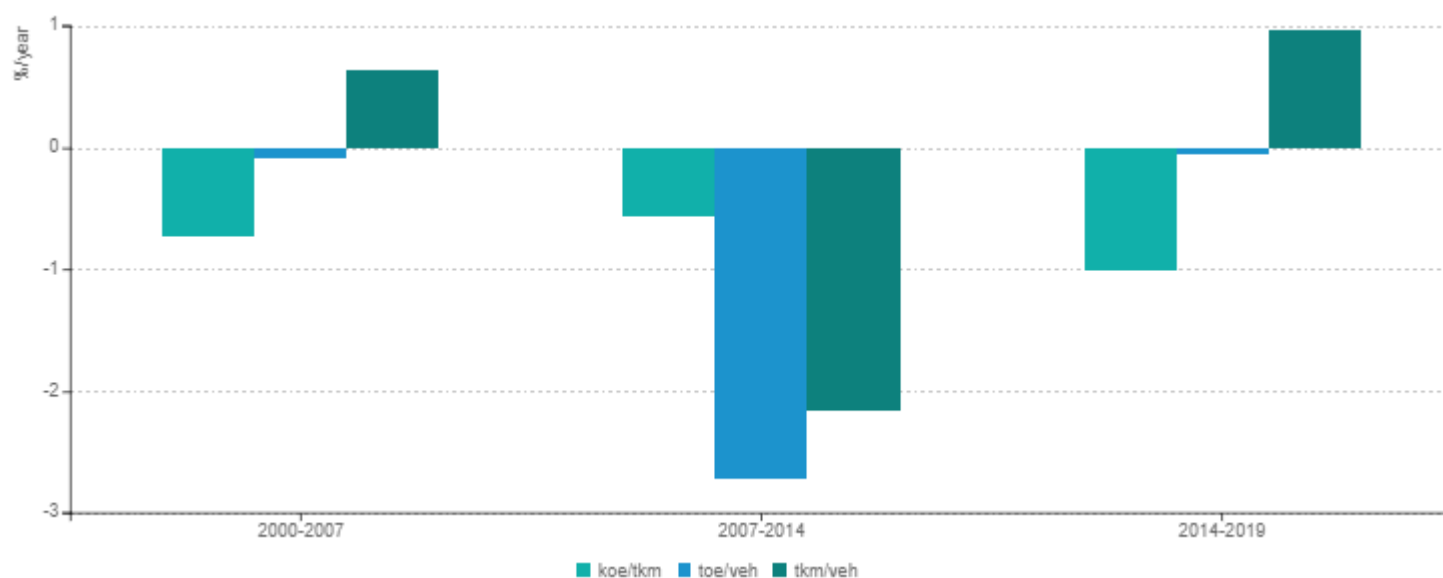
Share of rail and water in total goods traffic



Unit consumption of road transport of goods

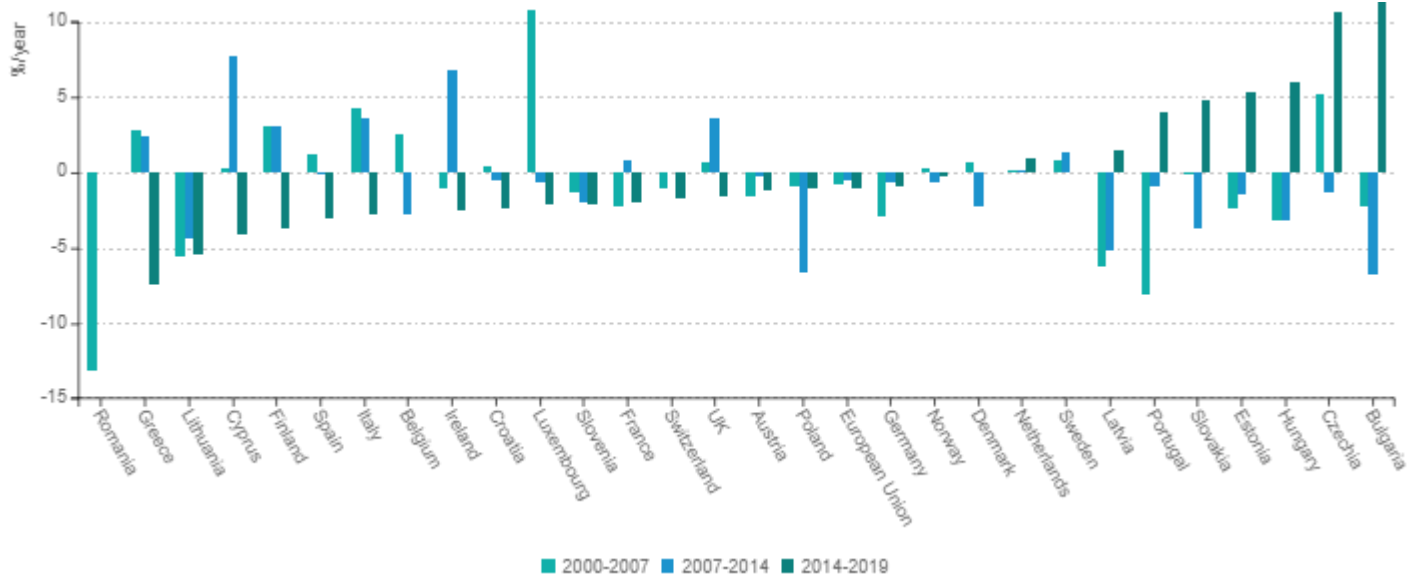
- Since 2014, energy efficiency progress of road freight transport, as measured from the decrease of the road freight traffic consumption per ton-km. has accelerated at EU level (around 1%/year over 2014-2019, compared to 0.7%/year between 2000 and 2007 and 0.6%/year for the period 2007-2014). This is due to an increase in load factors.

Change in the unit consumption of road freight transport (EU)



- Deterioration of energy efficiency in 15 EU countries since 2014 despite the rebound in freight traffic.

Unit consumption of road transport of goods

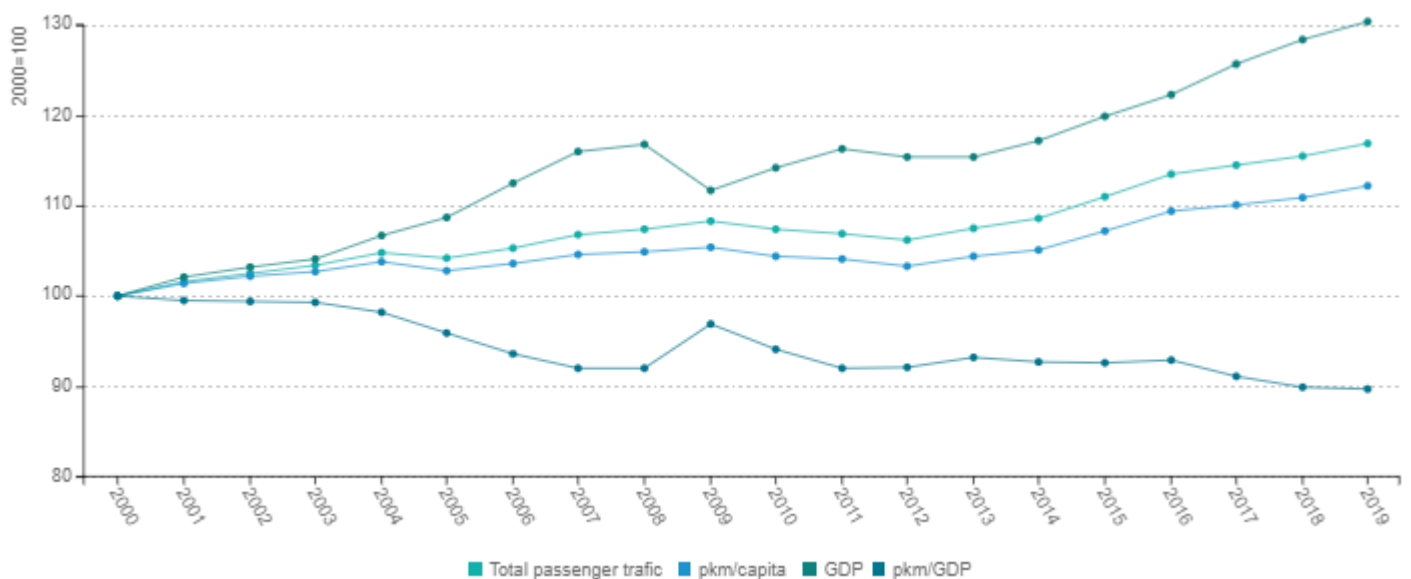


Passenger transport

Passenger traffic and GDP at EU level

- Passenger traffic has been growing at a lower rate as the GDP since 2016 at EU level, as shown by the slight decrease of the passenger transport intensity (pkm/GDP). Previously, it was rather stable between 2011 and 2016 and it grew slower than GDP over 2003-2008 and then 2009-2011.

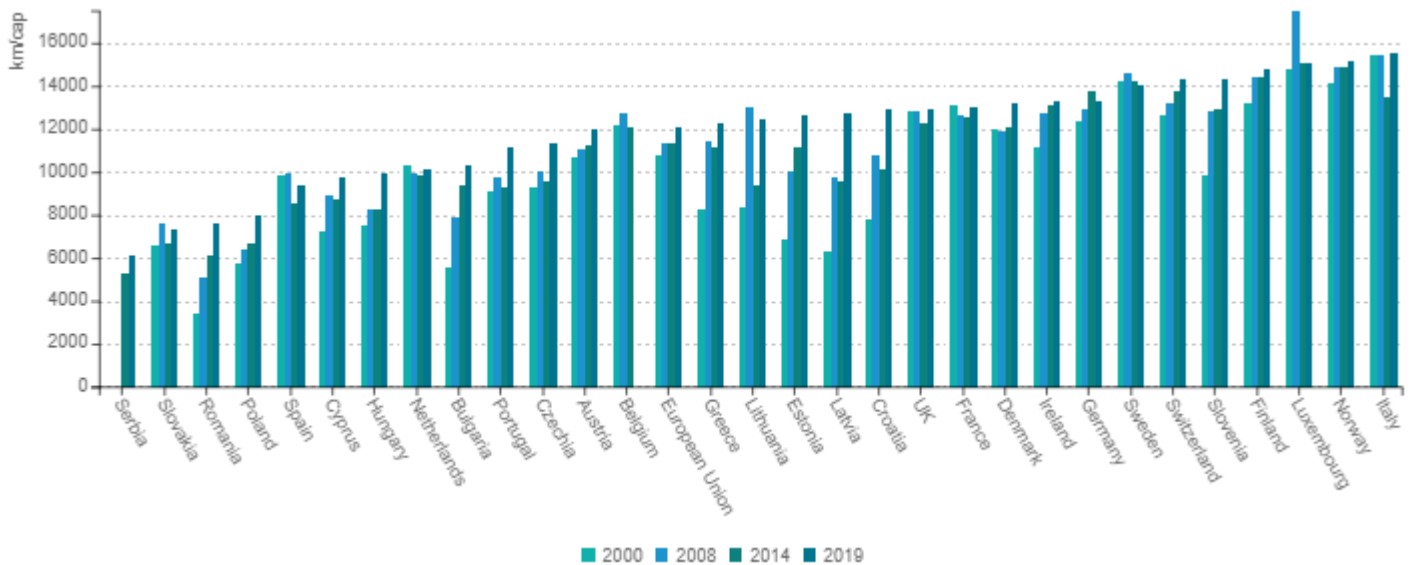
Passenger traffic and GDP at EU level



Passenger mobility per capita

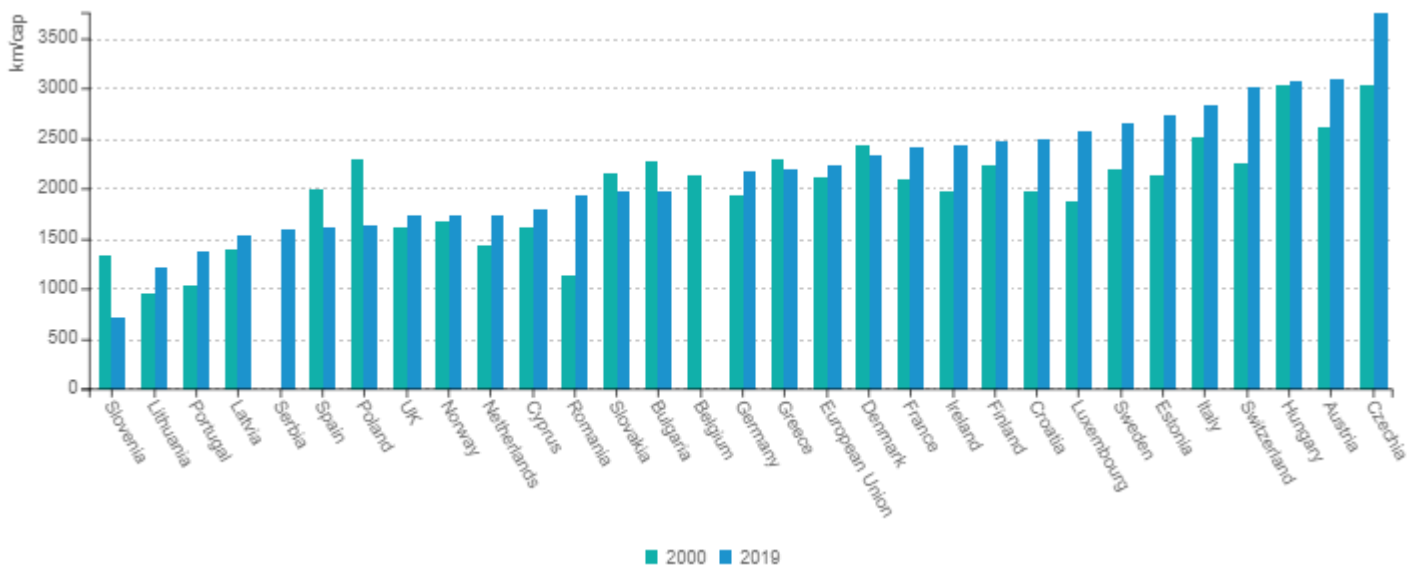
- The average mobility per capita (km/year) is increasing again in almost all countries since 2014 (except Germany, Luxembourg and Sweden). It has been stable or decreasing in 2/3 of EU countries for the period 2008-2014, following the economic crisis.

Passenger mobility per capita



- Czechia, Austria and Hungary have the highest use of public transport (above 3,000 km/year), compared to an EU average of around 2,200 km/year.
- Romania, Portugal and Luxembourg have recorded the highest increase in the use of public transport over the period 2000-2019 (above 1.5%/year).

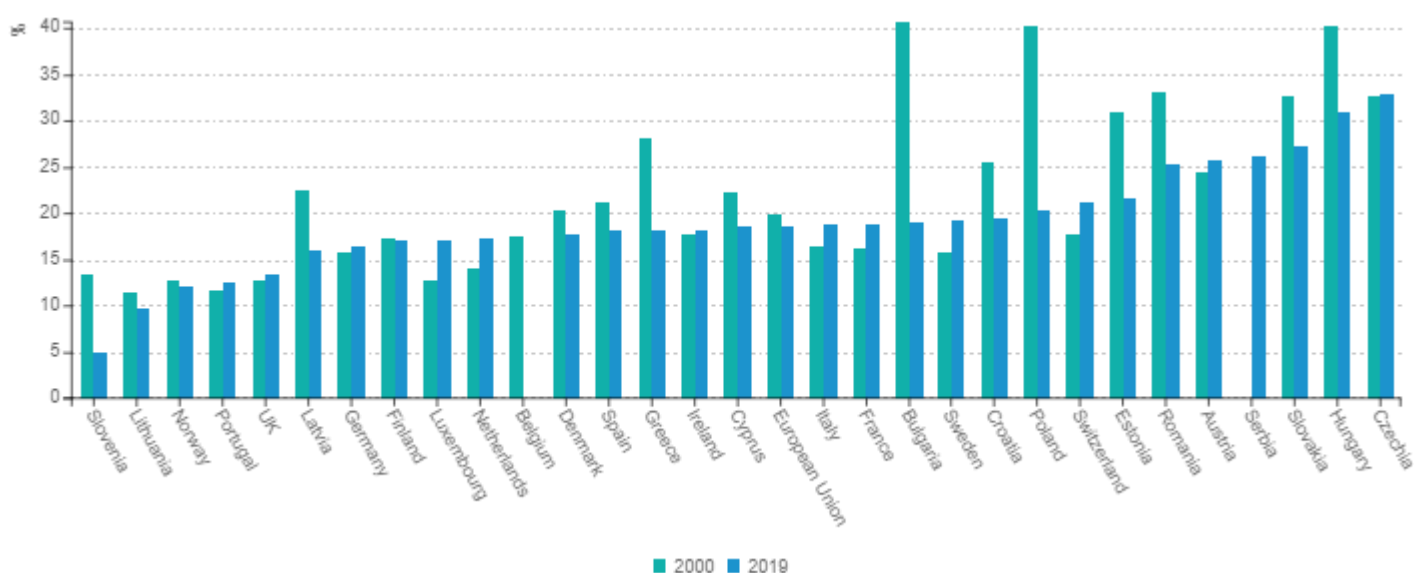
Mobility of public transport per capita



Public transport

- The share of public transport in passenger traffic has been decreasing in 15 EU countries. At EU level, it decreased by 1.1 points, to 19% in 2019.
- The highest progression is observed in Luxembourg (+4 points since 2000), Sweden, The Netherlands and France (around +3 points), Italy (+2 points).
- 7 EU countries have a share of public transport over 20% in 2019, of which 2 above 30% (Czechia and Hungary).
- The share of public transport has been decreasing rapidly in most Central and Eastern European countries (except Czechia), where public transport used to be dominant (especially in Estonia, Poland and Bulgaria).

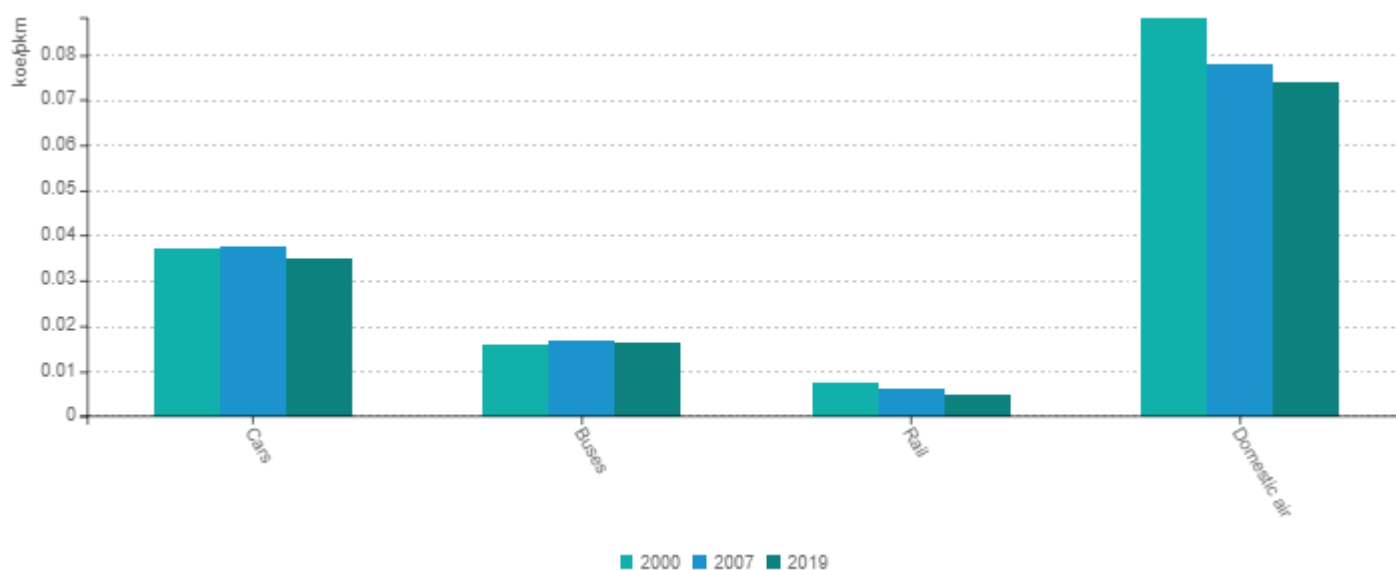
Share of public transport in total passenger traffic



Specific consumption

- Cars require almost 2.2 times more energy per passenger-km than buses, and 7 times more than rail transport. Domestic air transport is twice more energy intensive than cars and 15 times higher than rail.

Specific energy consumption by transport mode

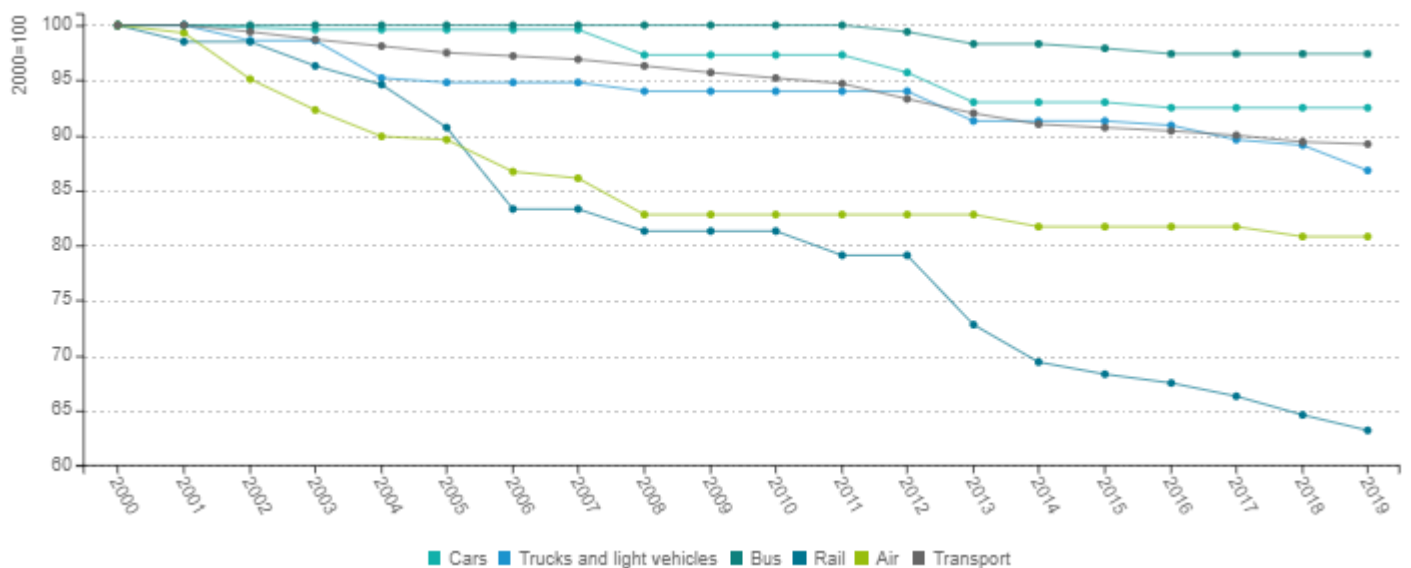


Energy efficiency and savings

Energy efficiency index for transport

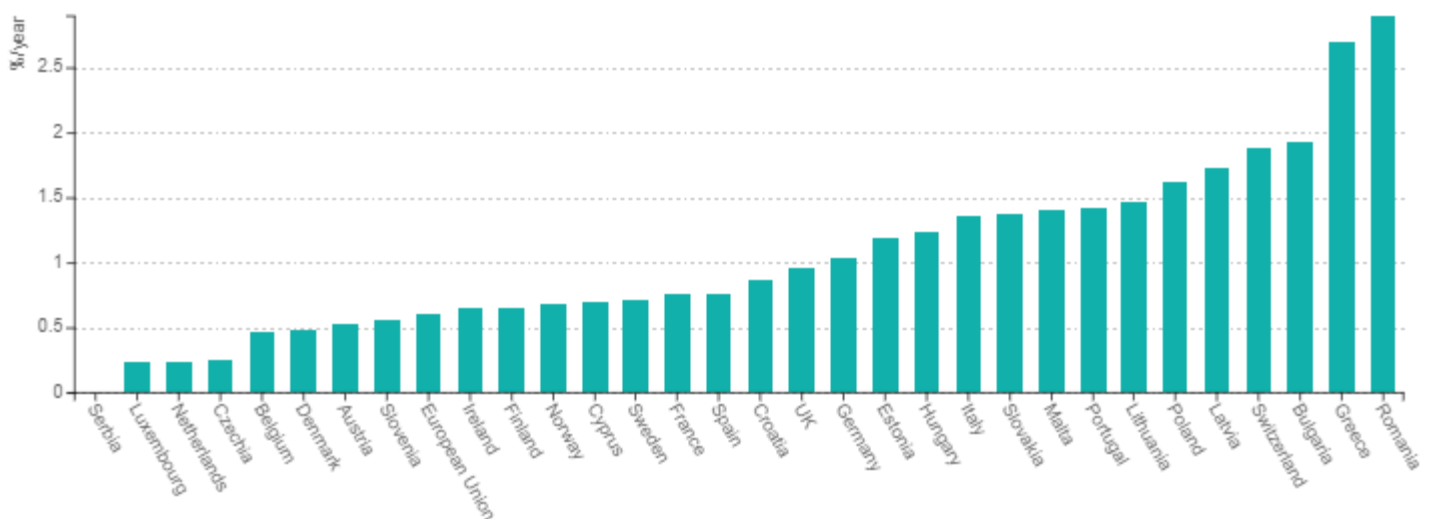
- Energy efficiency improvement of 0.6%/year between 2000 and 2019, as measured by ODEX that combines the energy efficiency trends of the different modes of transport (cars, trucks and light vehicles, bus, motorcycles, air, waterways, rail).
- Energy efficiency progress for cars was slower (0.4%/year), and quite low since 2014, because of an increase in the specific consumption of new cars, due to two main factors: a decrease in diesel shares (from 56% in 2012 to 34% in 2019) and a growing share of SUV (from 25% to around 40%).
- After a slowdown for trucks and light vehicles since 2005, with no more efficiency progress between 2008 and 2012 because of the economic crisis, energy efficiency is improving again (0.7%/year on average since 2000, 1.1%/year since 2012).
- Important energy efficiency progress was achieved in rail transport (2.4%/year) and domestic air (1.1%/year).

Energy efficiency index by mode (EU)



- Discrepancies in energy efficiency gains in EU countries: from around 3%/year in Greece and Romania to less than 0.5%/year in Czechia, Luxembourg, The Netherlands, Belgium and Denmark.

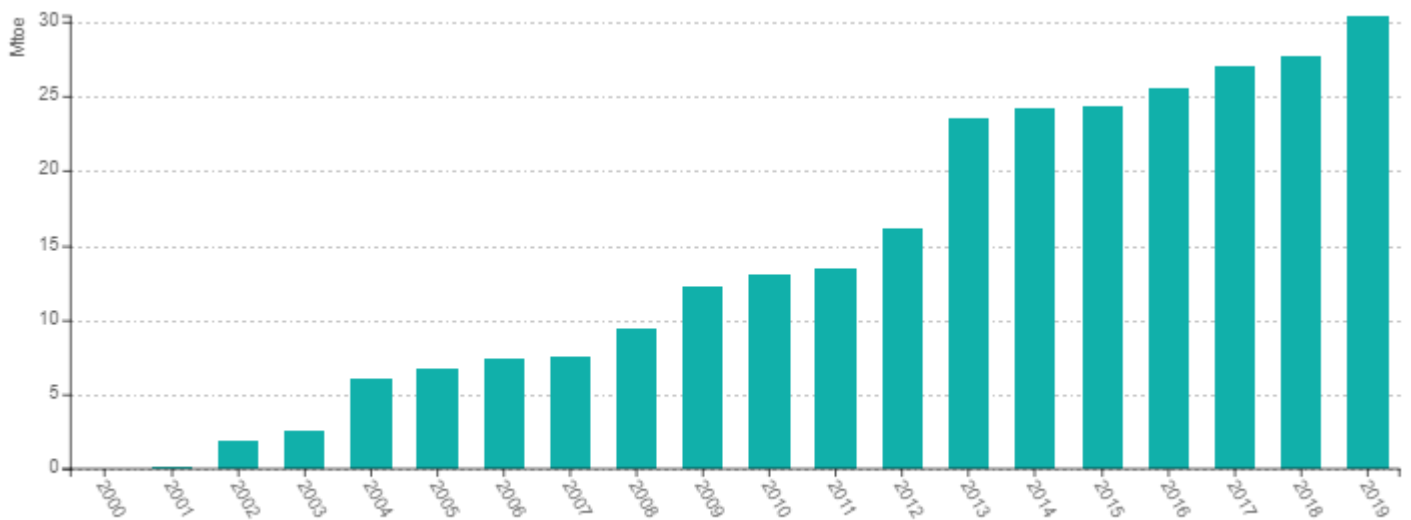
Energy efficiency gains for transport by country (2000-2019)



Energy savings in transport (EU)

- In 2019, energy savings in transport reached around 30 Mtoe at EU level: without energy efficiency improvement, the energy consumption would have been higher by 30 Mtoe.
- Slowdown in energy savings between 2009 and 2012, mainly due to no more progress for goods transport because of the economic recession.

Energy savings in transport (EU)

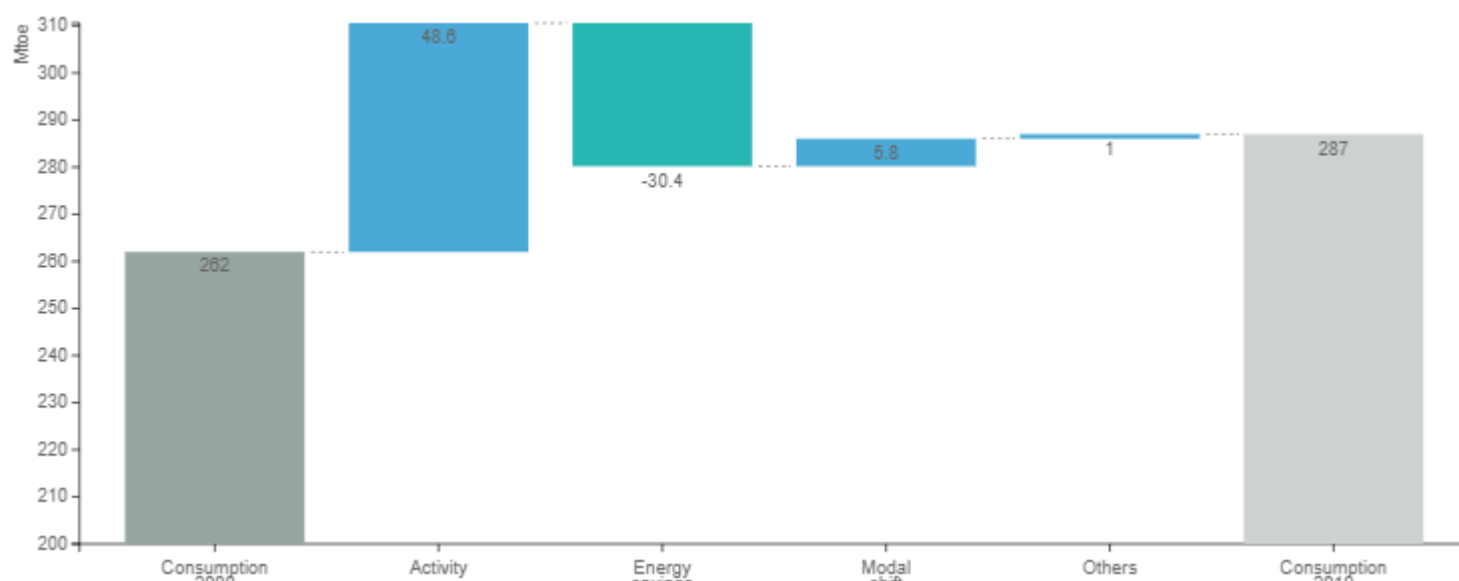


Decomposition of energy consumption

Drivers of transport consumption

- At EU level, the energy consumption of transport was 25 Mtoe higher in 2019 than in 2000. Increase in traffic of passenger and goods ("activity effect") contributed to increase this consumption (by 49 Mtoe).
- This effect was counterbalanced by energy savings (i.e. change in the efficiency of cars, trucks, airplanes, etc.) which contributed to decrease the energy consumption by around 30 Mtoe.
- The impact of modal shifts, i.e. changes in the share of transport mode in the total traffic, was limited but contributed to increase consumption by 6 Mtoe.
- Other effects (behavioural and operational effects) were negligible 1 Mtoe.

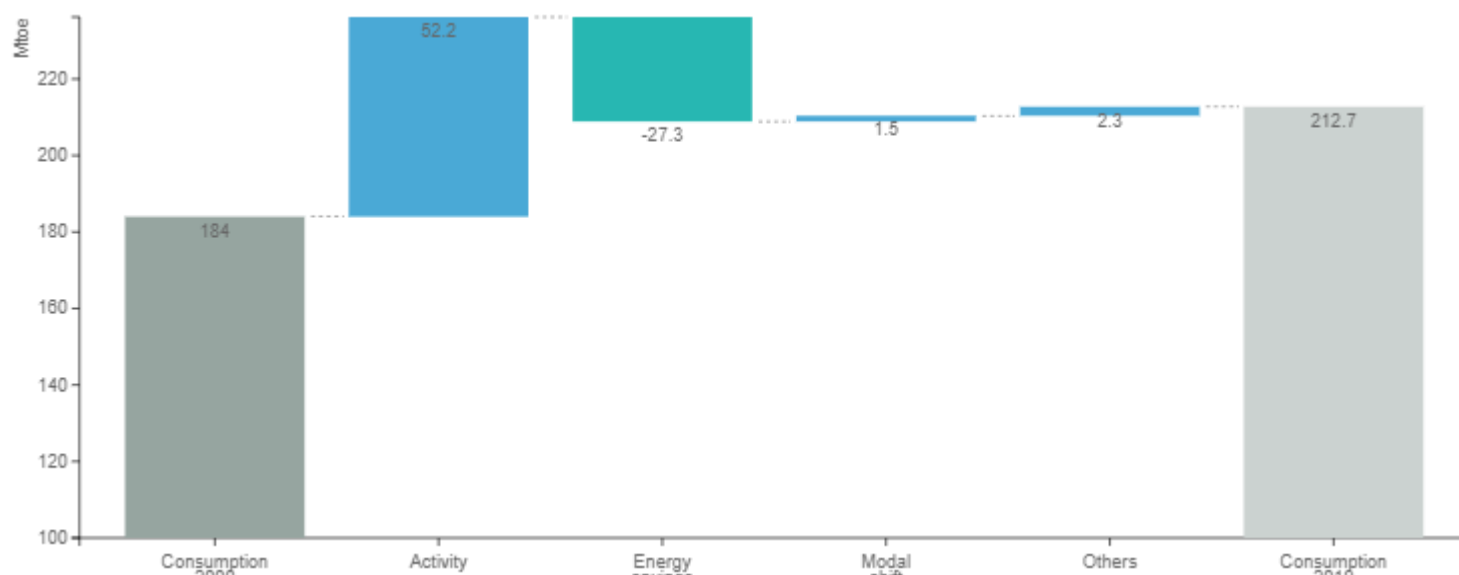
Drivers of energy consumption variation in transport at EU level



Drivers of passenger energy consumption

- The energy consumption for passenger increased by 29 Mtoe between 2000 and 2019. This is mainly due to the fact that energy savings (27 Mtoe) (change in specific consumption per unit of traffic) have only partially offset the effect of traffic growth (52 Mtoe). There was a negligible impact of modal shift, as the share of public transport in passenger traffic did not change much.

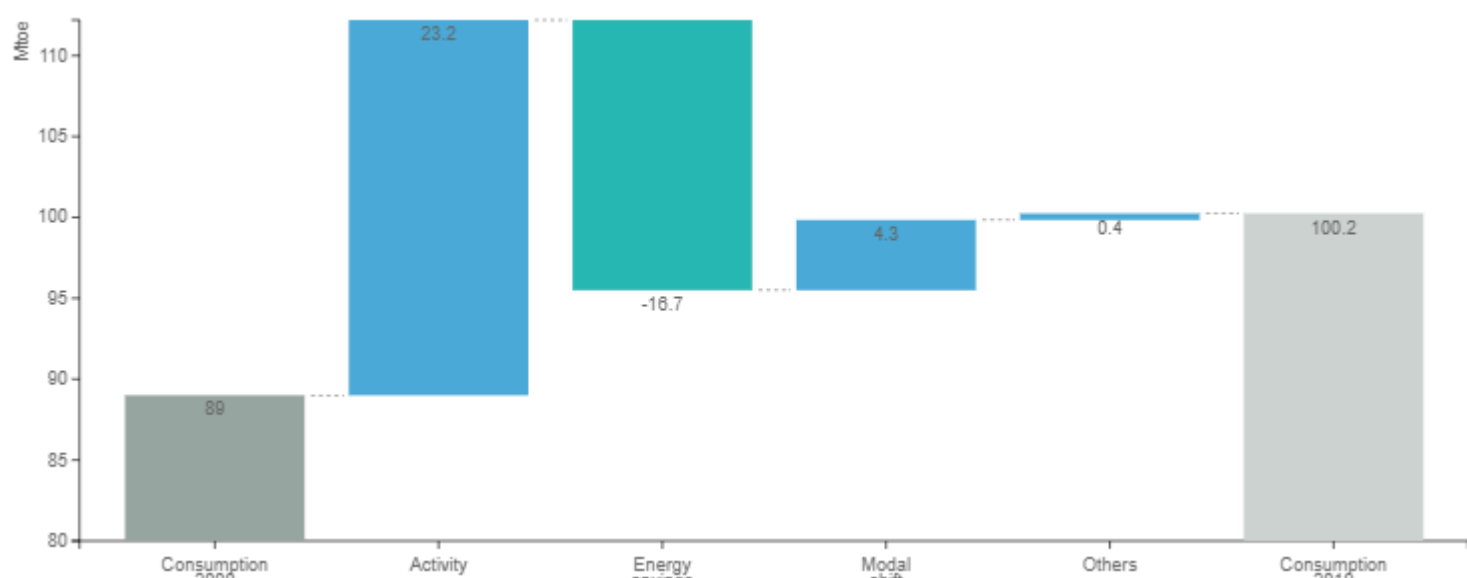
Decomposition of energy consumption for passengers (EU)



Drivers of goods energy consumption variation

- The energy consumption of freight transport increased by 11 Mtoe between 2000 and 2019. This is the result of two opposite trends: the increase in traffic in ton-km and, to a lesser extent, modal shift to road transport have contributed to raise consumption (by 23 and 4 Mtoe, respectively), while energy savings have decreased consumption by 17 Mtoe.

Decomposition of energy consumption for freight (EU)

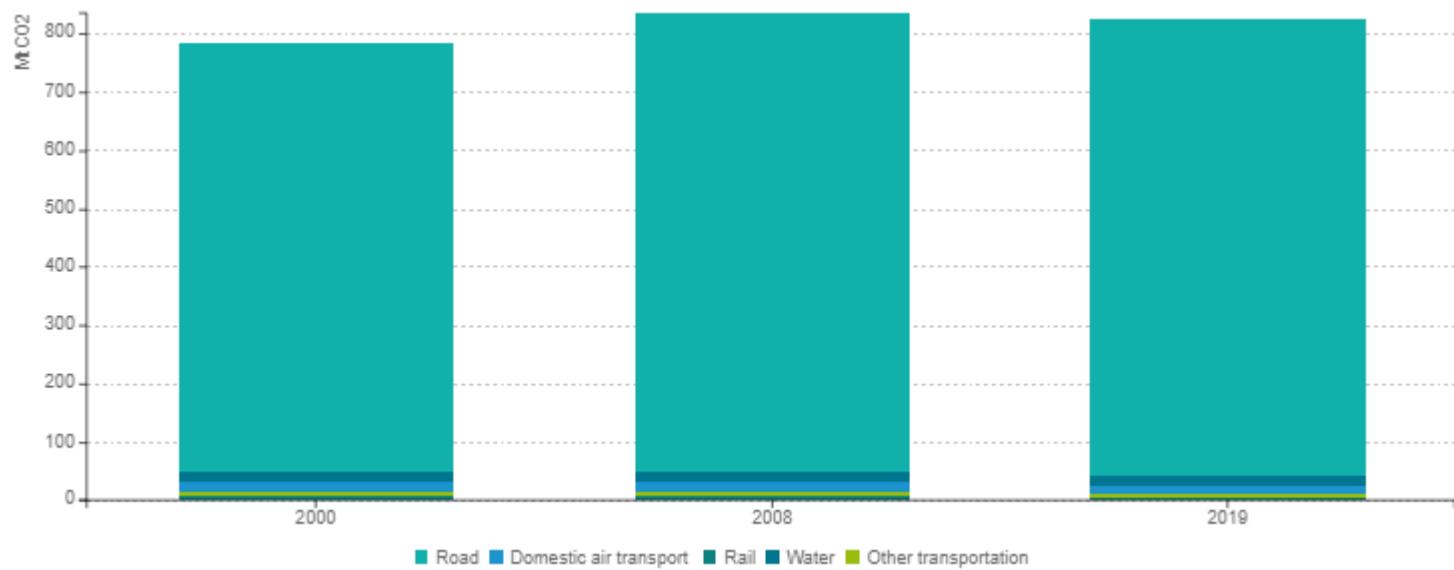


CO2 emissions

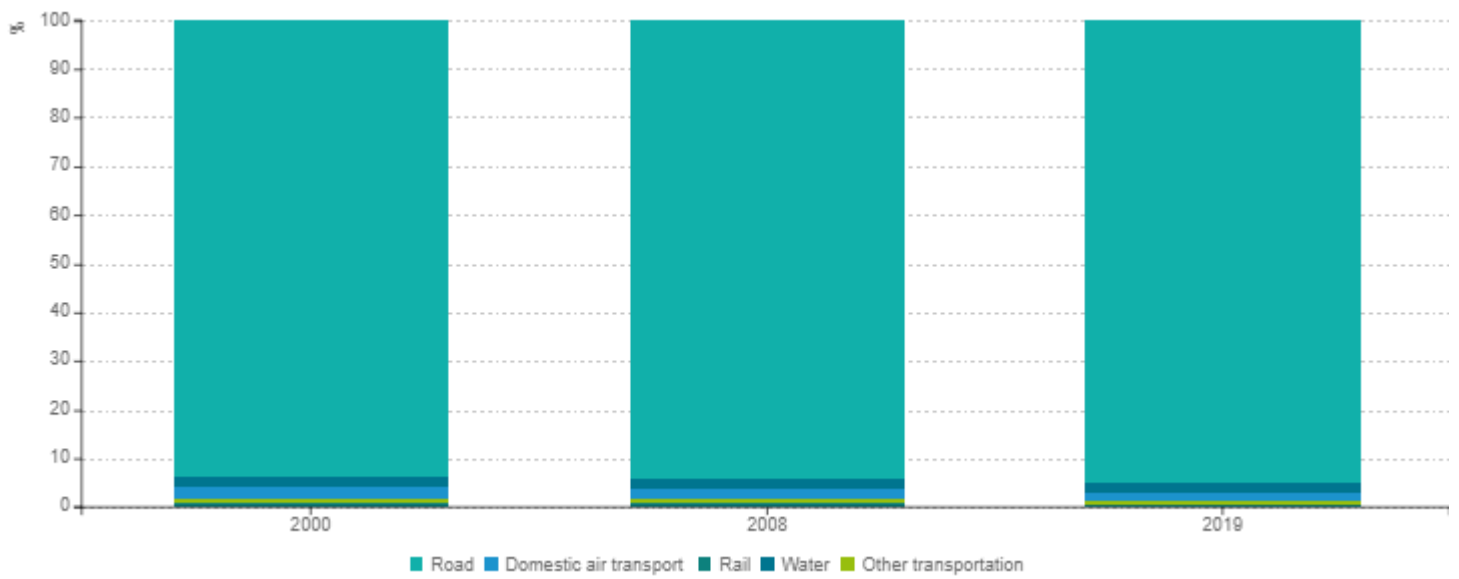
Emissions from transport

- Road transport represents around 95% of CO2 emissions from transport. Emissions have started decrease since 2008.

CO2 emissions from transport (EU)



CO2 emissions from transport (% EU)



Source: EEA