Resource efficiency and low carbon economy

Transport greenhouse gas emissions

<table>
<thead>
<tr>
<th>Indicator</th>
<th>EU indicator past trend</th>
<th>Selected objective to be met by 2020</th>
<th>Indicative outlook for the EU meeting the selected objective by 2020</th>
</tr>
</thead>
<tbody>
<tr>
<td>Greenhouse gas emissions from transport</td>
<td>▲</td>
<td>Reduce the overall environmental impact of production and consumption in the mobility sector - 7th EAP</td>
<td></td>
</tr>
</tbody>
</table>

Past transport greenhouse gas emissions increased from 1990 to 2016 despite a decline between 2008 and 2013 following the economic downturn. It is unlikely that emissions will decrease during the Seventh Environment Action Programme period (2014-2020) since emissions rose in each of the last 3 years (2014-2016) and preliminary results show an increase in emissions also in 2017.

For further information on the scoreboard methodology please see Box I.3 in the EEA Environmental indicator report 2018.

The Seventh Environment Action Programme (7th EAP) includes the objective of reducing the environmental impact of mobility (i.e. transport). Transport is the cause of significant environmental pressures including greenhouse gas emissions, habitat fragmentation, air pollution and noise. Greenhouse gas emissions from the transport sector are used here as a proxy indicator for the overall environmental impacts of the transport sector. Greenhouse gas emissions from transport have increased in the EU since 1990 in line with trends in economic growth and transport demand. Improvements in vehicle efficiency have nevertheless helped to limit the overall increase. It is unlikely that the EU transport related greenhouse gas emissions will decline during the implementation period of the 7th EAP (2014-2020) since these emissions increased in each of the last 3 years (2014-2016) and preliminary results show an increase also in 2017.
Setting the scene

The 7th EAP calls for a reduction in the environmental impact of mobility (EU, 2013). The transport sector is a major contributor to climate change, air pollution, noise, natural resource depletion and land fragmentation. Reducing the environmental impact of transport can be addressed by reducing the demand for travel, introducing new, cleaner technologies and shifting towards less environmentally damaging transport modes. Greenhouse gas emissions from the transport sector are used in this briefing as a proxy indicator for the overall environmental impacts of the transport sector. These emissions reflect the level and efficiency of the sector’s activity as well as the mix of transport modes. In addition, climate change (and therefore greenhouse gas emissions) is one of the most significant environmental issues and transport contributes about one quarter of the EU’s total greenhouse gas emissions.

Policy targets and progress

The European Commission’s 2011 Transport White Paper entitled Roadmap to a Single European Transport Area — Towards a competitive and resource efficient transport system (EC, 2011) still remains an important reference point because it contains a numerical transport sector target. It formulates the long-term ambition to reduce greenhouse gas emissions from transport by at least 60 % by 2050 compared to 1990. The more recent European strategy for low-emission mobility reiterates this target and identifies priority areas for action (EC, 2016).

Figure 1 shows the evolution of EU greenhouse gas emissions from transport (including international aviation and excluding international shipping) over the 1990-2016 period as reported by Member States. The emissions increased by 26 % compared with 1990 levels. This increase comes despite past improvements in the efficiency of transport and is broadly in line with increases in the level of economic activity as measured by gross domestic product (GDP) as well as increases in demand for transport (both freight and passenger) (EEA, 2018a).

Road transport accounts for 72 % of total greenhouse gas emissions of the sector (EEA, 2018b). Ongoing energy efficiency improvements in road transport have played a key role in limiting the increase of road transport emissions. Such improvements were brought about in part by means of increasingly stringent technical standards, including the fleet average CO2 emission requirements for new passenger cars (EU, 2009) and vans (EU, 2011).

Figure 1 shows that greenhouse gas emissions from transport decreased between 2008 and 2013. This was mainly because of lower levels of economic activity — manifesting also in lower levels of freight transport (EEA, 2018a) — following the 2008 economic downturn, as well as further implementation of transport efficiency measures.
Greenhouse gas emissions from transport increased in 2014, 2015 and 2016 (by 1 %, 2 % and 2.6 % respectively, year-on-year). The transport greenhouse gas emission increases over the 2014-2016 period were mainly because of increased activity levels in the transport sector driven by economic growth and took place despite energy efficiency improvements and technological advances in the sector (Odyssee-Mure, 2018).

The official projections by the EU Member States show that the EU transport greenhouse gas emissions (including international aviation but excluding international shipping) will decrease slightly between 2015 and 2020 in the two scenarios used: with existing measures and with additional measures (EEA, 2018c). However, EU transport greenhouse emissions (including international aviation but excluding international shipping) reported by the Member States have
increased for 3 years in a row (2014-2016) and preliminary estimates show an increase also in 2017 by 1.5% compared with 2016 (EEA, 2018d). This means that transport GHG emissions would need to fall at an annualised rate of above 2% during the 2018-2020 period in order to reach a level that is below the one in 2014. Such a development is incompatible with the most recent projections (2018c). It therefore seems unlikely that over the 7th EAP implementation period (2014-2020) EU transport greenhouse gas emissions will decrease.

Country level information

Figure 2. Change in greenhouse gas emissions from transport, 1990 to 2016, by country

Data sources: a. EEA. National emissions reported to the UNFCCC and to the EU Greenhouse Gas Monitoring Mechanism
b. EEA. TERM 002 indicator
Figure 2 shows the change in transport greenhouse gas emissions between 1990 and 2016 at country level. Over this period, a few countries saw a slight decrease in emissions while in the majority of the countries greenhouse gas emissions increased significantly. An increase in car ownership rates resulting in bigger car fleets is a key reason for transport greenhouse gas emission increases (EEA 2018e). Car ownership growth was particularly strong in the countries joining the EU since 2004, many of which started from a very low level in 1990. Countries with a strong growth in transport greenhouse gas emissions typically also experienced the strongest expansion in transport demand (EEA, 2018a) in tandem with a declining share of rail transport.

Outlook beyond 2020

The 10 goals set by the European Commission White Paper on Transport (EC, 2011) are expected to lead to the future introduction of new EU policies to increase the efficiency of Europe’s transport sector. The main target of the White Paper is to reduce greenhouse gas emissions by 60 % compared with 1990 levels, by 2050. A key assumption in the White Paper is that technologies that contribute to lower greenhouse gas emissions, such as the electrification of road transport and development of sustainable fuels, will be increasingly available, especially after 2030. More recently, the European Commission has also published a ‘European Strategy for Low-Emission Mobility’ (EC, 2016a) that identifies three priority areas for action:

1. [Further] increasing the efficiency of the transport system;
2. Speeding up the deployment of low-emission alternative energy for transport; and

A modal shift away from road transport is a key element of the EU’s decarbonisation ambitions. The White Paper explicitly states the ambition to shift 30 % of road transport for distances over 300 km to rail and waterborne transport by 2030, and more than 50 % by 2050.

Nevertheless, total transport demand is predicted to continue growing during the 2020-2030 period in line with 2010-2020 patterns (1 % a year for passenger transport (passenger km) and 1.5 % for freight transport (tonne km)) and at lower rates between 2030 and 2050 (0.7 % a year for passenger transport and 0.8 % for freight transport) (EC, 2016b).

Integrated measures addressing both production and consumption would therefore be needed in the long run in order to, inter alia, contain the expected increase in transport demand and reduce the greenhouse gas emissions from transport by 60 % by 2050.
About the indicator

This indicator presents the total EU greenhouse gas emissions from transport including emissions from international aviation but excluding emissions from international maritime transport. Greenhouse gas emissions from transport activities include carbon dioxide, methane and nitrous oxide. The individual gases were converted into greenhouse gas emissions by being weighted according to their global warming potentials following the relevant guidelines of the Intergovernmental Panel on Climate Change. For further information on the indicator and on the method used, please see the indicator specification of the EEA indicator TERM (Transport and Environment Reporting Mechanism) 002 (EEA, 2018e).

The indicator does not include greenhouse gas emissions from the construction of transport-related infrastructure or from the production of transport vehicles within and outside the EU.

Footnotes and references


Annual Indicator Report Series (AIRS)


Environmental indicator report 2018 – In support to the monitoring of the 7th Environment Action Programme, EEA report No 19/2018, European Environment Agency

Published on 29 Nov 2018

Environmental indicator report 2018 > Resource efficiency and low carbon economy > Transport greenhouse gas emissions