

Transport and Environment Reporting Mechanism (TERM)

Monitoring progress of Europe's transport sector towards its environment, health and climate objectives

The 'Transport and Environment Reporting Mechanism' (TERM) includes a number of indicators used for tracking the short and long-term environmental performance of the transport sector in the 28 Member States of the European Union (EU-28). This briefing presents the latest indicator-based assessment of progress being made towards key transport-related policy targets and objectives.



- The EU transport sector is making mixed progress towards meeting its environmental, health and climate policy targets. In particular, the need to manage rising greenhouse gas (GHG) emissions means increased efforts are required to meet long-term transport targets.
- Since 2014, the EU's transport GHG emissions have increased. In 2016, provisional data show there were 25 % higher GHG emissions (including international aviation but excluding maritime shipping) than in 1990.
- The average CO₂ emissions of new passenger vans and cars in 2016 were below the respective target paths for 2020 and 2021, although considerable reductions still need to be made in the coming years to meet future targets.
- Although sales of new diesel passenger cars have decreased in recent years, the share of diesel used in road transport (including for freight transport by heavy-duty vehicles) has continued to rise, amounting to more than 66 % of total fuel sales in road transport in 2015, compared with 51 % in 2000.
- Oil consumption by the transport sector will need to fall by more than two-thirds to meet the objective of reducing consumption by 70 % by 2050 compared with 2008 levels;
- The share of renewable energy in transport in the EU rose from 6.7 % in 2015 to 7.1 % in 2016, lower than the 10 % target set for 2020. Just three Member States (Austria, Finland and Sweden) have already reached the 10 % goal.
- Transport is the main source of environmental noise in Europe, and contributes to pressure on ecosystem and biodiversity habitats. It also continues to be a significant source of harmful air pollution, especially through emissions of nitrogen dioxide and particulate matter.

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Progress towards the EU's transport and environmental goals

The European Union's (EU's) Seventh Environment Action Programme (7th EAP) puts forward a clear vision: 'In 2050, we live well, within the planet's ecological limits.' In order to achieve this vision, environmental pressures arising from all sectors of the economy should be significantly reduced. As it is a key economic sector, reducing the environmental, health and climate pressures arising from Europe's transport sector is critical to achieving the 7th EAP's longer-term objectives.

Within the EU, quantitative targets and objectives relevant to the environmental performance of the transport sector are laid out in:

- the European Commission's 2011 Transport White Paper and its impact assessment;
- the Renewable Energy Directive (2009/28/EC);
- the Fuel Quality Directive (1998/70);
- the Regulations on CO₂ emissions from new cars (443/2009) and vans (510/2011).

Table 1 summarises the progress made for those goals that are monitored, highlighting past trends and the extent to which the EU is on track to reach respective policy targets. For each goal, a base year and corresponding value are determined, which serve as a starting point for the target trajectory. For transport GHG emissions, the 2011 Transport White Paper defined the preferred policy option to reach the objective. This forms the basis of the trajectory for reductions in transport GHG emissions. For the other objectives, a linear trend is assumed towards the target, starting from the base year. Only a selection of transport goals are provided — others cannot yet be fully monitored due to a lack of data and/or the complicated nature of the evaluation required.

Table1. Progress of the EU-28 in meeting selected transport goals.

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Source	Target	Unit	Where we were		Where we want to be		Where we are (current trends vs. target paths)												Latest annual trend		
			Year	Value	Year	Value	2010		2011		2012		2013		2014		2015			2016	
			Target path	Observed	Target path	Observed	Target path	Observed	Target path	Observed	Target path	Observed	Target path	Observed	Target path	Observed	Target path	Observed		Target path	Observed
European Commission's 2011 Transport White Paper (EC, 2011)	Transport GHGs (including international aviation, excluding international maritime shipping) ¹⁴	Mt CO ₂	2030	917 (-48%)	2030	1106	1106	1064	1108	1056	1110	1025	1113	1019	1115	1029	1117	1048	1099	1067	1.8%
			2050	333 (-60%)	2050	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054	1054
European Commission's 2011 Transport White Paper (EC, 2011)	EU CO ₂ emissions of maritime bunker fuels	Mt CO ₂	2005	161	2005	154	154	159	152	161	151	148	140	148	136	147	135	145	n.a.	-1.3%	
Passenger car CO ₂ EC regulation 443/2009	Target for average type-approval emissions for new passenger cars ¹⁵	g CO ₂ /km	2015	130	2015	140	140	140	138	136	136	132	134	127	132	123	130	120	124	118	-1.2%
			2021	95	2021	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172	172
Van CO ₂ EC regulation 510/2011	Target for average type-approval emissions for new passenger vans ¹⁶	g CO ₂ /km	2017	175	2017	180	180	180	180	180	180	180	179	178	169	177	168	176	164	164	-2.8%
			2020	147	2020	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180	180
Impact assessment accompanying the 2011 Transport White Paper	Reduction of transport oil consumption ¹⁶	million TJ	2050	5.2 (-70%)	2050	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	1.5%
			2050	10%	2050	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9	15.9
Renewable Energy Directive 2009/28/EC	10% share of renewable energy in the transport sector final energy consumption for each Member State (used here as a proxy) ¹⁸	%	2010	5.20%	2010	5.2%	5.2%	5.2%	5.7%	4.0%	6.2%	5.6%	6.8%	5.9%	7.1%	6.5%	7.6%	8.1%	7.1%	5.7%	

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Notes: (a) EU-28 excluding Croatia until 2013. EU-28 from 2014 onwards.

(b) Preliminary data for 2016.

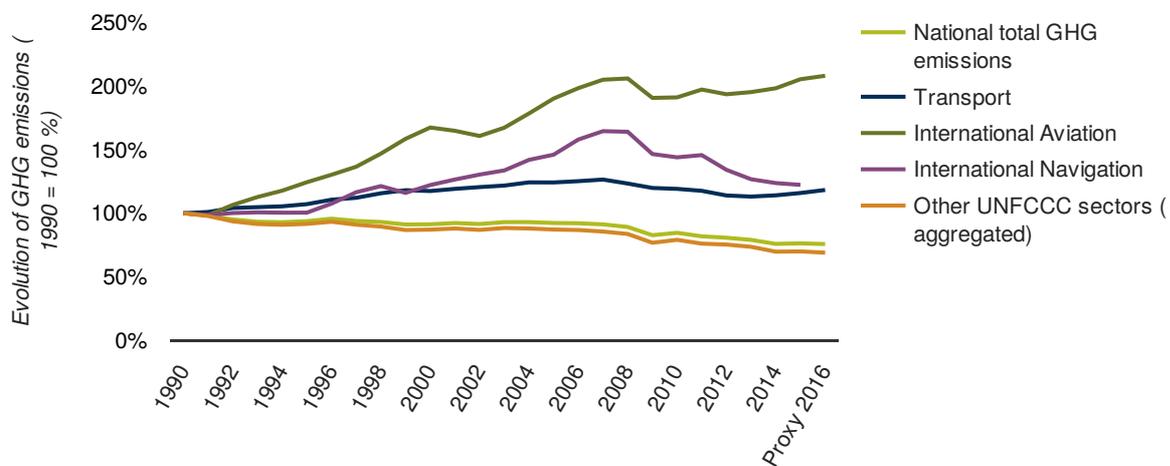
(c) In the case of the Renewable Energy Directive (EU, 2009a) target, Eurostat published for the first time (2011 data) the share of biofuels in transport energy use which meet the sustainability criteria of the Directive. The large increase between 2011 and 2012 is explained by the fact that in previous years the new sustainability criteria were not fully applied. The system for certifying sustainable biofuels is increasingly operational across all Member States.

Transport GHG emissions to be reduced by 20 % from 2008 levels by 2030, and by at least 60 % from 1990 levels by 2050

Transport emissions have increased in recent years and now account for around one quarter of the EU's total GHG emissions (Figure 1; see also TERM 002 indicator). From 1990 to 2015, official GHG emissions from transport (including international aviation but excluding maritime shipping in line with the Transport White Paper's 60 % reduction target), increased by 23.1 % (Table 1). The increase is more than 25 % if provisional data for 2016 reported by Member States are considered (European Environment Agency (EEA), 2017a). 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 both freight and passenger transport. The transport sector remains the only major European economic sector in which GHG emissions have increased, compared with 1990 levels.

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Figure 1. Evolution of greenhouse gas (GHG) emissions in the EU-28 from 1990 to 2016



Data sources: a. EEA. [EEA greenhouse gas - data viewer](#)
b. EEA. [Approximated greenhouse gas emissions in 2016](#)

[Explore chart interactively](#)

Note: Preliminary data for 2016 (EEA, 2017a), although not available for international navigation.

Road transport accounts for 72.9 % of transport GHG emissions (including international aviation and maritime emissions). Emissions from the sector have grown in each of the last 3 years, mainly influenced by growth in passenger transport volumes. In 2016, emissions from road transport comprised around one fifth of the EU's total emissions.

GHG emissions from international aviation have more than doubled since 1990 and were almost 25 % higher in 2016 than in 2000, although they still make up a relatively small share of total GHG emissions. Emissions from international aviation have increased over each of the last 4 years (2013-2016) at an average rate of around 2 % per year. As other sources of GHGs decline, emissions from aviation and shipping are increasingly significant.

Compared with the target path to meet the 2030 goals, a further reduction of 12.5 % needs to be achieved. Moreover, the long-term 2050 target requires a reduction in emissions of more than two thirds compared with 2015 levels (see Table 1).

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Maritime bunker GHG emissions to be reduced by 40 % from 2005 levels by 2050

From a peak in 2007-2008, GHG emissions from maritime 'bunker' fuels (i.e. fuels used in ships) sold in the EU-28 have decreased by around one quarter, at least partly because of the subsequent economic downturn. Since 2008, there has been a downward trend, with emissions in 2015 amounting to 135 Mt CO₂. This is more than 16 % below the 2005 level, from which the 2050 target is based. In order to reach the 2050 target, a further reduction of 28 % needs to be achieved.

A new system for the monitoring, reporting and verification of CO₂ emissions from maritime transport (established by Regulation (EU) 2015/757) will commence in 2018. It will introduce obligations to report data on annual maritime GHG emissions and other relevant information.

Average CO₂ emission targets for new passenger cars and vans

Since monitoring under the current Regulation began in 2010, the annual average specific emissions from newly registered passenger cars had decreased by almost 15 % as of 2015. The 2015 target of 130 g CO₂/km was already met in 2013, 2 years before the deadline. In 2016, average emissions decreased by 1.5 g CO₂/km, the smallest annual decrease since 2006. Monitoring of CO₂ emissions from new vans started in 2012. Since then, average specific emissions have decreased by 6.6 %. In 2016, average emissions decreased by a further 4.7 g CO₂/km, a 9.2 % decrease from 2012 levels.

Even though emissions from newly registered passenger cars and vans are well below the target path, they will need to further decrease by almost 20 % for new passenger cars and by more than 11 % for vans in order to meet the targets of 95 g CO₂/km by 2021 and 147 g CO₂/km by 2020 respectively. CO₂ emissions from passenger cars and vans officially reported by Member States and vehicle manufacturers. While these emission values are based on measurements performed in the laboratory using the standard European vehicle test cycle, it is nowadays widely accepted that such measurements may not reflect real-world driving performance.

The European Commission has recently proposed setting new CO₂ emission standards for cars and vans for the period after 2020. The proposed framework foresees a 30 % reduction of average emissions by 2030 compared with 2021.

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Oil consumption by the transport sector (including maritime bunkers) to be reduced by 70 % by 2050 from 2008 levels

Transport remains very dependent on oil, with oil-derived fuels accounting for 95 % of final energy consumption in transport. After reaching a peak in 2007, the impacts of the economic recession caused a subsequent decline in transport demand — oil consumption continuously decreased, until in 2013 it was 12.5 % below 2007 levels. From 2013 to 2015, the trend was upwards, although levels remained 8.8 % below those of 2008.

Road transport is responsible for the largest share of oil-derived fuels in transport, accounting for 78 % of total consumption in the EU-28 in 2015. Despite a decrease in energy consumption since the recession, road transport energy consumption in 2015 was still 23 % higher than in 1990. The portion of diesel used in road transport has continued to increase, amounting to more than 66 % of total fuel sales in road transport in 2015, compared with 51 % in 2000. This trend confirms the increasing dieselisation of Europe's vehicle fleet over the same period.

In order to achieve the 2050 goal of 70 % a reduction in transport oil consumption compared with 2008, the additional efforts required remain challenging. Even though the EU was on the target path until 2014, the increase in diesel fuel consumption in road transport and international marine bunkers meant it exceeded the projected downward target trend in 2015. Transport oil consumption will need to fall by more than two thirds to meet the objectives of a 70 % reduction in oil consumption by 2050.

Renewable energy — all EU Member States to achieve a 10 % share of renewable energy by 2020 for all transport options

Only those biofuels complying with the sustainability criteria under the Renewable Energy Directive and the Fuel Quality Directive are considered for this target. According to preliminary EEA estimates for 2016 (EEA, 2017b), the share of renewable energy grew from 6.7 % in 2015 to 7.1 % in 2016 (Table 1). For the EU-28 overall, the observed trend lies below the target path to reach the 2020 goal. The share of renewable energy in transport varied across countries, from 27 % (Sweden) to close to 0.5 % (Estonia). Besides Sweden, two more Member States (Austria and Finland) have also reached the goal of a 10 % share of energy from renewable sources in transport.

Renewable energy in this sector comes overwhelmingly from biofuels (close to 90 %), with electricity still playing only a limited role. A larger share of renewable electricity use in the transport sector would reduce the pressure on transport biofuels to reach the EU's target of a 10 % renewable energy share (RES) consumed in transport by 2020 (EEA, 2017b).

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Air pollution

Between 2000 and 2015, because of the introduction of fuel quality standards, Euro vehicle emission standards and the use of cleaner technologies, the transport sector significantly reduced emissions of certain air pollutants: sulphur oxides (SO_x), nitrogen oxides (NO_x) and particulate matter (PM) (TERM 003 indicator). With the exception of international aviation, all modes of transport contributed to the decrease.

Transport is responsible for more than half of all NO_x emissions and contributes significantly to the total emissions of the other pollutants. Road transport, in particular, continues to make a significant contribution to emissions of all the main air pollutants (with the exception of SO_x). Some 39 % of NO_x emissions arise from road transport. However, the contribution of the road transport sector to harmful NO₂ concentrations, especially in urban areas, is considerably higher, because emissions occur close to the ground and are distributed over densely populated areas.

While emissions from road transport are mostly exhaust emissions arising from fuel combustion, non-exhaust emissions contribute to both non-methane volatile organic compounds (NMVOCs) (from fuel evaporation) and primary particulate matter (PM) (from tyre- and brake-wear, and road abrasion). Although emissions of fine particulate matter (PM_{2.5}) from road transport have declined by 50 % since 2000, the relative importance of non-exhaust emissions has increased, because the introduction of vehicle particulate abatement technologies has reduced exhaust emissions.

As land-based emissions from transport sources decrease, there is an increased focus on coastal maritime emissions which contribute to background air pollution across Europe. Initiatives to reduce emissions of key air pollutants from the maritime sector include an international agreement to limit the maximum sulphur content in maritime fuel to 0.5% from 2020, and already from 2015 establishing a maximum concentration of 0.1% in a sulphur emission control area covering the Baltic Sea, the North Sea and the English Channel. For NO_x, a similar emission control area covering the same region is foreseen from 2021.

Noise

Noise pollution is a significant environmental health problem in Europe, with road traffic the dominant source of environmental noise. The latest data reported by EEA member countries (TERM 005 indicator) show that around 100 million people are exposed to road traffic noise levels above the 55 dB L_{den} indicator^[1]. Exposure to noise from railways comes next with 19 million people exposed above 55 dB L_{den}. Aircraft noise, with more than 4.1 million people exposed above 55 dB L_{den}, is the third main noise source. While aircraft noise does not affect a wide geographical area, aircraft typically generate more annoyance and sleep disturbance than other sources at the same noise levels.

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Ecosystem and biodiversity habitats

Transport can also cause several significant negative impacts on ecosystems and biodiversity. The design and use of road, rail and waterborne transport infrastructure alters the quality and connectivity of habitats and can create physical barriers to the movement of plants and animals between habitat areas. Species can be injured or killed by vehicles, become isolated by habitat fragmentation, or exhibit behavioural changes that put their survival at risk, such as feeding on or near roads, or changes in migratory behaviour (Bennett et al., 2011; CEEweb, 2011). The development and use of transport infrastructure can also increase pollution levels in surrounding habitats and serve as a vector for the spread of non-native and invasive species (von der Lippe and Kowarik, 2008). A number of policies have been introduced, establishing procedures and obligations to minimise such consequences. However, several gaps remain concerning their implementation in practical terms (EEA, 2015).

Further reading – TERM indicator fact sheets

TERM 001: Final energy consumption by mode of transport

TERM 002: Greenhouse gas emissions from transport

TERM 003: Emissions of air pollutants from transport

TERM 004: Exceedance of air quality objectives due to traffic

TERM 005: Population exposure to environmental noise

TERM 012: Passenger transport demand

TERM 013: Freight transport demand

TERM 020: Real change in transport prices by mode

TERM 021: Transport fuel prices and taxes

TERM 031: Use of renewable fuels in transport

TERM 032: Size of the vehicle fleet

TERM 034: Alternative-fuel vehicles as a proportion of the total fleet

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Footnotes and References

[1] 55 dB Lden — noise indicator under the EU’s Environmental Noise Directive designed to assess annoyance by setting a day, evening, and night noise level of 55 dB.

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