

Fact sheet

“Betting on E”: Playing dangerous roulette with Germany’s future

- European emissions legislation
- European climate protection targets 2030
- Method used to calculate CO₂ emissions for motor vehicles and fuels
- Biofuels: Biodiesel, bioethanol, and biomethane

European emissions legislation

The European Union has committed itself to reducing greenhouse gas emissions by at least 20 percent by 2020, and by at least 40 percent by 2030 (compared to 1990 levels). Pollutant emissions and climate-damaging CO₂ emissions from passenger vehicles and light commercial vehicles are governed by Europe-wide directives and regulations which set limits and testing procedures for emissions and evaporation. The emission limits in grams per kilometre (g/km) have been successively tightened since 1992 – initially with the implementation of the European Directive 91/441/EWG (Euro 1).

European CO₂ legislation: Until 2021 all new passenger vehicles and light commercial vehicles registered in the EU may emit a maximum of 95 g/km CO₂. In March 2019 the EU parliament approved new CO₂ limits applicable after 2021. By 2025 the emissions will be reduced further with reductions of 15 percent, followed by reductions of 37.5 percent by 2030 (compared to 2021 levels).

European climate protection targets 2030

EU climate and energy policy until 2030 is aimed at three primary objectives:

- Reducing greenhouse gas emissions in the territory of the EU by at least 40 percent compared to 1990 levels.
- Increasing the share of energy consumed generated from renewable sources in the EU by at least 27 percent.
- Increasing energy efficiency by at least 27 percent.

The resolution was approved by the European Council in October 2014. The objectives for renewable energies and energy efficiency were revised upwards in 2018.

Source: European Commission

Method used to calculate CO₂ emissions for motor vehicles and fuels

Using the “**Tank-to-Wheel**” calculation method, an electric vehicle is emission free – it has 0 g/km CO₂ emissions while the vehicle is in operation. “Tank-to-Wheel” means that the method takes account of the chain of events from the intake of energy consumption (fuel or electric energy) through to its conversion into kinetic energy in motor vehicles. It measures the emissions of a vehicle that result from bringing a vehicle into motion, starting from the fuel tank of the vehicle. These emissions are also described as direct emissions or operational emissions. This only takes account of that element of the process directly resulting from the technology used in the vehicle. The “Tank-to-Wheel” approach is the basis used by manufacturers to make declarations of fuel consumption (and fuel costs) as well as for emissions (used for vehicle taxes).

Using the “**Well-to-Wheel**” method, an ecologically more accurate approach and the method used for fuels, also takes account of the CO₂ emissions which result from the extraction or manufacturing of the respective fuels or in manufacturing and supplying the electricity used in the car.

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Using this method and taking account of the composition of the current **German electricity mix**, an electric car generates CO₂ emissions of approximately 65–75 g/km. On the other hand, a CNG vehicle powered by biomethane manufactured from waste materials or straw generated CO₂ emissions of only around 5 g/km on the “Well-to-Wheel” basis.

Biofuels: Biodiesel, bioethanol, biomethane

Biodiesel and bioethanol: Sustainably produced biofuels reduce greenhouse gas emissions compared to fossil fuels by 60 to 90 percent. Today, traditional biofuels such as biodiesel from rapeseed oil or bioethanol from rye and sugar beet provide the largest share of biofuels in the German market, followed by biodiesel from used cooking oil, a waste product. In future these will be replaced by so-called advanced biofuels, for example biomethane from 100 percent straw. In accordance with European directives these must constitute at least 1.75 percent of the energy brought into circulation by the year 2030.

With a realistic share of approximately 7 percent of the fuels market by 2030, biofuels will save 102.7 million tonnes of CO₂ so that few emission rights will need to be bought from other EU member states. As a result, biodiesel and bioethanol from sustainable cultivated biomass will lead to savings of EUR 5.8 billion, while biofuels from used cooking oil and animal fats, as well as advanced biofuels from waste and residual products, will lead to savings of EUR 4.4 billion by 2030. These are the results of a new study issued in February 2019 by DIW Econ, the consultancy company of the German Institute for Economic Research (Deutsches Institut für Wirtschaftsforschung – DIW).

Source: The German Biofuel Industry Association
(Verband der Deutschen Biokraftstoffindustrie e. V. – VDB)

Biomethane from waste products such as straw: [VERBIO AG](#) currently has three biomethane plants which generate biomethane wholly from waste materials. The plants use VERBIO's own technology in an anaerobic fermentation process using distillation waste (a residual waste product from ethanol production) or straw (a waste product from the region's agriculture). VERBIO has been operating the world's first large-scale biomethane plant at its Schwedt/Oder location based on 100 percent straw since 2014. The second plant of this type was brought into service by VERBIO in spring of 2019 at the Pinnow location.

According to a study published by the German Biofuels Research Center (Deutsches Biomasseforschungszentrum Leipzig – DBFZ), between eight and thirteen million tonnes of straw remain unused in Germany every year, meaning that these are available for the generation of biofuels.

In the last financial year VERBIO generated 600 GWh of biomethane from waste materials. With this, VERBIO's current production alone could meet almost 25 percent of German demand for CNG fuel. Four large bales of straw (2 tonnes) are sufficient to generate the annual fuel needs of a medium-sized CNG passenger vehicle.

For the time being, CNG and biomethane are also the only CO₂ available and affordable efficient alternative fuels for heavy goods vehicles used in long-distance transport. The 2019 and 2020

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exemption from road tolls for CNG-powered heavy goods vehicles in particular has made this an item on the agenda for German haulage companies.

In addition to these applications, CNG or biomethane can be used to provide climate-friendly and cost-efficient power for local public service buses. The evidence for this can be seen in cities such as Giessen, Greifswald, Dessau, Wernigerode, Oldenburg, Nuremberg and in particular in Augsburg, where the city bus fleet of approximately 100 vehicles has been using biomethane generated 100 percent from waste materials supplied by VERBIO since 2011.

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