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FVV | Research Association for Combustion Engines

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New FVV Fuels Study: The carbon footprint of the existing fleet is the decisive factor in achieving the climate goals

Electricity, hydrogen or synthetic fuels: When it comes to the energy sources to be used in road transport of the future, there is much debate. A new study by the research association FVV now shows: Powertrain technologies are not the decisive factor for the speed at which transport in Europe can become both sustainable and climate-neutral, but rather the fastest possible departure from fossil energy carriers.

Frankfurt/M., 11.11.2021 // What would happen if, from 2033 onwards, only passenger cars that are no longer powered by fossil fuels and are completely carbon-neutral in operation were to be registered in Europe? This question is answered by a new study conducted by the consultancy Frontier Economics and the Institute for Energy and Environmental Research Heidelberg (ifeu) on behalf of the FVV. The study differs from numerous other studies primarily in that it consistently considers all greenhouse gas emissions, i.e. not only those resulting from the production of the cars and their use, but also all those that are generated by the production and supply of the energy sources. The experts followed a budget approach, i.e. they did not look at relative savings, but only at the cumulative emissions up to the year 2050 - because ultimately the total amount of CO₂ released determines whether the climate targets defined by the Paris Agreement can be met.

Assuming an identical ramp-up duration and a service life of 17 years for each passenger car, the cumulative CO₂ emissions differ by only 14 percent between the various combinations of energy carriers and powertrains. »From this we may conclude that the powertrain technology plays only a very small part in whether the climate targets are met. It rather depends on how quickly we manage to completely phase out the use of fossil fuels,« says FVV Managing Director Dietmar Goericke.

The share of the existing fleet in total emissions from the transport sector is decisive

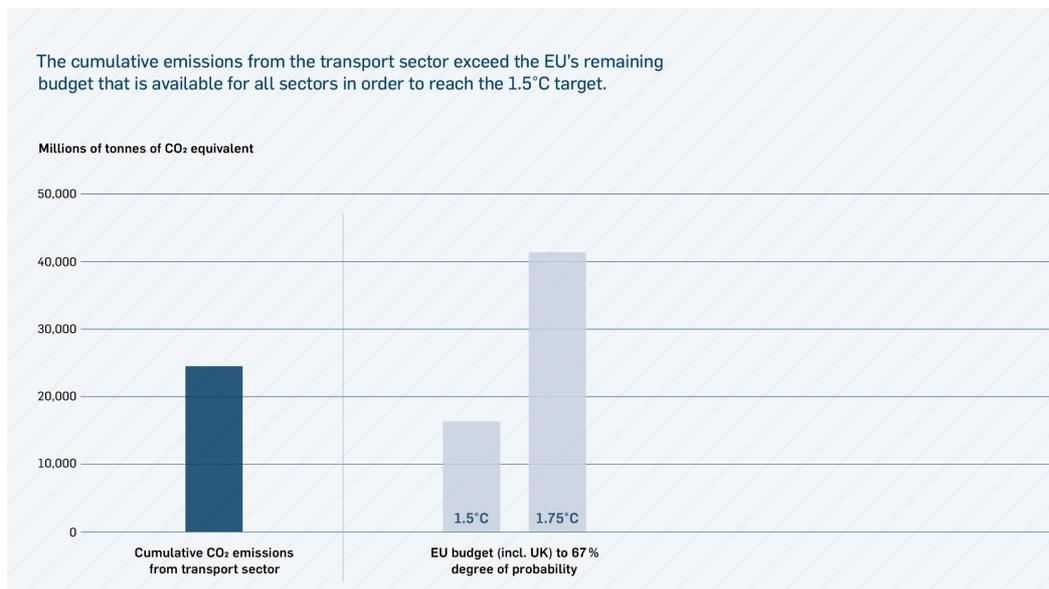
One of the key findings of the FVV study is that even if only climate-neutral passenger cars and light commercial vehicles are registered in 2033, the cumulative emissions from mobility will exceed Europe's entire greenhouse gas budget which would enable adherence to the 1.5°C target - and that for all sectors. What is even more serious is that this overshoot happens regardless of the scenario model as early as 2031 or 2032. The reason for this is the dominant share of the existing fleet in total emissions. Goericke

concludes: »It is an absolute necessity to find the fastest possible solutions to reduce the greenhouse gas emissions from existing vehicles. From today's perspective, this is only possible if we succeed in bringing synthetic fuels onto the market quickly.«

The study also looks at what the introduction of synthetic fuels - so-called e-fuels - would mean for the energy industry. According to the study, a one-hundred-percent transition of the entire passenger car fleet to synthetic fuels would increase the energy demand by a factor of three to four compared to pure battery-electric mobility. However, if the fuels were not produced in Europe but in other regions that are particularly rich in sun and wind, the generation capacity would only increase by a factor of two to three. »But 100 per cent scenarios is not realistic anyway,« says Goericke. »Rather, we need to pursue multiple technology paths in parallel. Then we have a chance to meet the goals of the Paris Agreement and at the same time to ensure that individual mobility remains affordable.«

Images

1 | If the existing fleet cannot be operated with less impact on the climate, mobility-related emissions will exceed the Europe's residual CO₂ budget.



2 | FVV publishes six theories on climate neutrality in the European transport sector



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About FVV

FVV | The Research Association for Combustion Engines is a globally unique network of companies, research & technology performers (RTD) and funding bodies. In the context of pre-competitive Industrial Collective Research (IGF), manufacturers of automotive engines, aircraft engines, industrial engines, turbomachinery and fuel cells as well as their suppliers and service providers work together with universities and other research establishments on cutting-edge technologies. The aim is to make prime movers, ie combustion engines and fuel cells, cleaner, more efficient and sustainable – for the benefit of society, industry and the environment.

Combustion engines and fuel cells facilitate individual mobility, transportation, energy supply and industrial added value. The innovative power of the industry and its economic success make a significant contribution to social prosperity. As a non-profit organisation, the FVV supports the development of its members - small, medium and large companies - and the promotion of young scientists through pre-competitive Industrial Collective Research.

The FVV is a member of the German Federation of Industrial Research Associations (Arbeitsgemeinschaft industrieller Forschungsvereinigungen - AiF), the leading national organisation for applied research and development for SMEs. It has invested far more than 500 million euros in nearly 1,500 research projects since it was founded in 1956.

More information can be found at www.fvv-net.de/en