

CLIMATE ACTION TRACKER

Press release, 15 September 2016

Zero emission vehicles need to take over car market to reach 1.5°C limit: analysis

Zero-emission vehicles need to reach a dominant market share by around 2035 for the world to meet the Paris Agreement's lower warming limit of 1.5°C—and even that could be too late to avoid the need for significant negative emissions, according to new analysis by the Climate Action Tracker (CAT).

This transformation of the passenger transport sector would also have to be accompanied by a decarbonisation of the power sector to ensure the electric vehicles (EV) are truly emissions free.

In the first of its decarbonisation series, the CAT analysis looks at transport, a sector that is key to achieving the deep cuts in emissions required by the Paris Agreement.

In this series the CAT will examine specific energy-intensive sectors, and how emissions can be reduced to be in line with the Paris Agreement's long term warming limits, namely, to keep global temperature rise "well below" 2°C, and to "pursue efforts" to limit warming to 1.5°C.

The CAT's latest analysis shows that if governments were to double fuel economy standards in new passenger cars by 2030, and achieve a 50% EV uptake by 2050, then most get close to—or even reach—a 2°C warming pathway. But a 1.5°C pathway requires more action.

"Emissions standards only get the transport fleet to a certain point—it is clear that in order to get to the Paris Agreement's lower temperature goal of 1.5°C, the world needs to make a paradigm shift to zero emissions vehicles," said Markus Hagemann of NewClimate Institute.

"Attention must also be paid to the recent discovery that some car manufacturers have been deliberately manipulating emissions tests," he noted.

"Perhaps a positive outcome of this scandal is that it has brought to light major shortcomings in the emissions tests themselves, sparking a move towards more realistic tests, hopefully leading to smaller discrepancies between laboratory and road emissions intensities."

"Aside from much-needed shifts in transport behaviour, for the transport sector to decarbonise there is no choice but to adopt zero-emission vehicles. For electric vehicles this would mean that they also need to be powered by renewable electricity," said Yvonne Deng of Ecofys.

To avoid exceeding a 1.5°C warming trajectory, zero global aggregate emissions would need to be reached around the middle of the century, implying that the last fossil gasoline or diesel-powered passenger vehicle would have to be sold around 2035 (assuming a new car would be on the road for an average of 15 years).

"Even a date of 2035 or so for the last new fossil-fuel powered passenger car could be late: the earlier we decarbonise the transport system, the less we will need to rely on negative emissions that largely require technologies still awaiting large-scale deployment," said Michiel Schaeffer of Climate Analytics.

The analysis looks at two scenarios comparing a range of big emitters: the EU, China, US, Japan, India, Mexico and Brazil. Scenario 1 would see a doubling of new car fuel economy standards by 2030, and Scenario 2 a doubling of new car fuel economy standards by 2030, plus 50% (zero emission) EV's by 2050.

- In the EU and the USA, the increased deployment of EVs would keep overall emissions on a downward trend in line with a 2°C pathway.
- In India, the projected rise in vehicle numbers (activity) is so high that absolute emissions from passenger cars would keep rising even under Scenario 2. However, this would still be in line with the IEA's 2°C pathway for India, which foresees a similar rise in emissions, reflecting this strong expected growth.
- The situation in China, Brazil and Mexico lies between these two cases, with emissions under Scenario 2 stabilising as the effects of increased activity and reduced intensity approximately balance out. The resulting decreasing emissions trend is just enough to comply with a 2°C pathway.
- Overall emissions are expected to decrease most strongly in Japan (in both scenarios), partly due to declining activity levels.

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The Climate Action Tracker is an independent science-based assessment that tracks the emission commitments and actions of countries. It is a joint project of the following organisations:

Climate Analytics

Climate Analytics is a non-profit institute based in Berlin, Germany, with offices in Lomé, Togo and New York, USA, that brings together inter-disciplinary expertise in the scientific and policy aspects of climate change with the vision of supporting science-based policy to prevent dangerous climate change, enabling sustainable development. Climate Analytics aims to synthesise and advance scientific knowledge in the area of climate, and by linking scientific and policy analysis provide state-of-the-art solutions to global and national climate change policy challenges. Contact: Dr. h.c. Bill Hare, +49 160 908 62463

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Potsdam Institute for Climate Impact Research (PIK)

The PIK conducts research into global climate change and issues of sustainable development. Set up in 1992, the Institute is regarded as a pioneer in interdisciplinary research and as one of the world's leading establishments in this field. Scientists, economists and social scientists work together, investigating how the earth is changing as a system, studying the ecological, economic and social consequences of climate change, and assessing which strategies are appropriate for sustainable development. Contact: Dr. Louise Jeffery, louise.jeffery@pik-potsdam.de

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NewClimate Institute

NewClimate Institute is a non-profit institute established in 2014. NewClimate Institute supports research and implementation of action against climate change around the globe, covering the topics international climate negotiations, tracking climate action, climate and development, climate finance and carbon market mechanisms. NewClimate Institute aims at connecting up-to-date research with the real world decision making processes. Contact: Prof. Dr. Niklas Höhne, +49 173 715 2279

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