

Electric cars better for climate in 95% of the world

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Fears that electric cars could actually increase carbon emissions are unfounded in almost all parts of the world, news research shows. Media reports have regularly questioned whether electric cars are really "greener" once emissions from production and generating their electricity are taken into account. But a new study by Radboud University with the universities of Exeter and Cambridge has concluded that electric cars lead to lower carbon emissions overall, even if electricity generation still involves substantial amounts of fossil fuel.

Already under current conditions, driving an electric car is better for the climate than conventional petrol cars in 95% of the world, the study finds. The only exceptions are places like Poland, where [electricity generation](#) is still mostly based on coal. Average lifetime emissions from [electric cars](#) are up to 70% lower than petrol cars in countries like Sweden and France (which get most of their electricity from renewables and nuclear), and around 30% lower in the UK.

In a few years, even inefficient electric cars will be less emission-intensive than most new petrol cars

in most countries, as electricity generation is expected to be less carbon-intensive than today. The study projects that in 2050, every second car on the streets could be electric. This would reduce global CO₂ emissions by up to 1.5 gigatons per year, which is equivalent to the total current CO₂ emissions of Russia.

The study also looked at electric household [heat pumps](#), and found they too produce lower emissions than fossil-fuel alternatives in 95% of the world. Heat pumps could reduce global CO₂ emissions in 2050 by up to 0.8 gigatons per year—roughly equal to Germany's current annual emissions.

"We started this work a few years ago, and policy-makers in the UK and abroad have shown a lot of interest in the results," said Dr. Florian Knobloch, of the Environmental Science Department at Radboud University (The Netherlands), the lead author of the study. "The answer is clear: to reduce [carbon emissions](#), we should choose electric cars and household heat pumps over fossil-fuel alternatives."

"In other words, the idea that electric vehicles or electric heat pumps could increase emissions is essentially a myth. We've seen a lot of discussion about this recently, with lots of disinformation going around. Here is a definitive study that can dispel those myths. We have run the numbers for all around the world, looking at a whole range of cars and heating systems. Even in our worst-case scenario, there would be a reduction in emissions in almost all cases. This insight should be very useful for [policy-makers](#)," said Knobloch.

The study examined the current and future emissions of different types of vehicles and home heating options worldwide. It divided the world into 59 regions to account for differences in power generation and technology. In 53 of these regions—including all of Europe, the US and China—the findings show electric cars and heat

pumps are already less emission-intensive than fossil-fuel alternatives. These 53 regions represent 95% of global transport and heating demand and, with [energy production](#) decarbonizing worldwide, Knobloch said the "last few debatable cases will soon disappear."

The researchers carried out a life-cycle assessment in which they not only calculated greenhouse gas emissions generated when using cars and heating systems, but also in the production chain and waste processing. "Taking into account emissions from manufacturing and ongoing energy use, it's clear that we should encourage the switch to electric cars and household heat pumps without any regrets," Knobloch concluded.

The study is published in *Nature Sustainability*.

More information: Net emission reductions from electric cars and heat pumps in 59 world regions over time, *Nature Sustainability*, [DOI: 10.1038/s41893-020-0488-7](#) , <https://nature.com/articles/s41893-020-0488-7>

Provided by Radboud University Nijmegen

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