Reaching national electric vehicle goal is unlikely by 2030 without lower prices, better policy

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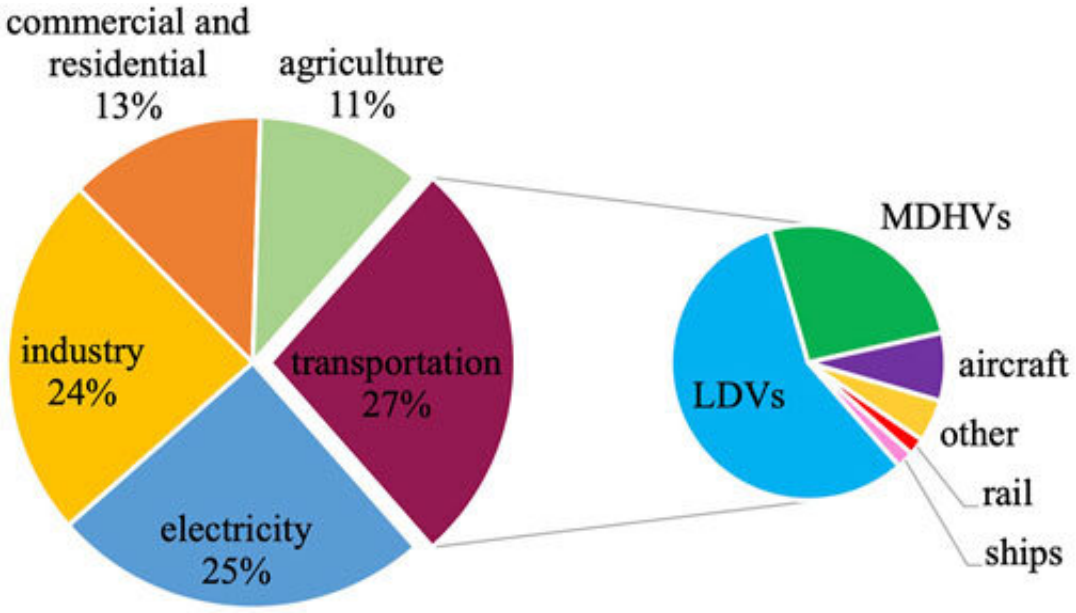

A breakdown of U.S. GHG emissions shares by industry sector, 2020. Credit: John D. Graham & Eva Bungard, *Frontiers in Environmental Science* (2022). DOI: 10.3389/fenvs.2022.962942

The United States government has set an ambitious national goal of reaching 50 percent penetration of plug-in electric vehicles by 2030, but a new study from researchers at Indiana University's Paul H. O'Neill School of Public and Environmental Affairs shows that the U.S. is unlikely to meet this goal unless electric vehicles become more

affordable for consumers.

The study, "Affordable Electric Vehicles: Their Role in Meeting the U.S. Contribution to the Paris Climate Goals," was recently published in the journal *Frontiers in Environmental Science*. The research was conducted by Professor John D. Graham and Eva Brungard, who is a research assistant at IU and has held internships at both an electric vehicle manufacturer and trade association.

"We need to focus policymakers, automakers, and electric utilities on how to stimulate consumer demand for—and automaker offerings of—affordable electric vehicles," said Graham, who also authored the 2021 book "The Global Rise of the Modern Plug-In Electric Vehicle: Public Policy, Innovation, and Strategy."

In 2021, President Joe Biden pledged to achieve net zero carbon emissions economy-wide by 2050, a commitment that is now a formal U.S. submission under the 2015 Paris Accords of the United Nations Framework Convention on Climate Change. As it stands, transportation is the largest contributor to U.S. greenhouse gas emissions, and 58 percent of transportation emissions come from light-duty passenger vehicles, such as cars and light trucks.

Reaching Biden's goal to cut emissions requires a transition from internal combustion engines to zero emission vehicles, such as plug-in electric vehicles, but a number of factors are slowing that transition, among them the price of PEVs. PEVs tend to cost $10,000–$20,000 more than their internal combustion engine counterparts, a price point that is slowing customer acceptance. Surging prices of raw materials used in making batteries and electric motors also have hindered a reduction in the price gap.

Graham and Brungard found that the midpoint of prices of all new

vehicles sold in the U.S. in 2021—both PEVs and ICE vehicles—to be roughly $45,000. Of the 108 total PEV models offered to U.S. consumers in 2022, only 17 featured a base price below $46,000. Few of those affordable models are appealing to consumers. The good news is that the number of affordable PEVs on the market are increasing, but the dominant U.S. producer of electric vehicles, Tesla, is not prioritizing affordable models.

Without more rapid penetration of plug-in vehicles into the affordable end of the new vehicle market, Biden's goals could be impossible. However, the commercialization of plug-in models in Europe provide hope for reaching the benchmarks, but it will require sufficiently favorable public policies to spur greater consumer acceptance.

"Instead of relying on unrealistic mandates from California and other states, the federal government needs a comprehensive electric-vehicle policy—performance standards and incentives—similar to what has been adopted in the European Union," Graham said.

More information: John D. Graham & & Eva Bungard, Affordable Electric Vehicles: Their Role in Meeting the U.S. Contribution to the Paris Climate Goals, *Frontiers in Environmental Science* (2022). DOI: 10.3389/fenvs.2022.962942

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