Earlier this month, the Trump Administration threatened to end federal tax credits for electric vehicles (EVs). Soon after, Congress decided it would not expand the EV federal tax credit, much to the detriment of automakers and potential EV buyers. But despite the disappointment this poses for many, it’s important to understand how government subsidies are bringing unintended consequences to the markets where they are issued.
A trip down memory lane reminds us that, for many years, European
governments used lower taxes on diesel fuel to encourage the purchase of diesel
vehicles over gasoline vehicles, citing superior fuel economy and reduced
pollution as the reason. But decades later, diesel proved to be anything but
environmentally friendly, and Europe was forced to ban diesel vehicles as they
became a major cause of air pollution and smog. But despite the mistakes
learned from diesel, Europe, China, and other countries are moving to replace
gasoline-powered vehicles with what again appears to be the more
environmentally friendly alternative—electric vehicles.

Nearly every major global automaker is planning to convert all of its models to
some form of battery power, but these risky and ambitious investments are being
made on the assumption that future developments can overcome the current
financial disadvantages of EVs. Battery costs raise EV prices to a level well above
comparably-sized internal combustion engine (ICE) vehicles, a premium that is
not offset by the elimination of gasoline expenses. As a result, governments have
tried to offset the unfavorable economics of EVs using a variety of cash incentives
and other perks to induce the purchase of electric vehicles in their efforts for a
“greener future.”

The government of Norway has been very successful at raising the level of electric
cars on its roads by offering various incentives, which are, ironically, supported
by an economy that is wealthy because of crude oil production. Norwegian EV
drivers have access to bus lanes, discounted parking and tolls, and are exempt
from various vehicle-related taxes. But Norway rolled back some of its incentives
when unintended consequences surfaced. For example, when three out of four
vehicles in bus lanes were electric cars, the congestion meant that Oslo’s buses
couldn’t keep to their schedules, and users of “greener” mass transportation were
severely inconvenienced. In another example, the Netherlands rolled back some
its generous EV subsidies after it’s €19,000 euro per vehicle tax credit (USD
21,600) made the small nation the top selling European market for the ultra-
expensive Tesla Model S.
Loss of gasoline tax revenues is another unintended consequence of EVs, forcing states (even EV-leader California) to impose various fees on EV and hybrid owners to compensate for lost tax revenues. Many have argued that the burden of financing critical road projects, which are funded in large part by gasoline taxes, can’t fall on the portion of the population that owns the oldest and least fuel-efficient vehicles, while states use precious tax funds to subsidize the purchase of $100,000 sports cars (just because they are electric). As EVs proliferate, government-mandated fees are increasing in amount and frequency, but it’s unclear if these fees will be enough to offset lost gasoline tax revenue.

There are also many unanswered questions, and potential unintended consequences, impacting the lifetime ownership economics of electric vehicles as well as the societal burden to accommodate this transition. Who will build and invest in charging infrastructure in our cities and homes, including multi-family buildings? What is the impact of millions of vehicles charging simultaneously on the electric power grid, especially on transformer life (after all, there are currently 275.1 million vehicles on U.S. roads today, of which only 800,000 are EVs)? How will car owners adjust to the shorter life of EVs, as a result of a battery lifespan of no more than ten years (with significant degradation beginning at five years)? Battery replacements could potentially cost a high multiple of the current value of the car itself, whereas the average ICE vehicle lasts sixteen years.

Despite all the economic issues related to EVs, perhaps the most surprising and unintended consequence is, of all things, pollution. Much of the electricity that powers EVs is produced by “dirty energy,” even in the U.S., which means in many markets powering an EV results in more air pollution than it avoids. As Herbert Diess, CEO of Volkswagen AG explained, “renewable energy is a must. If you don’t have renewable energy or at least a low carbon share of energy, then you’re
driving on coal instead of oil, and it doesn't make sense.” There are also issues resulting from the improper disposal of end-of-life batteries. Less than 10% of former electric vehicle batteries are recycled because doing so doesn’t make economic sense. In comparison, as a result of becoming an economically viable industry, nearly 100% of the parts in gas-powered vehicles, including the lead-acid battery, are recycled.

As Europe bans its once beloved diesel engine, many countries around the world have convinced themselves that EVs are the answer, and that might be true if accelerated EV research addresses the many problems that surround electric vehicles. But until then, governments and the EV industry must first overcome obstacles they have failed to address; if not, more unintended consequences will result.

Jeremy Alicandri  Contributor

I provide strategy-level consulting services to companies within the automotive industry. Director @ Maryann Keller & Advisors. NYC-based.

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Chike Aguh  Brand Contributor

Chike Aguh (Chee-Kay Ah-Goo) serves as a principal at the McChrystal Group. Chike focuses on growth strategy for the firm and its clients. He is also a partner at Innucvate, a Maryland-based firm growing innovation businesses and ecosystems, particularly in communities that...

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