

Accelerating EU and US Electric E-Mobility on the Road to 2030

Hayden Carbine (United States)



Abstract

According to the United Nations Framework Convention on Climate Change (UNFCCC), greenhouse gas emissions (GHG) must decline 43% by 2030. Transportation is the largest GHG source according to the U.S. Environmental Protection Agency (EPA). Electric mobility holds great potential for GHG reductions in the transportation sector. There are several policy options, including blended financing and carbon pricing instruments, that have been effective and can be implemented much more effectively. To reach our 43% GHG reduction, the US and the EU must accelerate the transition to electric mobility by exchanging best practices in policy implementation, infrastructure development, and public-private collaboration. By assessing the differences between

the US and EU and analyzing the results we can determine which strategies are most effective.

Policy Preview

Transportation is known to be the highest producer of greenhouse gases (GHG), and there has been huge growth in Electric Vehicle (EV) use over the past years. This growth needs to be more dramatic. As 2030 draws closer, the transition to EV transportation must accelerate quickly to achieve the necessary 43% reduction in GHG emissions. While the EU is ahead of the U.S. in the EV market, each can learn much from the other for quick improvements and reductions in GHG emissions. This policy statement considers EU and US policy implementation for electric mobility in search of best practices. It then explores the infrastructure development for each to learn how such development can be quickened effectively. Finally, it describes how public-private collaboration can have a significant impact on EV proliferation.

U.S. Bipartisan Infrastructure Law and Inflation Reduction Act

The Bipartisan Infrastructure Law (BIL) includes programs to incentivize sustainable transportation financially. One is the Clean School Bus Program. According to the U.S. Climate Policy Resource Center, it provides \$2.5 billion specifically for electric, zero-emission buses. The largest is the Carbon Reduction Program. It provides \$6.4 billion to the U.S. Department of Transportation to establish a carbon reduction formula program to assist states in reducing transportation emissions (Electric Vehicles, 2024).

The Inflation Reduction Act (IRA) provides tax credits based on the vehicles purchased. There are four major credits. The Clean Vehicle Credit provides tax credits up to \$7,500 when individuals purchase new, qualifying clean vehicles (Electric Vehicles, 2024). The Previously Owned Clean Vehicle Credit provides individuals up to \$4,000 when purchasing used clean vehicles. The remaining credits are components of the Qualified Commercial Clean Credit. It provides up to \$7,500 tax credit for purchasing a vehicle under 14,000 lbs. For vehicles heavier than 14,000 lbs. The maximum credit is \$40,000.

EU Green Deal and Sustainable and Smart Mobility Strategy

The European Green Deal and the Fit for 55 Package share the goal of reducing GHG emissions in cars and vans. According to the European Environmental Agency, the Fit for 55 Package foresees a 55% reduction of emissions from cars by 2030 and a 50% reduction from vans. The goal is zero emissions from new cars in 2035. Beginning in 2027, the EU will initiate carbon pricing for road transport. Consumers will change their vehicles quicker than, because it becomes more expensive to own emission-emitting vehicles. EU carbon pricing has also begun in the aviation and maritime sectors. The generated revenue can be invested in accelerating vehicle emissions reduction. The Sustainable and Smart Mobility Strategy shows 10 key areas for action to achieve EU goals for 2030, 2035 and 2050. According to the European Commission, the 2030 transportation goals include at least 30 million zero-emission cars in operation on European roads, scheduled carbon-neutral collective travel for journeys under 500 km, and market-ready zero-emission marine vessels.

U.S. and EU Best Practices

In comparison, the US has particularly good financial incentives for individuals. The EU relies more on carbon pricing. The BIL can be effective due to the significant amount of money invested, but the spending timeline could be more effective. The number and scope of the EU Sustainable and Smart Mobility Strategy plans/initiatives are very ambitious. It also is precise and indicates clear timelines for implementation and goal achievement. Overall, the policy implementation of the EU has shown itself to be more precise. The US invests impressively but must be more precise with its timelines.

U.S. Charging Infrastructure

The US charging infrastructure developed too slowly. According to the US Department of Energy, the US had 64,187 public EV charging stations and 175,575 public outlets as of 2023. There is an important distinction between the types of chargers. According to Smart Electric Power Alliance, there are level 1, level 2, and level 3 chargers. The level 1 chargers are the most basic home-based that require 40-50 hours to charge a Battery Electric Vehicle (BEV). The charge takes 5-6 hours on a Plug-in Hybrid Electric Vehicle

(PHEV). The level 2 charger can be seen at homes, workplaces, or public outlets. This type requires 4-10 hours for a full charge on BEVs and 1-2 hours for PHEVs. Level 3 Direct Current Fast Chargers are seen at public fast charging stations and require 20 minutes–1 hour to fully charge a BEV. According to electrek (Lewis), the EV market share for new vehicles is likely to reach 40% by 2030. It estimates that a total of 2.13 million level 2 and 172,000 level 3 public chargers will be required. Although there has been an approximately 20% increase in stations and outlets annually since 2018, a much larger and quicker increase is necessary.

EU Charging Infrastructure

The EU has shown much better charging station progress, with just over 690,000 ports to charge at the end of 2023 according to statzon (Melissa). Not only is this significantly more than in the United States. The growth is much better. Over the past years, the growth percentage has continued to increase and resulted in over a 40% increase from 2022 to 2023. Continued success depends on sufficient funding. According to McKinsey & Company in 2022, the cumulative cost may exceed 240 billion Euro by 2030. Carbon pricing could contribute significantly to relevant revenue generation. Public-private collaboration is another promising funding instrument.

Policy Recommendations

Public-private collaboration, better known as blended financing, can be an especially important tool to accelerate the EU and U.S. transition to e-mobility. This is a collaboration between government agencies and private sector companies to finance, build, and operate projects. According to the World Economic Forum, just 5% of overall climate finance goes towards climate adaptation. Of this 5%, 95% is public money and it amounts to approximately \$30 billion a year. Over the next decade, the projected costs for financing adaptation will be \$140 billion to \$300 billion per year. Both the private and public sectors benefit from the collaboration in investing in adaptation because it optimizes risk management. Private enterprises take on the implementation risk, because they are well suited to do so, whereas the public takes on the policy risks or investments in innovative approaches that competitors can replicate.

Next Steps

There is plenty the EU and U.S. can learn from each other when it comes to EVs. The U.S. is behind in many aspects. That does not mean the EU is on track or cannot improve from peers. The U.S. struggles on BIL timelines. The U.S. IRA is impressive. It could benefit from carbon pricing to add resources for its incentives. The EU will implement their Emissions Trading Systems 2 to address the CO2 emissions from fuel combustion in buildings, road transport, and additional sectors (mainly small industries not covered by the existing EU ETS). I believe this could have a huge effect on the growth of EVs and accelerate improvements. The EU has more guidelines for timelines, but there could be more money invested in implementation. The U.S. is severely lacking in EV charging. Carbon pricing and blended financing are necessary to enable annual improvements of 20%. The EU struggles with project expenses. It will benefit from accelerated carbon pricing and blended financing. The relevant goal would be to increase funding perhaps by 20% annually. The road to fulfilling the Paris Agreement goals will not be easy. Transportation must remain a primary focus of EU and U.S. attention to achieve success by 2030.

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