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Is cost hindering the adoption of electric vehicles?


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An assessment of price differences across European countries found small electric vehicles (EVs) are relatively more expensive than big EVs, and plug-in hybrid vehicles are more costly than battery electric vehicles compared to conventionally fuelled vehicles. Larger market penetration can only be achieved if EVs become price competitive.

National and local governments are adopting a range of measures to encourage electric vehicle (EV) use to reduce greenhouse gas emissions, oil dependency and improve urban air quality. Yet one of the biggest barriers to market breakthrough of EVs is that, in the absence of incentives, they are currently not cost-competitive.

Fiscal incentives are important as they influence the vehicle purchase decision of individuals or companies. They can be total or partial tax exemptions, or direct subsidies.

An assessment was undertaken to evaluate how different fiscal incentives used by national governments to promote electromobility may have stimulated the market penetration of EVs in eight European countries (France, Germany, Hungary, Italy, Netherlands, Norway, Poland, and the United Kingdom). The total cost of ownership (TCO) was calculated to determine how costs and sales of EVs relate to each other and to examine the role of fiscal incentives in reducing TCO and increasing EV sales.

The eight countries considered in this study adopted different approaches in their fiscal policy (2014) such as tax exemptions or subsidies. In Norway, Netherlands, Germany, Italy, and Hungary negative externalities associated with the usage of conventional fuelled vehicles are penalized with taxes, from which EVs are partially or fully exempt. The higher the taxes, the more EV owners benefit from the exemptions. In the UK and France the main policy instrument is a subsidy given to EV owners upon purchase. In Poland there are no incentives.

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D I G E S T

TRIMIS

The Transport and Research and Innovation Monitoring and Information System (TRIMIS) supports the implementation and monitoring of the Strategic Transport Research and Innovation Agenda (STRIA) and its seven roadmaps.

TRIMIS is an open-access information system to map and analyse technology trends, research and innovation capacities, as well as monitor progress in all transport sectors.

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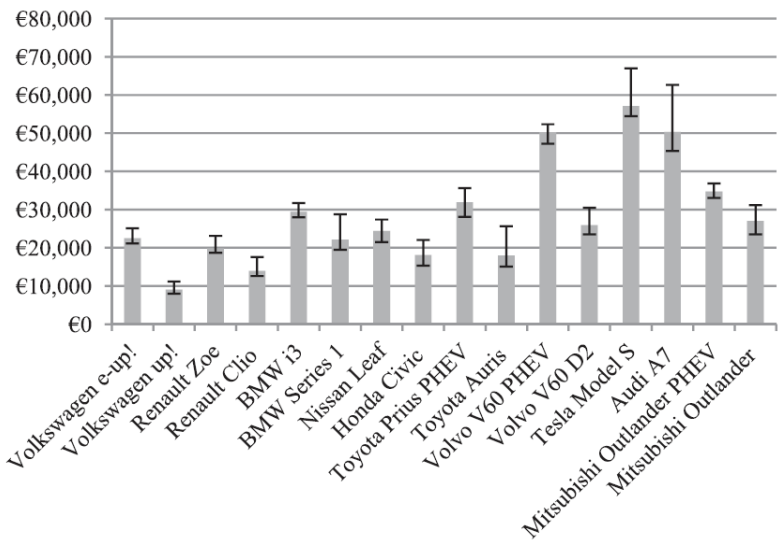
A pairwise comparison was performed to quantify and compare incentives and cost differences across car segments and countries. EVs and conventionally fuelled vehicles were paired and the cost and sales of each EV was expressed as a percentage of the cost and sales of their corresponding conventionally fuelled vehicle. This enabled differences in market and segment sizes among countries to be excluded.



Average net price and price spread of EVs: average country prices (columns), minimum and maximum prices (error bars)

After quantifying net price, fuel, and electricity price differences across countries, the study concluded that small EVs are relatively more expensive than big EVs, and plug-in hybrid vehicles (PHEVs) are more costly than battery electric vehicles (BEVs) compared to their conventionally fuelled vehicle pairs. It found that registration and circulation tax exemptions in Norway and the Netherlands favours big EVs. In contrast, lump-sum subsidies in France and UK (20–27% of purchase price with a maximum cap) favour small EVs.

The TCO calculations contribute to our understanding of the interaction between fiscal incentives and sales. Incentives can play a crucial role in the market breakthrough of EVs, but larger market penetration can only be achieved if EVs become price competitive. Small, medium and big cars exhibit different relative TCO-sales relationships, both in terms of price responsiveness and spread of sales and TCO. It is important to consider these dependencies when fiscal policies are designed or modified because different incentive schemes favour different car segments and may therefore affect different sections of the population.