

The Results of The feasibility and impact of the transition to electric mobility in the Randstad

Aiming at analysing EV acceptability and potential for adoption to the Dutch market, **Project 1** has developed a novel integrative interdisciplinary approach where economic modelling, environmental psychology and marketing principles are combined. Importantly, developed approach distinguishes multiple stages of adoption and is able to predict preferences for EVs at different adoption stages. Data from a large-scale questionnaire was used in this analyses.

An important finding following our analyses is that, overall, EV adoption and acceptability are determined by individual and collective factors, such as price and functionality, but also by perceived environmental concern, which entails perceived severity of environmental problems caused by gasoline vehicles and the ability of an EV to contribute to their solution. Interestingly, perceived energy security risks, such as dependence on imported energy resources and volatile oil prices, can improve general EV acceptability but not purchase intention. Furthermore, our results show that consequences of both past and future behaviors are relevant to individual vehicle choices.

Concerning preferences of Dutch drivers towards EV's, we have identified a number of potential consumer segments for each stage of EV adoption. Our results show that functional and symbolic factors determine EV choices for all segments. In particular, presence of fast charging infrastructure is critical for EV adoption, in particular on the mass market as it decreases charging times, increases the range-as-you-go, and decreases range anxiety. While perceived environmental concern is an important determinant of EV acceptability, tailpipe CO2 emissions are not always associated with environmental advantages of an EV or predict vehicle choices. It appears that early adopters may associate green labeling with government subsidies and tax reliefs that are directly related to vehicle CO2 emissions. New to vehicle choice research was the inclusion of towing potential in the analysis of consumer preferences, that is of particular importance on the Dutch drivers as top 'towers' in Europe. We have found that towing potential is an important and highly valued attribute of an EV on the Dutch mass market. Finally, perceived symbolic EV attributes (distinguishing oneself from others and expressing one's identity) are identified as important drivers for potential EV buyers; while symbolic gasoline vehicle attributes act as a substantial barrier to EV adoption for anti-EV consumers.

Policy implications to facilitate EV promotion on the mass market include a mix of incentives, such as monetary benefits, development of charging infrastructure, improvement of vehicle functionality and provision of information on the direct and indirect environmental impacts of EV's, including vehicle production, energy use and electricity production.

Project 2 concludes that EVs pose both opportunities and threats to various stakeholders. They therefore participate in the development of the emerging EV system, primarily in order to learn about the potential positive and negative impacts of these systems on their interests and, ultimately, to be able to grasp the opportunities and mitigate the threats. In other words, the expectations, interests, and resulting strategies of stakeholders relate to and depend upon the specific configuration of the emerging socio-technical system for electric mobility. We identify six potential conflicts of interest: the division of tasks within a public recharging infrastructure; the allocation of charging spots; the ways in which charging behavior can be influenced; the role of fast-charging, technical standards for charging equipment; and supportive policies for full-electric and plug-in hybrid vehicles.

In general, the stakeholders do not seem overly concerned about either short-term returns on investments or long-term negative impacts. In this regard, the early phase of the transition can be understood as a relatively carefree phase. In order to continue the development of the emerging EV system and to keep it on the right track, however, for the foreseeable future, supportive policies will be necessary in order to provide a stable and reliable basis for further market expansion.