

SURVEY TO ASSESS THE BARRIERS TO WIDESPREAD ELECTRIC VEHICLE USE IN A MEDITERRANEAN ISLAND SETTING

Manfred WEISSENBACHER¹, Emma AHOMAA¹

Introduction

The small European Union island nation of Malta has in recent years reduced its carbon footprint substantially by shifting electric power generation from oil to gas and by commissioning an interconnector to Sicily (Weissenbacher and Muenchrath, 2014). Transport, the second largest sector in terms of greenhouse gas contribution, offers itself as another main target for decarbonization. In a previous study a model was devised to evaluate the potential of biofuels to reduce carbon dioxide emissions and to reach the mandatory EU 2020 goal of 10 % renewable energy in transport (Lauri, Sant, and Weissenbacher, 2014). In a current study we attempted to assess the possibility to achieve a large electric vehicle fleet in Malta. This involved a review of policies to incentivize electric vehicle use in various countries, a cost-benefit analysis of introducing such policies in Malta, and an investigation to identify the reasons for the existing incentive schemes to fail triggering high demand for electric vehicles. We are here reporting the results of a survey conducted to clarify the latter and to determine the perception and opinion of potential electric vehicle buyers. The survey was thus also an evaluation of the effect of the EU-financed DemoEV project, which by December 2014 had installed 90 charging points on the islands, put 24 electric vehicles on the roads, and trained over 170 participants on the operation and functioning of electric vehicles (Calamatta, 2015).

Methods

The survey was designed as a paper and online survey, with the link to the online survey being sent to email addresses and social media platforms with local interest groups. Email recipients were encouraged to pass on the link to the survey platform. The survey distribution channels were chosen to achieve demographic variety within the overall respondent target group of residents 18 years and older. The survey was not limited to car owners or holders of a driver's license. This target group, or, in statistical terms, population, was calculated to be 338,086 based on the latest demographic review of 2014. The confidence level, i.e. the probability that the sample accurately reflects the attitudes of the population, was set at 95 %, while the margin of error, reflecting the range that the population's responses may deviate from the sample's, was set at 10 %. This way the sample size was calculated at 97. The survey consisted of 11 questions, nine of which were polar questions (yes/no questions), while the remaining two were multiple choice questions. It was avoided to use specialized language.

Results

The demographics of the survey respondents were as follows. Female respondents (54 %) and male respondents (46 %) were relatively equally represented. The median age was 30 years for female and 37 years for male respondents. (For comparison, the median age of the Maltese population as a whole is 41.5 years.) In terms of highest completed education, 2 % of respondents stated primary, 19 % secondary, and 79 % tertiary. (For comparison, 32.3 % of the Maltese population have tertiary level education.) The survey response revealed that half of the respondents use a car daily and that just over half of the respondents not using a car on a daily basis were women. Ninety percent of respondents considered pollution generated by road traffic as a problem. Of the remaining ten percent, most were non-users of cars (on a daily basis). Notably, these respondents resided in areas of relatively low traffic volume (Pembroke, Swieqi and Mgarr). Over 85 % of respondents had never driven an electric vehicle. Among those who had, there was only one woman. Nearly 48 % of respondents had never considered buying an electric vehicle. Among men the share of those who had indeed considered such purchase was larger (65 %) compared to female respondents (42 %).

¹ University of Malta, Institute for Sustainable Energy, Msida, MSD 2080, Malta,
manfred.weissenbacher@um.edu.mt, ahomaa.emma@gmail.com

Most of those who had considered buying an electric vehicle had previously driven one. A question regarding the main reasons of concern allowed for a choice of up to three answers out of the following: “The purchase price is too high”; “The driving range is not sufficient”; “The battery lifetime and its replacement costs”; “Maintenance costs”; “Charging takes too long”; “Availability of charging points”; “The resale value”; and “The technology”. The top-ranking concerns were 1. “availability of charging points”, 2. “the battery lifetime and its replacement costs”, and 3. “the purchase price is too high”. However, 85 % of both male and female respondents indicated that they would consider buying an electric vehicle if the upfront cost would be the same as with a conventional car (internal combustion engine), and 77.5 % stated that if they were to buy a car within the next two years, they would purchase an electric vehicle if it was economically possible. Only 26 % of respondents knew about the grant scheme available for the purchase of electric vehicles, and only 35 % knew that electric cars require the lowest registration tax and annual road license fee. Answering a question shown with a map that indicated the location of charging points, just over half of all respondents stated that they had not noticed any of the charging points on the streets of Malta. Regarding the most important benefit of electric cars, over 67 % felt that this was that electric vehicles do not produce tailpipe exhaust. The second most important benefit (chosen by 14 % of respondents) was that “It shows that the owner is an environmentally friendly person”.

Conclusions

With well over 600 passenger cars per 1,000 inhabitants, Malta has one of the highest national car densities in Europe. This is related to the high degree of urbanization and Malta’s extreme population density. Traffic congestion is considered a severe problem and air pollution limits are frequently exceeded. Yet, out of 283,138 passenger cars licensed in Malta at the start of 2017 only 169 were electric vehicles. This in itself shows that the mentioned DemoEV project, which began in 2012, did not manage to trigger a transition within the given time frame. Our survey, in which holders of tertiary education were overrepresented, attracted a large share of respondents already interested in electric vehicles. In contrast to the low observed electric vehicle registration (below 1 % of the total), a large percentage of respondents (15 %) had already driven an electric vehicle, which might in part be an achievement of the DemoEV project. On the other hand, the installed charging stations remained invisible for half the respondents, indicating that only those who ever considered buying an electric vehicle (also half) would actually notice any. Given that the top-ranking concern was the “availability of charging points”, and cost-related concerns were high while existing incentive schemes were largely unknown, we conclude that further information campaigns about measures already in place would be beneficial to promote electric vehicle use. Driving range anxiety, on the other hand, is absent due to the insular structures, and the local environmental benefits of electric vehicles seem to be well known.

References

- [1] Weissenbacher, M., Muenchrath, J. (2014) “From Laggard to Leader? Malta’s Transition towards lower CO₂ Emissions and a larger Renewables Share with Aspects of Energy Storage”, Proceedings EnInnov 2014, 13. Symposium Energieinnovation, TU Graz, February 12 -14 (Graz, Austria) Online: https://www.tugraz.at/fileadmin/user_upload/Events/Eninnov2014/files/lf/LF_Weissenbacher.pdf
- [2] Lauri, A., Sant, G., and Weissenbacher, M. (2014) “Modelling Malta’s Road Transport System to Evaluate Carbon Dioxide Emissions and the Biofuel Potential: A Tool for Policy-Making”, Proceedings Sustainable Energy 2014: The Annual ISE Conference, University of Malta, March 20 (Qawra, Malta) Online: https://www.um.edu.mt/library/oar/bitstream/handle/123456789/23001/4_5_Lauri_et al.pdf?sequence=1&isAllowed=y
- [3] Calamatta, St. (2015) “DemoEV - Demonstration of the feasibility of electric vehicles towards climate change mitigation”, LIFE10 ENV/MT/000088, Online: http://ec.europa.eu/environment/life/project/Projects/index.cfm?fuseaction=search.dspPage&n_proj_id=3978