

2030

CORCA DHUIBHNE DINGLE PENINSULA

ESB Networks' Dingle Project EV Trial

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Evan Boyle, Connor McGookin, Clare Watson, Aoife Deane, Brian Ó Gallachóir; MaREI Centre



Introduction

Private transport, or car use, accounts for 13% of Ireland's greenhouse gas emissions. A range of solutions are being pursued to meet the need to reduce the emissions related to private transport. These include investment in public transport, the development of shared mobility schemes, and the scaling up of public infrastructure for transport alternatives such as cycling. The deployment of electric vehicles is a solution that is being prioritized within the All-of-Government Climate Action Plan, whereby aspirations have been set to get 840,000 electric vehicles on Irish roads by 2030, alongside the expansion of charging infrastructure across the country.

Despite this aspirational policy goal, there are some associated challenges for EV users and potential users. The perceived limited driving range of electric vehicles is at odds with the established user experience of getting fuel at a petrol station. The charge times are vastly longer than the standard experience of fueling your car at a petrol pump, even with relation to superchargers. These factors lead to 'range anxiety'. Also, the upfront costs are often greater than standard combustion engines. Maximum grant incentives of €5,000 are currently available for privately purchased new EVs in Ireland. Another associated challenge for users is the lack of qualified mechanical support.

While these challenges are noted, innovative solutions to facilitating the scaling up of electric vehicle deployment in Ireland are needed. As part of the Dingle Project, ESB Networks has deployed 17 EV's across the peninsula for a one year trial, given to individuals and families selected through an application process. Within this trial, research has been conducted on the lived experience of participants in taking on EV's and the benefits and challenges within this. This piece of research seeks to draw out findings on the experiential dimensions of transitioning to EV's for private transport. These driver experiences can provide insights for policymakers to assist in actualizing the aspiration for 840,000 EV's by 2030 set out in the Climate Action Plan.

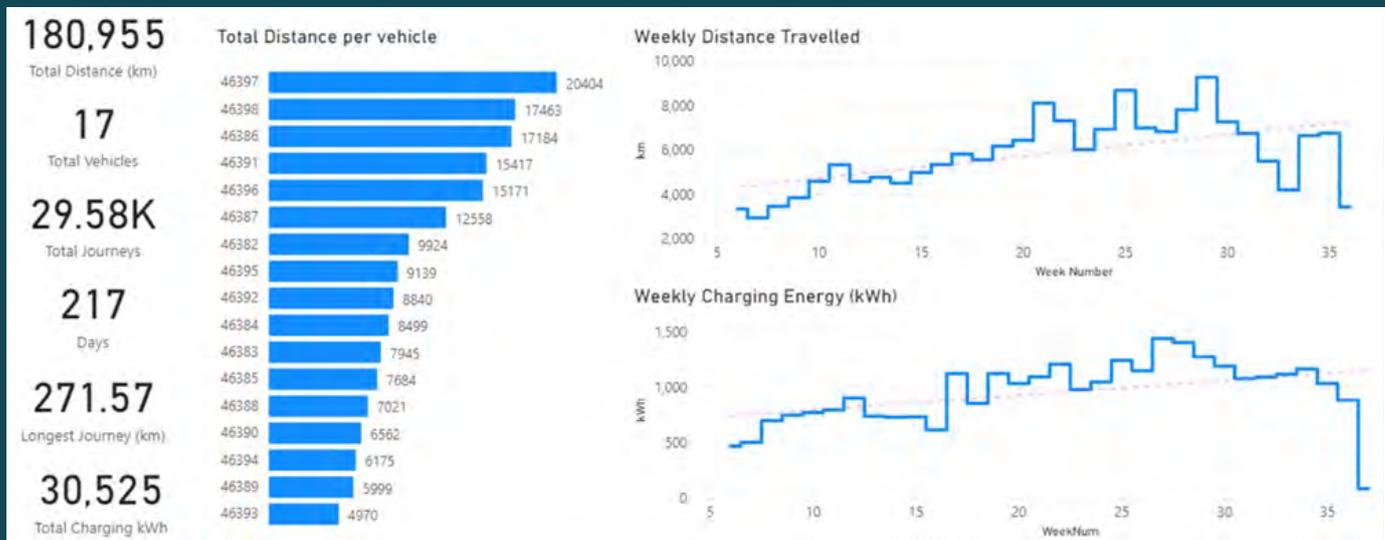


Method

The research team within MaREI administered a one hour survey to trial participants at the beginning of the process (February 2021). These drew out baseline information across several topics with relation to motivations, benefits, challenges, performance, practicality, usability, social norms and diffusion. A follow-up interview was then undertaken at the close of the research project (August 2021) to revisit the participant experience of integrating an EV into their lives. Interview respondents have been numbered 1-15 (i.e. EV1-EV15). The fifteen trial participants (10 Hyundai Kona's & 5 Nissan Leaf's) were interviewed through this process, with two of the seventeen vehicles being shared mobility vehicles. The two have been cross-referenced to draw out findings. Alongside this, quantitative data has been gathered on each participant vehicle through the use of a telematics data monitoring system, used here to supplement the qualitative findings.

Insights

Below we see the breakdown of total distance travelled, total journeys, longest journey and total charging in kWh. Based on the most recent grid CO₂ intensity figure (2020) that would equate to roughly 19.3 tonne CO₂ saved, which is equivalent to 3,002 litres of diesel.



Through using an electric vehicle as part of the trial the majority of participants viewed the experience favourably, with several participants considering the future purchase of an EV.

"We are going to do our best to get an EV following this and we will look to try and trade in one of the petrol cars by the end of the year to get a second-hand EV". (EV9)

A central facet of the ESB Networks Dingle Project is to investigate how energy citizenship can be established through the integration of new technologies into people's lives.

"We are all obsessed with electricity now. We send pictures from the app to the family WhatsApp group. If something is using a lot (of energy) on the app everyone is running around the house turning things off. You become really obsessed with it". (EV5)

The idea of energy citizenship, and within this behaviour change related to energy efficiency, can be facilitated through real-time feedback of energy usage, encouraging active participation.

"That instant feedback on the dashboard is a real eye-opener for me and how it drives behaviour". (EV3)

The participants within the trial were asked to outline three positive and three negative things which come to mind when thinking about electric vehicles. This was done both at the beginning and end of the trial. A mind map has been developed to illustrate participant responses.



Fig. 2 Mind map of positives and negatives of Electric Vehicles from trial participants. Orange is used for positives and navy for negatives.

The importance of clearer communication around the reality of using an EV was brought forward several times within this trial based upon participant experience of using the technology.

"People find it hard to believe that you could get that kind of range out of them. When you tell them it costs €5 to get that 450 km or so, then they start listening". (EV4)

While the positives must be more effectively communicated there is still a need to address the negative aspects of EVs. Within the trial, the primary negative factor brought forward by participants was the public charging infrastructure available across the country, with most charging taking place in the home.

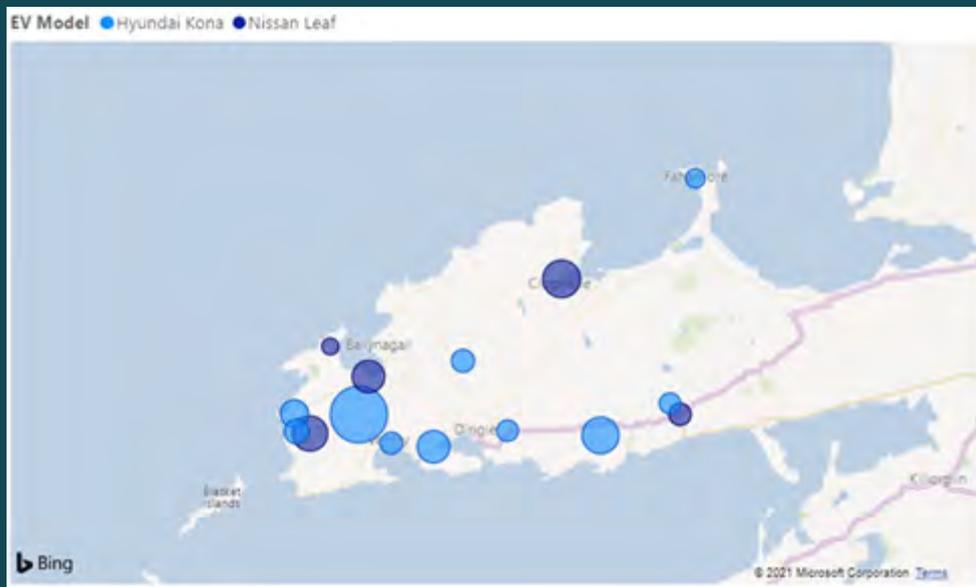


Fig. 3 Location of each home charger in the trial and amount of energy

"With any policy, it has to be supported by infrastructure. Just having a robust network of chargers. You should not have to plan a trip in Ireland with military precision. I think you should hop in the EV and go to Galway or Donegal with the same level of concern you would have with finding a petrol station" (EV9)

Although many participants had positive experiences of long-distance driving, it was still viewed to be less reliable than internal combustion engine alternatives. Finally, some wider policy recommendations for the uptake of electric vehicles nationally were offered by participants.

"An improvement of the charging services"... "Incentivise petrol stations to make up losses from petrol and diesel. They are already raising their prices to make up for losses from last year". (EV1)
"They are too dear... there are so many incentives they could bring in. Even parking for electric cars, people should be able to do their shopping and plugin". (EV2)

The EV Trial has investigated the integration of electric vehicles into the driving patterns of individuals living in a rural community. Overall the experience of moving from an internal combustion engine to an electric vehicle was viewed positively throughout the trial.

Learnings

- Electric Vehicles can be used for daily driving in rural communities without disruption to normal patterns.
- Range, cost to charge, and performance are perceived more positively following user experience.
- For long-distance driving, EV's are deemed to be less practical than internal combustion engine alternatives.