European Commission

Science for Environment Policy

What influences motorists' intentions to switch to electric vehicles?

What drives people to behave in more environmentally friendly ways? A new study explores factors that affect Dutch motorists' intentions to switch to electric vehicles. The authors found that they could reliably predict the intention to switch by applying a theoretical framework—Protection Motivation Theory—based on perceptions of the threat of environmental damage.

11 December 2014
Issue 397

Subscribe to free weekly News Alert

Source: Bockarjova, M., & Steg, L. (2014). Can Protection Motivation Theory predict pro-environmental behavior? Explaining the adoption of electric vehicles in the Netherlands. *Global Environmental Change*, 28: 276–288. DOI:10.1016/j.gloenvcha.2014.06.010.

Contact:
m.bockarjova@vu.nl, marija.deen@gmail.com, e.m.steg@rug.nl

Read more about:
Sustainable mobility, Environmental information services

People switching to an electric vehicle are likely to be thinking of environmental concerns, or 'threats'. For example, the threat of environmental risks associated with the continued use of vehicles run on fossil fuels, or the challenges of traditional fuels running out.

In Europe and North America, incentives such as tax rebates and free parking have not had the desired effects on adoption of electric vehicles. For this study, researchers wanted to understand how people weigh the risks and benefits of switching and how specific threats might motivate them to do so. To do this, they produced a questionnaire, completed by 2974 Dutch drivers, based on the key concepts of 'Protection Motivation Theory'.

Protection Motivation Theory was originally developed to explain how people respond to personal threats to their health and has been extended to immediate environmental threats, such as flooding and wildfire, but not, so far, to responses to longer-term environmental threats. It assumes that people decide whether to change their behaviour by subjectively considering threats and coping strategies.

Appraising threats involves deciding: 1) how severe the threat is; 2) how vulnerable you personally are to the threat; and 3) whether the benefits of doing nothing are greater than the threat. Appraising coping strategies involves deciding: 1) whether a particular course of action will reduce the risk; 2) how capable you are of taking that course of action; and 3) what it will cost you, financially as well as in time or effort, for instance. The researchers designed questions to measure these components.

For instance, in appraising the severity of threats, drivers were asked to rate the possible negative consequences of impacts of fossil fuel cars such as poor air quality, pollution, climate change and depletion of natural resources.

Driver ratings in each of the six areas reliably predicted how likely they might be to switch to an electric vehicle. They measured likelihood of switching as drivers' 'intention to buy', whether they thought the advantages outweighed the disadvantages, and perceived acceptability of their long-term use as well as policies to promote them. For example, drivers who perceived the environmental risks associated with conventional vehicles as being more severe were considered more likely to switch based on all of these measures.

Drivers were more concerned about risks such as air pollution, noise and greenhouse gas emissions than they were about dwindling fossil fuel resources. The most important barriers to switching to electric vehicles were the greater perceived benefits of conventional cars and greater perceived costs of electric vehicles. Costs mainly reflect non-monetary concerns, such as time to charge batteries. Removing such barriers by, for example, increasing the availability of fast-charging points, could increase adoption.

Individual concerns, such as cost, were more likely to influence 'close' measures of adoption, such as a driver's intention to buy an electric car. Collective concerns, such as whether electric cars can actually solve the problems caused by conventional cars, were more likely to influence 'distant' measures, such as the acceptability of policies to promote electric vehicles.

The study assessed changes in drivers' intentions rather than actual switching behaviour or electric car purchases. However, it provides a framework that could also be applied to predict actual pro-environmental behaviours.