

Electric vehicle charging infrastructure business models compared

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Credit: Elhuyar Fundazioa

The Tecnalia and UPV/EHU-University of the Basque Country researchers Carlos Madina, Inmaculada Zamora and Eduardo Zabala have published a paper titled "Methodology for assessing electric vehicle charging infrastructure business models" in the journal *Energy Policy*. The study explores the advantages of charging at home, en route and in shopping car parks.

Electric vehicles are starting to become a real option among buyers' preferences; demand is growing around the world, although in Spain, they account for only 0.3 percent of the total of cars sold in 2015; in the Netherlands, their market share has risen to 9.6 percent, and in Norway to 23 percent.

With the boom in the electric vehicle looming, companies will be preparing charging infrastructures; the work by Madina, Zamora and Zabala analyses three possible charging points: home charging, infrastructures for fast charging on motorways, and charging at points of interest, such

as shopping centres or underground car parks.

The best price

"There is no doubt that the best price will be obtained by plugging in the vehicle at home overnight taking advantage of the night tariffs. Another advantage of private charging is convenience, being able to do so at home and not having to identify yourself, pay separately, etc. apart from the cost that would be less than €1," explained Madina.

By contrast, fast charging would allow the autonomy of the car to be increased within a very short space of time (less than half an hour), which would enable one to do trips longer than the 100-150 km of autonomy that a conventional electric vehicle currently has. "But it is very expensive for the customer and for the owner of the charging point. The fact is that the price the user would pay would depend on the use of the charging infrastructure as most of the operating costs of it are fixed ones. We are talking about approximately €10 to charge a vehicle to do 100 km. At points where the use is high, the price could however be lower than at other less used ones. On the other hand, rapid charging infrastructure could, in principle, be located at existing petrol stations, although it would be necessary to check whether the electrical power grid could handle it to allow [charging](#) at the required power (each charger would need between 50 kW and several hundred kW, which would be multiplied by the number of chargers at each station). In this case, the natural thing would be for companies such as Repsol to install these chargers. Right now, it is already doing so, for example, through the company Ibil," he explained.

Charging at points of interest such as shopping centres or urban car parks, according to the research, enables the daily range to be increased at lower prices: "For example, if autonomy has

been used up when going out to do the shopping or for leisure purposes, the prices are affordable and comparable with the cost per km of a traditional car: About € 5 (would provide autonomy of about 70 km) and in reasonable periods of time: 2 hours, which could be devoted to going to the cinema, to shopping, etc."

It could be a matter of three or four years, although it is not clear, but the revolution brought by the electric car will be a reality, even among us," according to Madina. "The only thing needed is for the price of [electric vehicles](#) to be closer to their equivalent in petrol-driven cars and for their autonomy to be increased to 200-250 km per charge."

Provided by Elhuyar Fundazioa

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