Launch event

Are consumers ready for electric vehicles?

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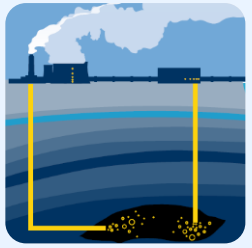



Electric Mobility: Inevitable, or Not?

A study for the Platform for Electromobility

12th January 2022

elementenergy
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Celine Cluzel, Partner

This study surveyed 14,052 new car buyers in June 2021 from seven markets covering ca.80%[1] European[2] new car registrations

Largest choice experiment of its kind deployed in Europe to date, with 2,000 respondents from each market. From these responses, six distinct consumer groups, with different purchase behaviours, were identified

112,416 choice experiment responses used to construct a statistical model of consumer new car purchase decisions, which is used to predict future consumer demand of different powertrains

Example of a choice set shown to consumers in the survey:

	Petrol/ diesel car (A)	Plug-in hybrid electric car (B)	Battery electric vehicle (C)
Purchase price	**€10,000**	**€13,000**	**€13,000**
Annual running cost	**€500** per year	**€2,000** per year	**€1,000** per year
Driving range	**400 km**	**20 km in electric mode**, 400 km using petrol/ diesel engine	**300 km**
Access to private home charging	Not applicable	No	No
Local and destination charge point coverage	Not applicable	On residential streets and at driving destinations	On residential streets
Location of rapid charge points	Not applicable	Not applicable	Within urban areas
Rapid charge point rate	Not applicable	Not applicable	**80 km** per 10 minute charge

If you could choose any of the three cars, which one would you choose?

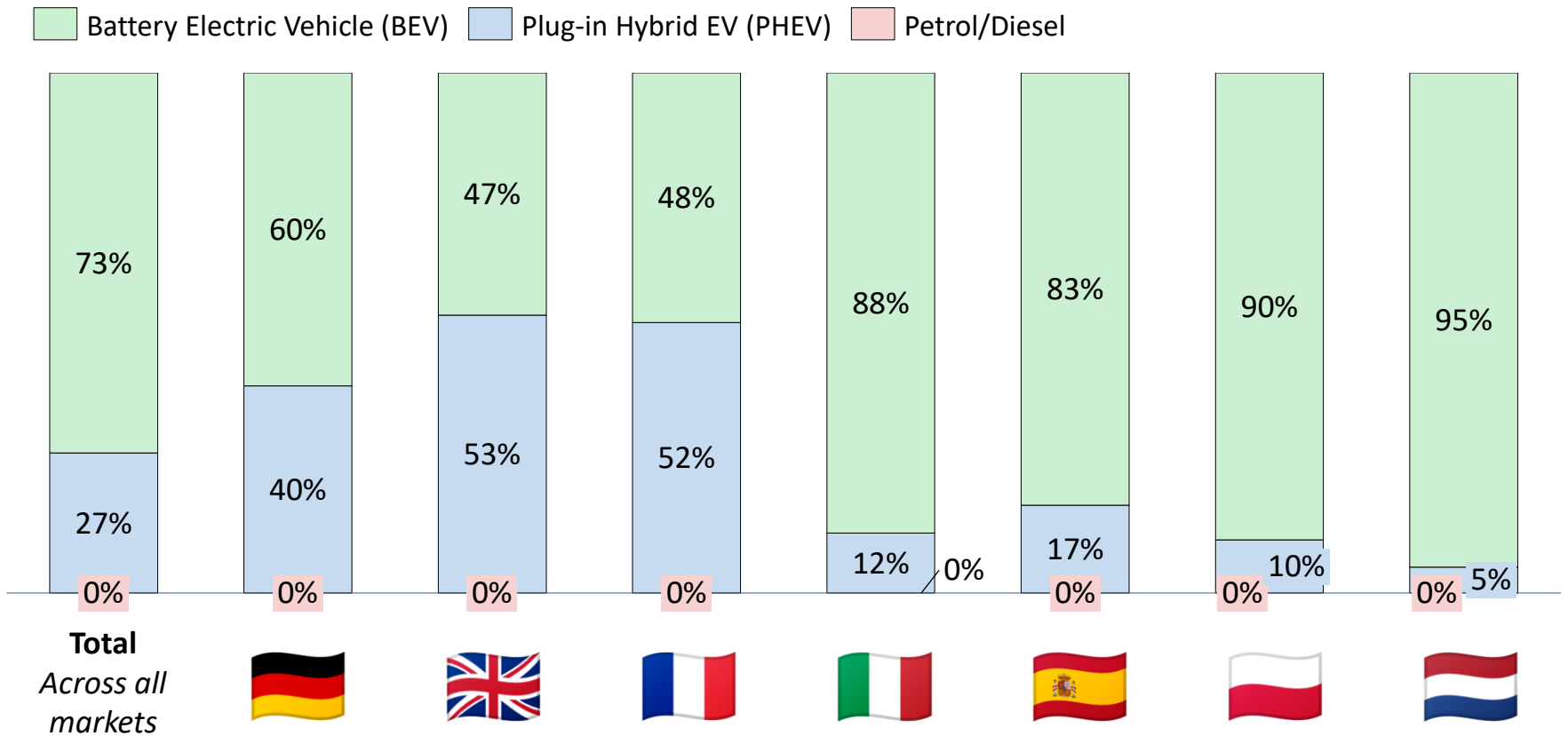
○ Option A ○ Option B ○ Option C

1) Market registrations from ACEA; 2) EU + EFTA + UK

Today, if all else were equal, a majority of new car buyers would preferentially choose a battery electric vehicle (BEV) over the competition

First choice powertrain for private new car buyers, if all else is equal

Equivalent purchase price and running cost, access to home and public charging, BEV and PHEV range 500km and 80km



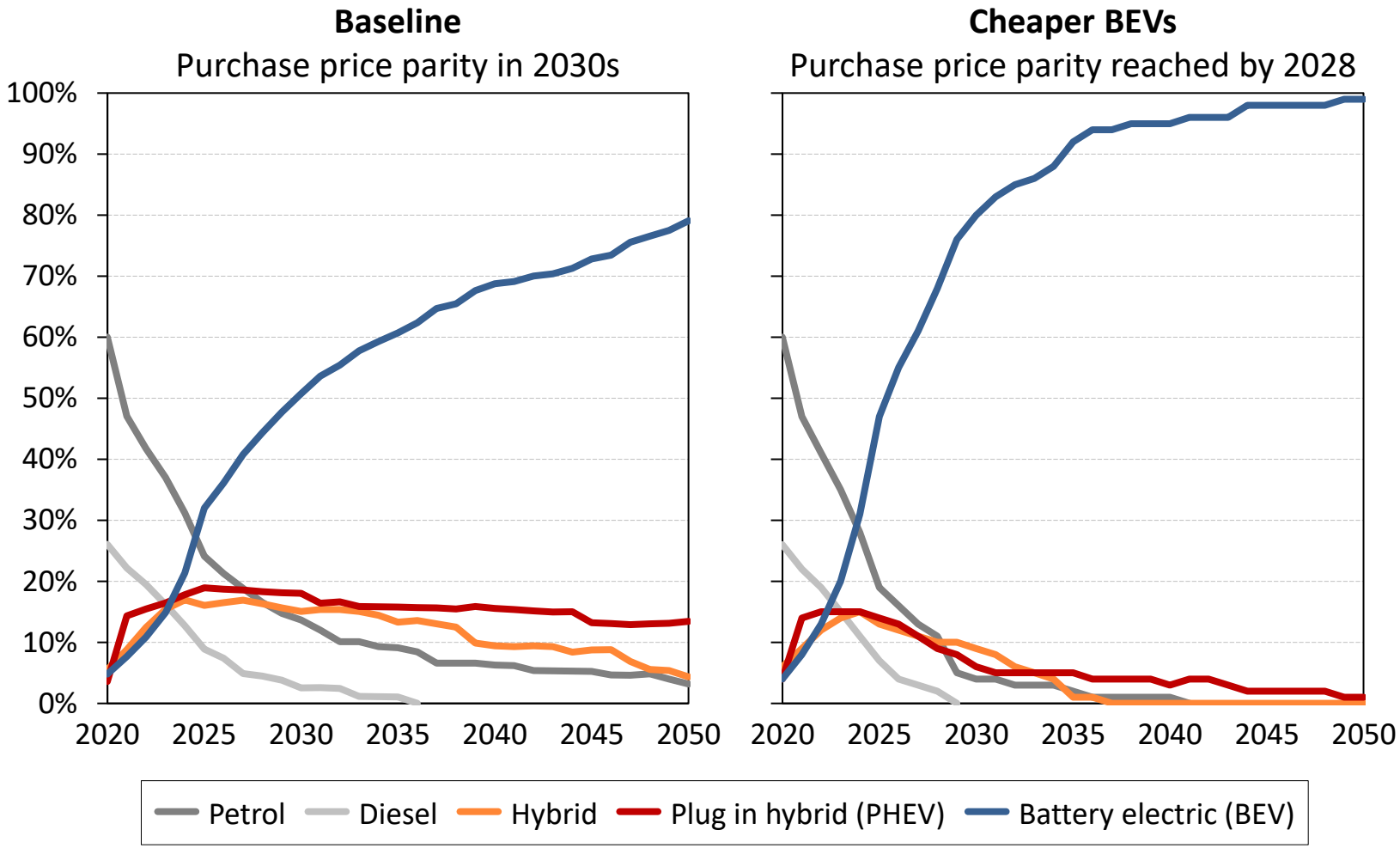
BEVs are already the preferred powertrain for a majority of consumers. Consumers who purchase a fossil fuel car today are not doing so because they *prefer* them over BEVs, but because it is the cheaper alternative

This is a major departure from results of EE studies of UK consumers, 2011, 2015, 2018[1]

1) Element Energy for UK Department for Transport (2011, 2015); Element Energy for ETI, *Consumers, Vehicles and Energy Integration* (2018)

A majority of consumers will choose BEVs from the mid-2020s, with reducing upfront purchase price key to unlocking additional BEV demand

Share of demand for new cars by powertrain, across all seven markets studied



Under a conservative baseline, where total cost of ownership parity is reached between BEVs and petrol cars in the mid-late 2020s and purchase price parity is achieved in the 2030s, **BEVs become the most demanded powertrain by 2025**

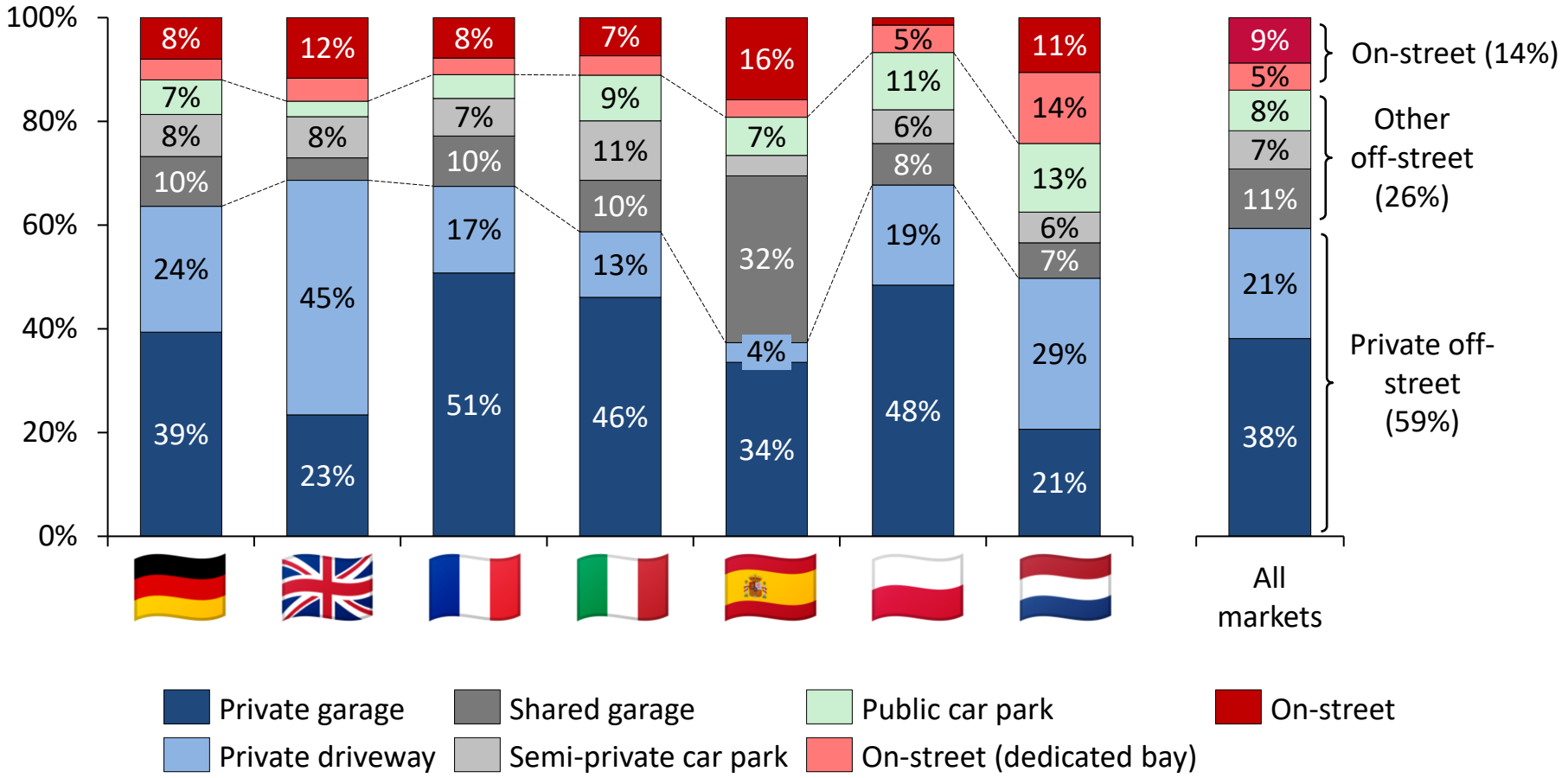
However, if BEV purchase price falls to reach purchase price parity by 2028, nearly all consumers will choose a BEV by 2035

Reducing BEV purchase price is the key to consumers choosing a BEV over a fossil fuel car. Providing charging infrastructure supports BEV growth, but does not generate demand itself. The same is true for driving range and charging speeds

Manufacturers are assumed to remove powertrains from sale after 5 consecutive years of losing market share and falling below 10% market share, at a country and car segment (small, medium, large) level.

59% of new car buyers across Europe have access to private off-street parking and can easily install a home charge point, however this varies substantially across markets

Share of where survey respondents currently park their car(s)



Consumers reliant on public charging are ca.12% less likely to choose a BEV than those with home charging

26% of new car buyers park their car off-street but do not have control over whether a home charge point is installed or not

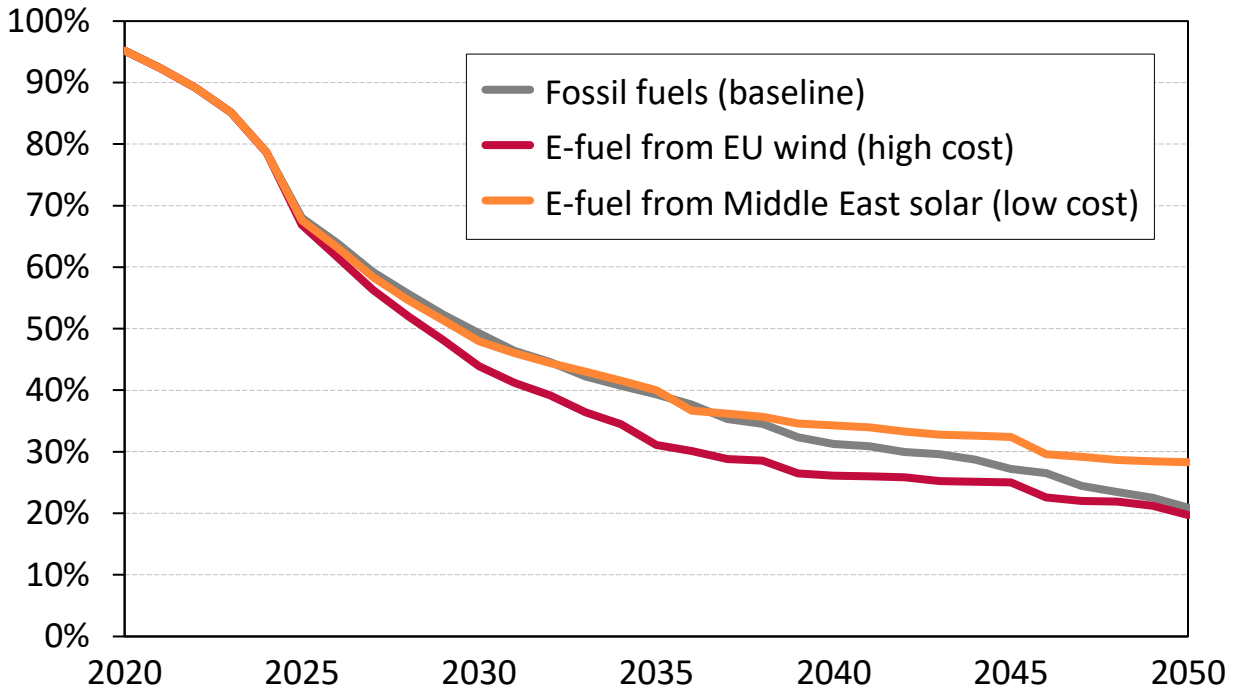
Only 14% of new car buyers will be reliant on public charging

1) If all else were equal between powertrains and public charging is accessible

Legacy fossil-fuel cars running on synthetic e-fuels are not an attractive alternative to BEVs in the eyes of consumers due to the higher running costs

Consumer demand for internal combustion engine vehicles running on different fuels[1] (petrol/diesel vehicles + HEV + PHEV)

Source of e-fuel prices[2], assumed no fuel duty applied, no additional upfront cost added to cars running on e-fuel



Under all scenarios, consumers overwhelmingly choose BEVs over internal combustion engine vehicles running on fossil fuels or synthetic e-fuels. The much higher running costs of e-fuels over BEVs hastens the transition to e-mobility

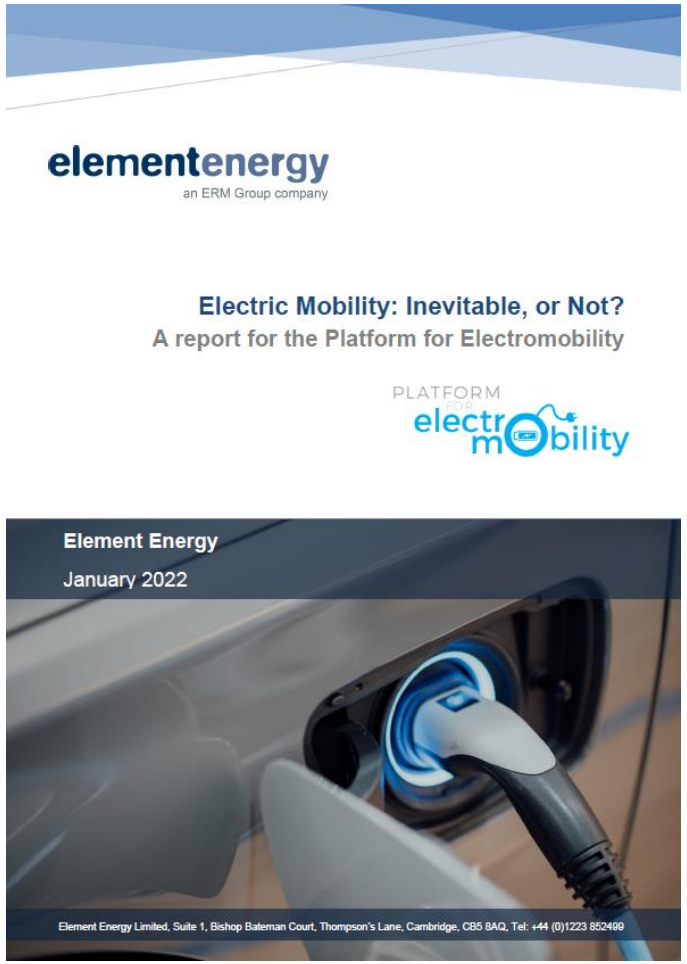
E-fuels are expected to remain more expensive than petrol even under the most optimistic scenarios until 2037, by which time BEVs will have been cemented as the dominant powertrain. E-fuels are not an economically compelling alternative for consumers

Private consumers have already embraced the transition to electromobility: consumer preferences have already switched towards BEV, and it is unlikely consumers will switch en masse back to internal combustion engine vehicles in the 2040s

***E-fuels** are a range of proposed carbon-neutral synthetic fuels made from captured CO_2 and renewable electricity that may be used to power cars fitted with internal combustion engines.*

1) E-fuels blended into petrol mix from 2025-2035
2) Frontier Economics for Agora Energiewende (2018): *The Future Cost of Electricity-Base Synthetic Fuels*. Link

Details of what has been discussed today and more can be found in the full report



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Read the full report at:

www.platformelectromobility.eu

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With thanks to the trade unions, think tanks, EV user associations, and industry stakeholders who have provided their insights throughout the project

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Thank you for watching

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Find the full report and webinar recording at
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