CHART OF THE MONTH

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An energy economic perspective of EV Charging in Greece

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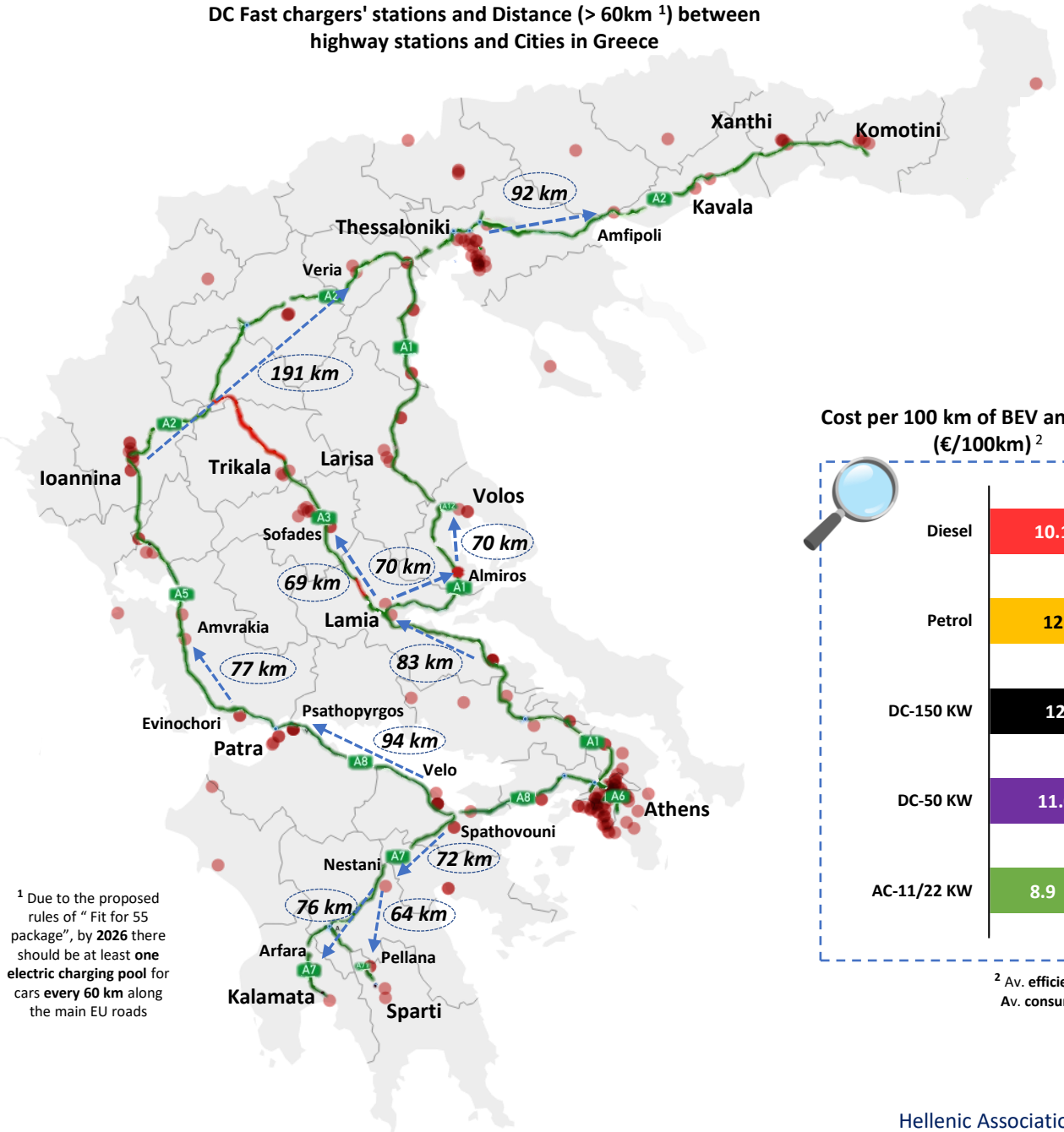
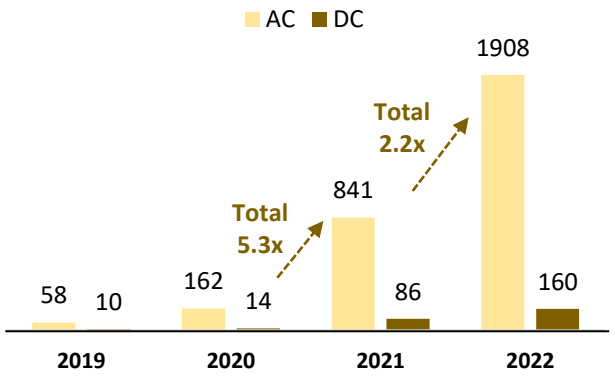
An energy economic perspective of EV Charging in Greece

DC Fast chargers' stations and Distance (> 60km [1]) between highway stations and Cities in Greece

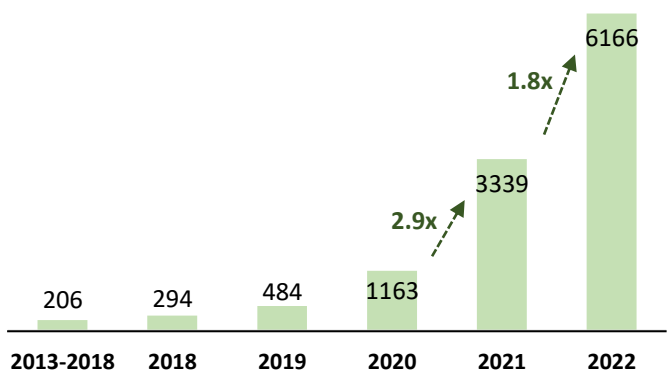


[1] Due to the proposed rules of " Fit for 55 package", by **2026** there should be at least **one electric charging pool** for cars **every 60 km** along the main EU roads

Public charging stations in Greece



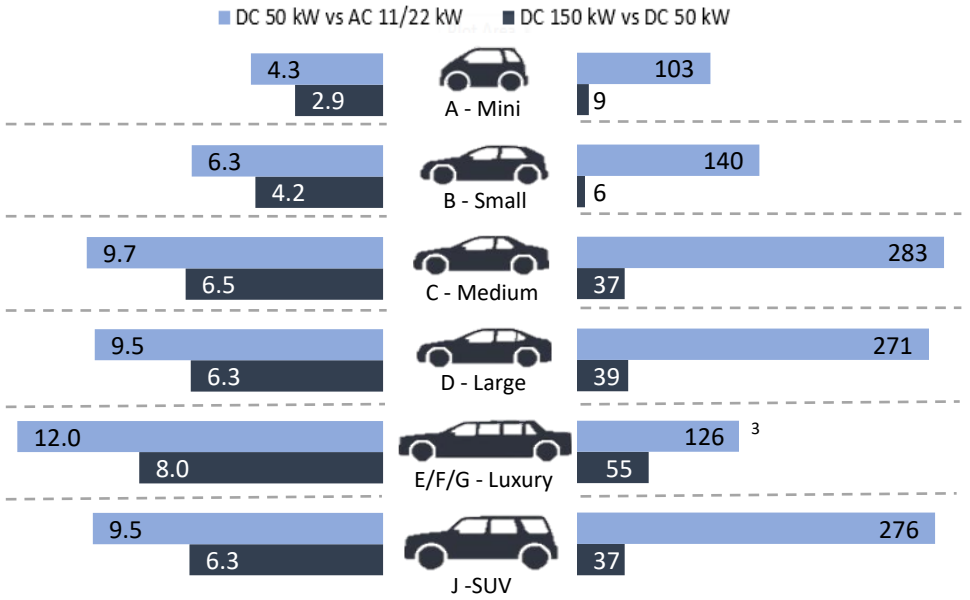
Evolution of BEV cars in Greece



Cost per 100 km of BEV and ICE cars (€/100km) [2]

[2] Av. **efficiency of 177 Wh/km for BEV cars** Av. **consumption** of **6.5 l/100km** for **Petrol** and **5.5 l/100km** for **Diesel** cars

Comparative analysis of chargers' maximum power per EV car segment for a charge from 10-80%



[3] 11 & 22 kW on board charger capabilities for AC charging

Source: PAE,DEI blue, inchargeNRG, Blink, Protergia, EV Database, ΣΕΑΑ, PlugShare, fuelGR, ΥΠΕΝ, HAEE Analysis

For 191km between Veroia and Ioannina, in Egnatia Motorway, and for 94km between Velo and Psathopyrgos, in Ionia Motorway, there is no public-accessible charging infrastructure. Egnatia Motorway has no service areas to install new charging infrastructure. In total, in Greece, there are 11 routes across the large cities in which there is a lack of DC charging infrastructure.

In 2022, there were 1908 AC stations and 160 DC stations, nationwide, reaching in total an exponential raise of 2941% within a four-year period. The number of BEVs tripled between 2020 and 2021 and increased by a rate of 1174% between 2019 and 2022 indicating that the supply (chargers) experiences a higher rate of increase by 250% in comparison to the demand (BEVs).

A 100km distance trip, would cost 10.1 €/lt to a diesel ICE vehicle driver, 12.7 €/100 km to a petrol ICE vehicle driver, and from 8.9 €/100km to 12.4 €/100km to a BEV driver (depending on the charging capacity), proving that electromobility has the potential of being the most cost-effective solution, however DC fast charging is still expensive, reaching the price levels of petrol and diesel.

The comparative analysis between the different charger types indicates that, switching from an AC charger to 50 kW DC, there is an additional cost of €4.3 to €12 to save 103 to 283 minutes, while the extra cost, switching from a 50kW DC to 150kWDC, is €2.9 to €8 to save 6 to 55 minutes, respectively. The cost of a charge in a 150 kW DC charger for a medium/C-segment car is 56.7 € and the charging time is 33min. It is worth mentioning that all car segments, except E/F/G Luxury cars, have a board charging capability of 11 kW AC.

New business models emerge to create value in the recharging ecosystem

Commercial EV charging value chain

Generation, management, and sale of electricity.

Charging hardware equipment manufacturing.

Site preparation, installation, and maintenance of chargers once in operation.

Investment in sites and chargers, sourcing of electricity from utilities.

Operation of charge points, including monitoring charging status and coordinating maintenance.

Provision of charging and adjacent services to end-users.

- Fast DC recharging network is becoming denser to accommodate increasing demand for recharging at a faster rate.
- Yet, trade-offs between recharging time and cost to recharge exist and are user-dependent. A recent study from Deloitte[1] indicates a general willingness of users to wait substantially longer than 10 minutes to recharge (relative to conventional brick and mortar petrol stations).
- Willingness-to-wait depends on the trip type and the location of the charging, as well; waiting time needs to be compensated with proportionately increasing value to the users.
- Value creation includes development of new services and enhanced experience to the users while their car recharges.
- New business models and strategies are rapidly developing to create and maximize value to users, for trips that can accommodate extended waiting time.
- Integrated type of services across the recharging value chain will generate synergies, economies of scale and increased attractiveness to the users.

[1] Deloitte Report: 2023 Global Automotive Consumer Study

Source: Deloitte Greece

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