



EV CHARGING BUSINESS FUNDAMENTALS & MOBILITY SERVICE PROVIDERS

WHAT DOES THE EV CHARGING VALUE CHAIN LOOK LIKE?



- The main roles in the EV charging ecosystem are hardware manufacturers, Charge Point Operators (CPO) (owners and/or operators of EV charging stations), software providers, mobility service providers (MSP), roaming platforms, and service/maintenance and recycling companies. Companies often combine several roles. The sector is innovating rapidly and new business models and services regularly emerge.
- The EV charging sector is part of a broader value chain, with utilities on one end and car manufacturers on the other end. Utilities, EV charging companies and EVs operate as an ecosystem with high dependencies. The success of the EV charging sector goes hand in hand with EV uptake; they are two sides of the same coin. Ensuring this ecosystem operates with fluidity is one of the top technical and commercial tasks of the sector today.
- EV charging company structures and maturities vary. There is a significant share of start-ups and scale-ups, along with larger companies that are diversifying their historical activities.

WHAT STAGE OF DEVELOPMENT IS THE EV CHARGING SECTOR IN TODAY?



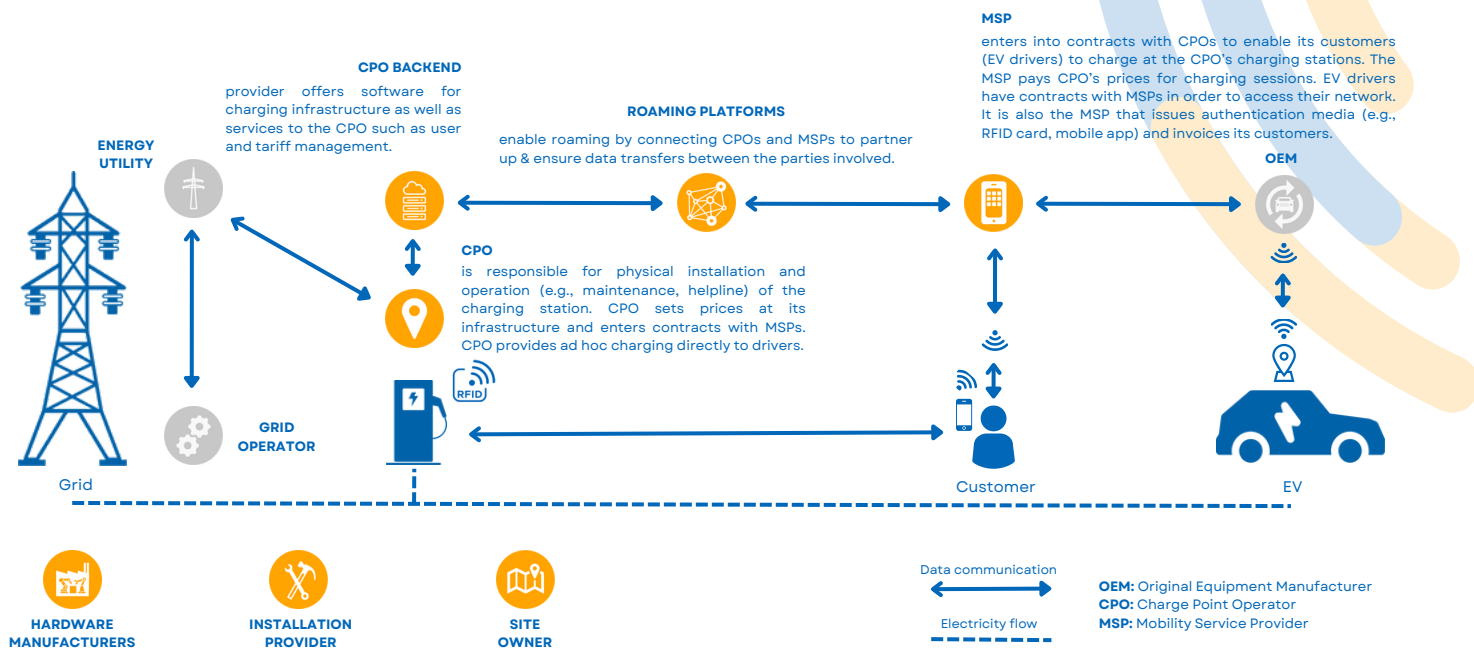
- The industry is in a period of significant growth and maturation. Companies are currently investing heavily. Investments into charging Infrastructure will grow from €5 billion in 2021 to over €15 billion in 2030. Of this, private charging infrastructure is estimated to account for 2x the investment costs of public infrastructure.

- The sector is increasingly treated as a classic infrastructure business – high initial investment with returns over a long period, increasing as EV market share increases in each Member State.
- On average, the EV charging industry in Europe will require about 15,000 new positions per year through 2030. This will lead to the creation of more than 118,000 new jobs from 2022 to 2030, i.e. a growth of approximately +270%. The sector currently experiences labour shortages across skill ranges (technical, digital etc.).
- The industry is very dynamic and standards are under development. Standards are expected to play an outside role in ensuring a seamless experience for EV drivers in coming years and to catalyse system integration along the value chain.

WHAT ARE SOME OF THE MAIN DIFFERENCES BETWEEN CHARGING & REFUELING?



- Whereas refueling can only happen at 'petrol stations', EV charging can take place wherever there is electricity – at home, work, destinations like restaurants & shopping malls, along the highway, and for fleets, buses, and trucks, depots. In most of these use cases, users charge where they are already parked, not going somewhere specifically to recharge.
- When an electric vehicle is plugged into a charging station, communication takes place between the battery in the vehicle and the charging station. In this way, the EV charging sector integrates transport and energy by digital means.



MOBILITY SERVICE PROVIDERS

- Mobility service providers (MSPs) serve as the link between EV drivers and the charging infrastructure provided by CPOs. They offer customers access to charging stations by using an authentication device (e.g. app or physical object) that identifies them at the charging station. While the CPO manages and sets up the charging infrastructure and maintains the charging stations, the MSP has – except in the case of ad-hoc charging – the direct relationship with the customer and provide customer services and billing.
- MSPs help CPOs gain revenue by increasing the utilisation of their stations. Agreements between CPOs and MSPs typically include pricing and revenue-sharing arrangements. They may also include data-sharing arrangements related to the use of charging stations, helping both parties gain valuable insights into the usage of these stations.
- The clients of MSPs include private drivers, fleet operators, employees of companies, and others. These clients have an account and retrieve their invoice from their MSP of choice.
- MSPs offer a suite of services to EV drivers. MSP customers have opportunities to charge at many operators with one account through roaming, and benefit from promotions, loyalty schemes, a variety of payment methods (enabling drivers without credit cards to access charging), and route planners to optimise their charging and road trips. Additionally, customer support, billing, invoicing, and charging history are all in one service.
- MSPs show the chargers on their network in a single map, and drivers can click on the location to see the price at that particular location based on their payment plan. Drivers have the choice between fixed pricing through subscriptions or the flexibility of more dynamic pricing related to the ad-hoc price from the CPO or the energy market spot price.
- MSPs grow the size and range of their network by having contracts with more and more CPOs – this offers more value to the end user of the MSP, as their customers can now access an even larger network of charging stations. MSPs connect with CPOs through roaming platforms or directly through peer-to-peer connections. IT and data exchanges are supported by the Open Charge Point Interface (OCPI) protocol, which is widely used by CPOs and MSPs, and some roaming platforms as well.
- MSPs form the foundation of Plug&Charge, the entirely frictionless next frontier of EV charging, which is expected to become more common in the future. Plug&Charge requires a driver to have an account with an MSP in order to work.