



**ChargeUp**  
EUROPE

# EV CHARGING BUSINESS FUNDAMENTALS & THE AFTER-MARKET: MAINTENANCE AND CIRCULARITY

## 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?



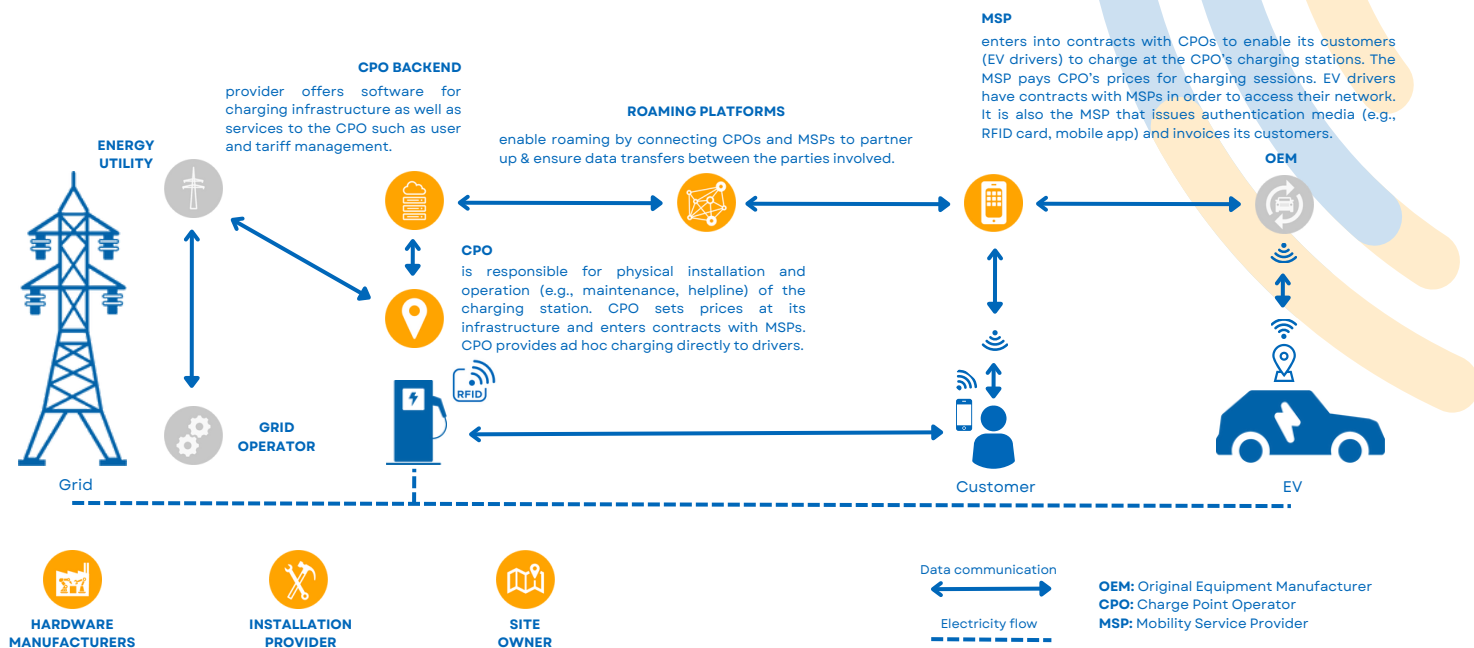
- The industry is in a period of significant growth and maturation. Companies are currently investing heavily. Investments into charging Infrastructure will grow from €5 billion in 2021 to over €15 billion in 2030. Of this, private charging infrastructure is estimated to account for 2x the investment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



## THE AFTER-MARKET: MAINTENANCE & CIRCULARITY



- As the market is growing and maturing, there is a growing focus on after-market services.
- Repair and maintenance companies seek to extend the life cycle of a product that has been deployed in the field. A charging station is a customer-facing piece of self-service technology which needs to work 24/7. The reliability of charging infrastructure builds on proactive and preventive services, combined with smart spare part logistics that will decrease the number of charger failures and increase uptimes, resulting in higher customer satisfaction. Some of the repairs or updates will be done remotely (online), and some onsite.
- Circularity has emerged in recent years, often building on the knowledge gained on other markets and applied to e-mobility. Hardware manufacturers are building partnerships to make their supply chains more circular, sometimes in response to regulatory evolution. Recycling and refurbishing can also help them control and reduce costs. Finally, the foreseen scarcity of precious resources due to geopolitical developments and growing global demand also stimulates the industry to recycle the "end of life" hardware.
- After-market services rely on cooperation of different companies across the value chain, and this is also where value can be generated, via "feedback loops". Maintenance and recycling companies can feed information back to manufacturers, i.e. on the design to make a product easier to refurbish, recycle or repair, to bring better products to the market, and ultimately to derive higher value from the product.
- Currently this sector relies on skilled, manual labour (both due to low volumes and the required flexibility in development of the optimal aftermarket processes), and is expected to become gradually more automated.
- To tackle the upcoming scarcity of field engineers, the sector is developing new business models, swapping units or parts in the field and repairing them in a controlled repair & refurbish centre.