



# Regulations Paving Way for Widespread Installation of Smart Chargers

by **Efra Farah Usmani**  
+++++

- ✦ Developed countries across the globe are rapidly moving towards widespread adoption of electric vehicles.
- ✦ Regulations revolving around billing requirements, roaming, remote management and intelligent metering are themselves pushing for installation of smart chargers in some of the largest EV markets in Europe.
- ✦ With the widespread adoption of EVs, the traditional charging infrastructure will burden the grid infrastructure instead of supporting the grid.

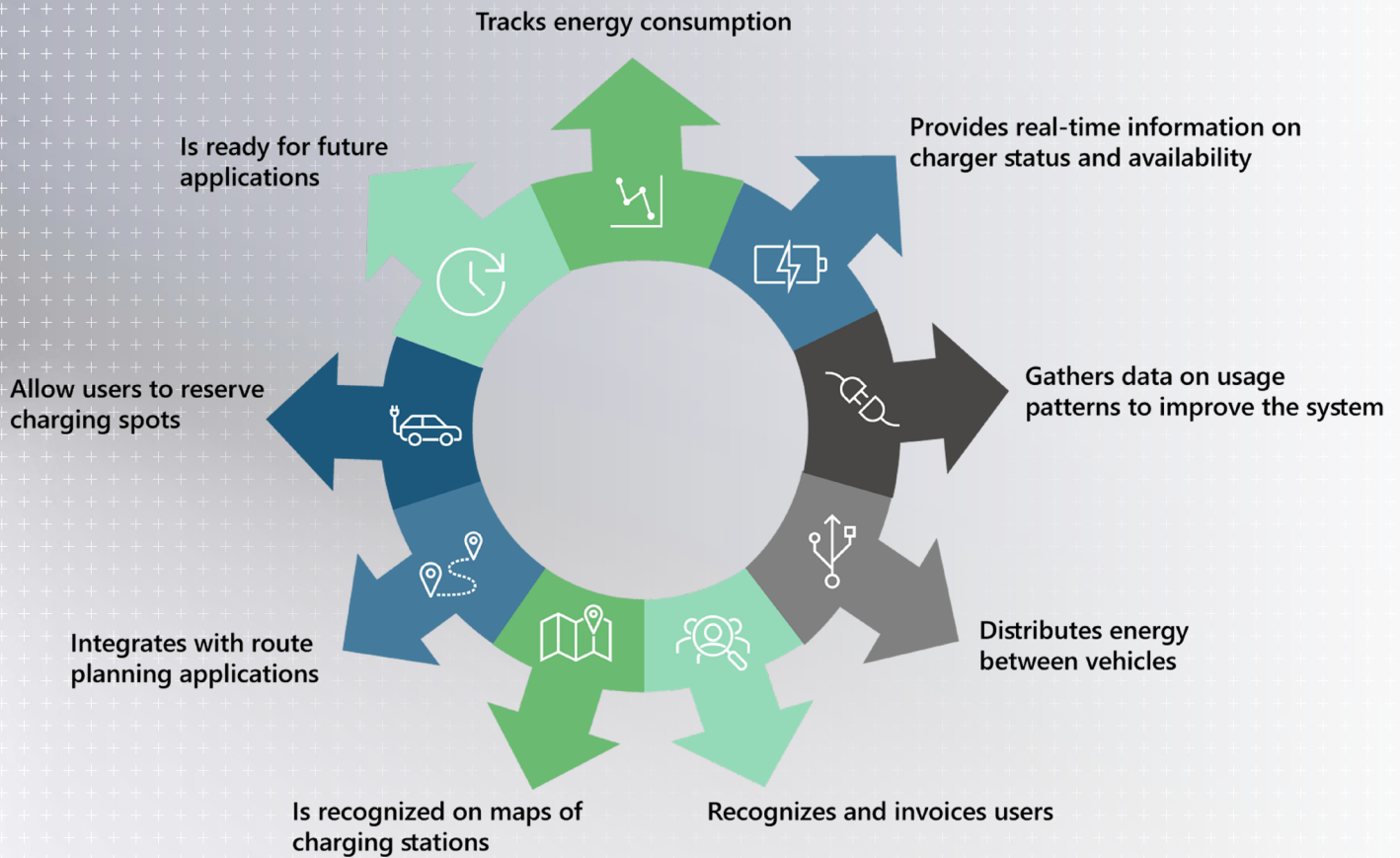


Figure 1: Smart Charging Enhances Customer Experience and Promotes Ease and Convenience  
Source: PTR Inc.

Developed countries across the globe are rapidly moving towards widespread adoption of electric vehicles. This is driving the associated charging infrastructure which is necessary to sustain the adoption of EVs. It is expected that the EV and EVSE market of the future will be radically different from what it is today, so it is necessary to future proof the electric vehicle supply equipment technology keeping in mind the latest regulations and policies. This presents a challenge to present day Original Equipment Manufacturers (OEMs) of electric vehicle supply equipment who are responding by developing intelligent

charging infrastructure, also referred to as smart charging infrastructure.

Contrary to traditional charging infrastructure, that is not capable of two-way communication, smart charging infrastructure includes multiple types of communication in real time:

- 1) Communication between the car and the charger
- 2) Communication between the charger and the charging operator
- 3) Management of the charging event to support the needs of operator to alter the charging power without disrupting the charging event.

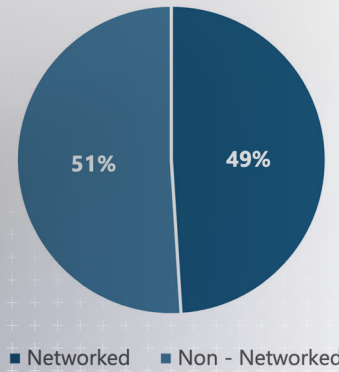


**Kamil Maqsood** is a Senior Technical Research Writer at PTR Inc. He has a BSc degree in electrical engineering from the University of Engineering and Technology Lahore and is currently pursuing a master's in electrical engineering from the Lahore University of Management Sciences with a focus on Power System Planning, Electricity Markets, Power System Operations, and Control and Battery Energy Storage Systems. At PTR, Kamil is responsible for the creation & editing of technical content for which he coordinates with the research team. Additionally, he has experience working with The World Bank (energy team) as STT Consultant.

**Regulation on Smart Charging**

Regulations revolving around billing requirements, roaming, remote management and intelligent metering are themselves pushing for installation of smart chargers in some of the largest EV markets in Europe: Germany, France and UK.

Figure 2: Share of Networked Chargers in EMEA in 2021  
Source: PTR Inc.

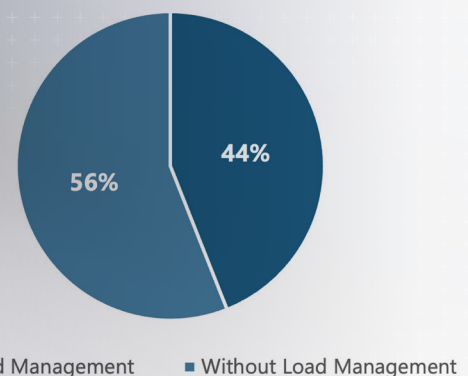


**Germany**

In Germany each electric car driver should be able to charge and pay at the same time without requiring an agreement with a service provider beforehand. The regulation aims to ensure unhindered use of electric vehicles across operators, and municipalities can choose from the following payment mechanisms:

- 1) Cash or cashless payment (standard card-based payment system for instance credit card) in the vicinity of the charging point.
- 2) Web-based payment system (meaning a QR-code, app or

Figure 3: Chargers with Load Management Capability in EMEA in 2030  
Source: PTR Inc.



website) including at least one variant of access to the web-based payment system (i.e., PayPal, credit card or others), which must be available free of charge.

- 3) The menu for charging should be available in at least German and English.

Similarly, regulations in Germany require chargers to have the ability to manage load as well which is a feature only available in smart chargers.

A charging infrastructure, open to the public, is operated by a charging infrastructure operator that utilizes a monitoring system that allows data exchange with each charging point. It also has the capability to monitor the status of charging points, and records the important parameters of service use, including those concerning the delivery of energy.

On the other hand, the French IRVE decree requires the use of a supervisory system that ensures

Furthermore, the charge point should be accessible remotely to the public through a data communication protocol and communication technology (Open Charge Point Protocol (OCPP) version 1.6 (equivalent or above)). Additionally, the regulations in the UK require intelligent metering systems to be installed alongside recharging stations that are accessible to the public.



For three or more EV chargers, load management features are generally required in multi-unit buildings in Germany. With the installation of EV chargers, the utilization of electricity increases and to keep the network from overloading and for smooth charging of multiple electric vehicles simultaneously, many OEMs have integrated load management in their chargers.

#### France

Regulations in France require chargers to have the capacity to be managed remotely and to use a supervision system that supports EV roaming.

that each charging point accessible to the public can be monitored remotely. Interoperability can be achieved either through a contract or via a data exchange platform as provided in the decree.

#### United Kingdom

The UK has regulations that require intelligent metering, payment and data communication related features from EV chargers. For instance, charging stations in the country are required to have charging information displayed on a screen or at the time of service directly conveyed to the consumer through SMS, Web App or an email.

#### Looking Ahead

Traditional charging technology was a great help in the initial phases of EV charging deployment in Europe but as the region moves towards the widespread adoption of electric vehicles, smart charging infrastructure is a must. For the implementation of the latest regulations, smart charging infrastructure is a prerequisite. Secondly, with the widespread adoption of EVs, the traditional charging infrastructure will burden the grid infrastructure instead of supporting the grid (possible only through smart charging).