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To go carbon neutral by 2050, Europe needs more electric vehicles on the road--and more EV charger installations. What will this build-out look like and what might it cost?

The European Alternative Fuels Observatory (EAFO) has conducted an analysis of EV recharging infrastructure across Europe for Q1 2024. The data reveals distinct trends and patterns in the distribution and power of EV charging points, highlighting areas of excellence and opportunities for improvement. Key Trends and Patterns:

Globally, the average public charging power capacity per electric LDV is around 2.4 kW per EV. In the European Union, the ratio is lower, with an average around 1.2 kW per EV. Korea has the highest ratio at 7 kW per EV, even with most public chargers (90%) being slow chargers.

In the European Union, over 250 000 chargers are described as having restricted access. While home charging infrastructure is well established in many countries, the landscape for 2Ws is markedly different. Stock and sales of 2Ws continue to increase in India and the ASEAN countries.

Europe is currently ranked second to China in terms of e-mobility. However, China"s statistics far exceed those of Europe and any other region in the world. In 2022, China had already installed more than 1.7 million EV charger points, whereas Europe couldn"t even reach half of that number. The market for EV charging stations reached USD 9.8 billion in China, in 2022. In Europe electric vehicle charging station market was valued at USD 4.1 billion for the same year.

Despite trailing behind, Europe"s EV charging sector is growing at a faster pace, albeit with a slowdown in recent years. AC charger installations saw a 46% growth in 2022, a decrease from the previous year"s 76%, and further slowed to 37% in 2023. For DC chargers, there was a 90% growth in 2022, slightly reduced to 84% in 2023.

There are things that China did a lot earlier than others to make EVs and EV charging infrastructure ubiquitous in the country. The Chinese government began subsidizing electric car sales in 2010 and also enforced a standard plug for EV charging, which led to the high adoption of EVs. Europe has recently drafted some ambitious targets for EVs to align with its "Fit 55 Package", the EU"s initiative to reduce emissions by at least 55% by 2030 (compared to 1990 levels). Emissions from the transport sector have been rising since the 1990s, accounting for nearly 20% of total EU GHG emissions.

The European Parliament aimed high in October 2022 by voting for a regulation on the alternative fuels infrastructure (AFIR) to ensure a smooth transition to renewable zero-carbon fuel. The regulation highlights the need to increase the power level of public charging, stimulate fast charging deployment, and enable swift

deployment of electric charging infrastructure for heavy-duty vehicles.

Almost 80% of residential EV chargers in Europe (90% if we include Benelux) were sold in DACH (Germany, Austria, Switzerland) and France, corresponding with the existing distribution of EVs in these countries.

Residential EV chargers are AC chargers with charging power between 7.4 and 22 kW. Each charging point receives more than four charging sessions per week, totaling an average of 100 kWh/week. More than 95% of home charging sessions take place between 12 PM and 8 AM.

It"s critical to offer workplace charging, especially for individuals without access to a home charger. Nordic countries and France have the highest share of workplace charging at 60% combined, followed by Benelux and DACH. Workplace chargers usually offer AC charging with a capacity of 22 kW. Despite its significance, workplace charging constitutes less than half of the total residential charging units.

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