

INSIGHTS INTO THE STRATEGIC ROLL-OUT AND USAGE OF PUBLIC CHARGING INFRASTRUCTURE IN GERMANY

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Overview

One of the primary energy challenges for the next decade is the decarbonisation of the transport sector. Promoting electromobility with its electricity supply being generated from renewable energy sources is currently a popular policy measure in many countries in order to reduce CO₂ emissions in the transport sector. Germany, where 20% of the emitted greenhouse gases stem from the transport sector, has also opted for this strategy, promoting both, the purchase of electric vehicles and the build-up of public charging infrastructure. An effective large-scale adoption of electromobility poses huge economic, regulatory and technical challenges, among others the strategic roll-out of a nationwide reliable charging infrastructure. Therefore, in this paper we aim to lay out and evaluate Germany's approach to build up public charging infrastructure in its early stages.

The biggest promotion scheme for public charging infrastructure was adopted by the German Ministry of Transport and Digital infrastructure in 2017, which provides investment subsidies for the hardware of and grid connection for charging stations. In the scope of this promotion scheme comprehensive data has been collected for the second half of 2018, which gives detailed insights into the nationwide build-up and usage of public charging infrastructure.

Based on this data we analyse the characteristics of the promoted public charging infrastructure with a special focus on their utilization and economics.

The statistical analysis gives insights into how public infrastructure in Germany is used by determining for example the average charging time, the average amount of charged energy and peak times of charging, distinguishing between the used charging technology in terms of rapid and normal charging points.

Considering the economics of charging infrastructure, we identify how pricing models for charging infrastructure are set and if they differ depending on factors such as day time, the location or charging capacity of the charging station. Based on the costs, utilization and pricing models of the charging infrastructure we assess if the build-up and operation of charging infrastructure is already economically viable.

The results of our analysis can warrant conclusions for network operators, giving them a better understanding of how electric vehicles behave as new consumers within the electricity supply in terms of their charging habits. The analysis also holds lessons for the further development of Germany's promotion scheme, for example, whether it is still needed in order to incentivise the build-up of charging infrastructure for electric vehicles or if the market has already developed sufficiently for charging point operators to take over the further roll-out on their own merit with economic benefits.

Methods

The data is examined by means of statistical analysis. Our database comprises information on the location, charging technology, costs and pricing models of over 1600 charging stations and data of their charging operations from July till December 2018.

Results and Conclusions

The analysis is ongoing. A working paper will be concluded before the conference is due.