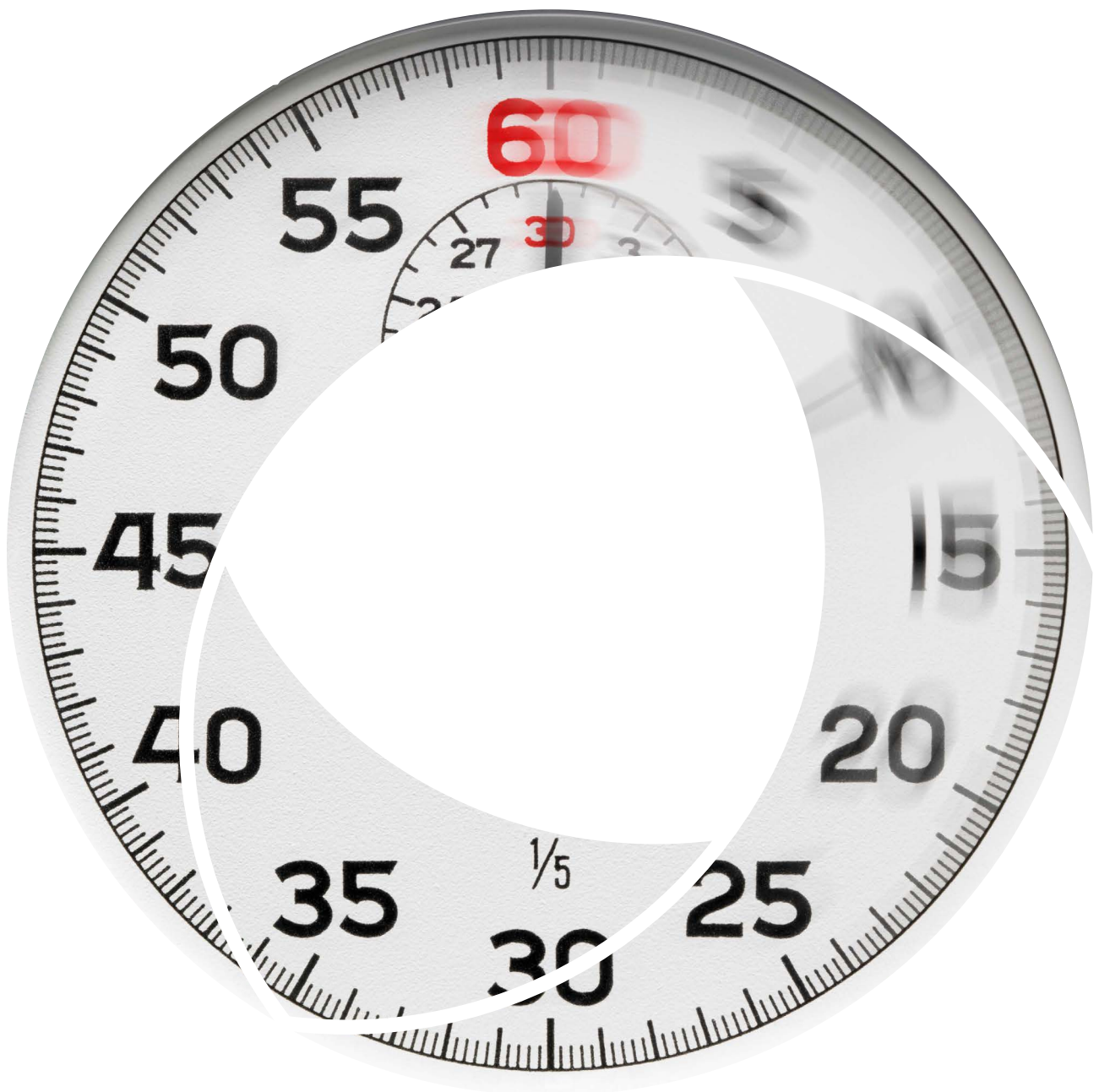


Paving the way to an EV future

Policy recommendations for accelerated charging infrastructure development

EXECUTIVE SUMMARY



Imprint

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Executive Summary

The coalition agreement signed by the new German government foresees increasing the number of purely electric vehicles in the German passenger car fleet to 15 million by 2030. Meeting this target will require the rapid expansion of electric vehicle sales and charging infrastructure. Although charging infrastructure has not been a decisive obstacle to the expansion of the EV fleet in Germany thus far, a massive and rapid build-out of this infrastructure will be required in the coming years. In recognition of this fact, the German coalition agreement aims to achieve the installation of 1 million charging points by 2030.

In past years Germany has committed substantial public funds to the financing of EV purchase incentives as well as to support the construction of charging infrastructure. However, it is unlikely that such subsidies will continue at the present level over the long term, as recent deficit spending – not only due to the COVID pandemic, but also more recently, to combat the energy crisis – has raised budget concerns. Against the backdrop, the adoption of appropriate financial incentives and regulatory arran-

gements that ensure a well-functioning market for charging infrastructure expansion have become all the more pressing.

This study investigates the financing and regulatory instruments the federal government can use today to set priorities for expanding publicly accessible charging infrastructure as quickly and comprehensively as possible. To conduct this analysis, Agora Verkehrswende commissioned the consulting firms Consentec and Neon Neue Energieökonomik.

Based on needs, costs, and use cases for the construction and operation of public charging stations, the study derives a roadmap for infrastructure development. The roadmap aims to guide the expansion of charging infrastructure in a manner that is oriented to future needs. Additionally, the study examines two regulatory models for the development and financing of publicly accessible charging infrastructure, and develops recommendations for the amortisation of associated outlays.

Key findings

1

The expansion of publicly accessible charging infrastructure should be future-oriented: Over the long term, charging infrastructure must be suitable for servicing a purely electric passenger car fleet. By 2045 at the latest, the passenger car fleet in Germany will be largely all-electric. By 2030, charging capabilities for 15 million purely electric cars will be needed. Today's expansion of charging infrastructure should already be aligned with this vision, in order to create a network of charge points that is both comprehensive as well as economically efficient. Aligning today's development of charging infrastructure with this vision of the future will also help to avoid stranded investments. The conditions for public funding should be adapted to focus more strongly on the quality of the charging infrastructure network as a whole, as opposed to focusing only on the total number of charging stations.

2

With high shares of electric vehicles, publicly accessible charging infrastructure can be user-financed. Until then, there is a need for public funding. Already today some of the costs can be recuperated via the revenues generated from the German greenhouse gas reduction quota (*Treibhausgasminderungsquote*), implemented to conform with the EU Renewable Energy Directive II. For additional financing needs that go beyond these revenue streams, the allocation of tax resources will be necessary for some time. A user-financed system over the medium term can potentially be supported in part by revenues from a national car-toll system (which has yet to be introduced). When designing such a system, an exit date for charging infrastructure subsidies should be kept in mind.

3

The financing of publicly accessible charging infrastructure should focus on fast chargers in highly frequented locations. This will ensure a basic coverage quickly and is a no-regret strategy. Especially publicly accessible fast chargers (50 kW and higher) and high-power charge points (150 kW and higher) at supermarkets, DIY stores, shopping malls and cinemas are likely to be the most user-friendly while also ensuring rapid amortisation. The study shows that 50-kW DC charging infrastructure has comparable costs to slower 11-kW AC charging infrastructure due to a higher utilisation rate. This approach can be scaled up for high shares of electric vehicles and would have high coverage. This support model should be supplemented with incentives that promote competition and customer choice. Important examples for such incentives are a “competition bonus” for charge point operators (CPOs) with low market shares in a specific region as well as the introduction of third-party access for other Electric Mobility Service Providers (e-MSP) at the level of the ad hoc price.

4

Additionally, competitive tenders combined with price regulation will be useful for developing charging infrastructure along motorways. Under this model, government support is provided through tenders. The awarded contracts would provide a premium (in cents per charged kWh) to infrastructure developers. This premium would be calculated based on the difference between a fixed upper price limit and the actual excess cost that was initially bid. The advantage of this approach (i. e. subsidy per kWh) is that it incentivises developers to ensure high utilisation; subsidy costs to the government would be limited thanks to selection of the most favourable bids. Future adjustments to the price cap should be based on rules or indexes. The challenge inherent to this approach is to achieve a comprehensive infrastructure network based on forward-looking demand planning, yet also to avoiding overfunding, insofar as this instrument is used beyond motorways.

5

The design of government support instruments in large cities is a particular challenge. Municipalities need more capacity and support in developing long-term roadmaps for the expansion of charging infrastructure. Especially in urban areas, publicly accessible charging is crucial, as less private charging infrastructure is available. In addition, the high level of competition for scarce public space poses a challenge for an integrated, interdepartmental approach to planning urban charging infrastructure. In any case, additional personnel capacities are needed in municipal administrations. Guidelines for the efficient, long-term expansion of publicly accessible charging infrastructure and for tailor-made funding instruments must be developed as quickly as possible in cooperation with municipalities and on the basis of good practice examples.

In addition to the key findings mentioned above, it is important to consider that the accelerated expansion of charging infrastructure need not solely depend on tailor-made funding instruments from the federal government. Various additional measures can promote infrastructure expansion, including in particular the removal of administrative, political and legal hurdles – for example, in national and local permitting processes, in construction law, and in grid-connection rules.

Accordingly, there is also a need to adjust regulatory conditions in the energy industry in order to facilitate both charging at company sites as well as smart charging. These issues need to be addressed as part of the new German Masterplan for Charging Infrastructure, which is up for revision at the time of writing. All of the above points should be addressed if Germany wants to realise its target of 15 million electric cars on the road by 2030.

Agora Verkehrswende is a think tank for climate-neutral mobility. In dialog with politics, business, science and civil society, the non-profit organization works to reduce greenhouse gas emissions in the transport sector to zero. To this end, the team develops scientifically based strategies and proposed solutions.

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