

Position

Recommendations for a successful ramp-up of charging infrastructure for electric vehicles by 2030

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Executive Summary

Without electric mobility, the ambitious goal of sustainable mobility by electrifying the vehicles, as required by European legislation, cannot be reached. The expansion of charging infrastructure is the most important prerequisite for a successful market ramp-up of e-mobility. This expansion can be divided into two phases, which need to be designed in two steps:

Short term, 2019 to early 2020, the goal should be to gain our customers' trust in e-mobility by a strong increase in publicly accessible charging infrastructure:

- Already in this early market ramp-up phase, charging infrastructure is required even beyond the current demand, especially in public areas.
- The infrastructure has to be installed as quickly and as visibly as possible. Customer perception and increasing customer confidence in e-mobility are key during this phase.

By mid-2020 at the latest, the overall framework conditions must have been created in order to achieve a continuous expansion of the infrastructure in line with demand. Private charging points and charging points at the workplace are the focus during this phase:

- Private charging infrastructure is growing continuously, charging stations on employee parking lots are available. Additionally, funding programs are available and the regulatory framework conditions have been adjusted.

Overall, different financial measures and regulatory frameworks are needed, as charging takes place in different situations and at different locations. The VDA therefore recommends the following measures for implementation:

- Coordinated, overarching approach at federal, state and municipal level for charging infrastructure development
including: Coordination of charging infrastructure growth by the federal government, coordination across administrations, Implementation-monitoring, status information
- Create legal requirements
including: Fixed targets for infrastructure build-up with timing, enabling a "right to charge" through adjustments to renting/ownership law, charging point guidelines for buildings and new Energy Performance in Buildings Directive, include requirements for commercial vehicles
- Remove practical obstacles
including: Acceleration/simplification of approval procedures, uniform federal requirements, simplification and transitional regulations for calibration law, adjustments to German charge point regulation ("Ladesäulenverordnung")
- Jump-start financial support
including: Short-term funding calls for public and private charging infrastructure, reduction of electricity price for driving
- Simplify funding guidelines on charging infrastructure
including: Fixed-rates for connection costs, flexibilisation of access rights

In VDA's and its member companies point of view, such a package of measures is urgently needed in order to achieve a short-term and coordinated growth of charging infrastructure. Consistent action by all responsible parties can turn Germany into a lead market for e-mobility.

Status Quo

The continuing market ramp-up of electric mobility must be accompanied by a demand-driven, convenient and available charging infrastructure plus a positive customer perception. Only in this way the necessary trust and acceptance to switch to electric mobility can develop and grow. The coalition treaty at federal level already sets ambitious targets for further expansion of public charging infrastructure and for simplifying the installation of charging points in the private sector.

The EU's CO₂ reduction targets increase the pressure on industry, politics and consumers and require a further increase and acceleration of the installation of charging infrastructure. Compared to China with approx. 330,000 publicly accessible charging points (end of 2018), the current level of 17,400 publicly accessible charging points in Germany is absolutely insufficient. In its current calculations, the National Platform Future of Mobility (NPM) assumes that there will be about 7 to 10 million electric vehicles in 2030. Based on today's requirements of the EU DAFI Directive (Directive for Alternative Fuels Infrastructure), the public sector needs 700,000 to 1 million "normal" AC charging points and an additional 70,000 to 100,000 DC fast charging points. For the private sector, the quota defined by the National Platform for Electric Mobility (1.125 charging points per vehicle) requires approx. 8 - 11 million charging points. By 2025, one third of this number will already be needed for both public and private charging points.

In order to achieve these goals, all necessary steps must be taken now without further delay. This sense of urgency is not yet present among all stakeholders in politics, industry and associations and a nationwide coordination is missing.

In the context of the accelerated ramp-up of electric mobility, it has to be ensured that trust is created in the short term and is continuing to develop through a reliable and comfortable public charging infrastructure. Particularly in the phase of the early market ramp-up, the focus needs to be on a clearly visible expansion of charging options that is visible to the customer. Rapid expansion in both the public and private sectors is a key prerequisite for achieving the ambitious ramp-up targets for electric vehicles. The first steps have been taken with installation of fast charging infrastructure at motorway service stations and the construction of charging parks along major European transport axes by the consortium of German automobile manufacturers IONITY. Availability and visibility of the necessary public charging infrastructure in urban areas are the task of the municipalities. In 2014, the city of Hamburg, for example, made a clear and unambiguous political decision by the city's Senate for the development of charging infrastructure which is showing its effect today.

Due to the fact that charging points are currently and in the near future not yet economically viable, the Federal Government and the EU are supporting the development of publicly accessible normal and fast charging infrastructure with public funding programs. Nevertheless, investors and operators still lack the motivation to build and operate charging points. Therefore, in addition to financial support, further incentives, measures and regulatory regulations are needed to promote the expansion of, most importantly intelligent, charging infrastructure, especially in the public and private sectors.

The German government's approaches to support the development of private charging infrastructure point in the right direction, but must also be accompanied by a reduction of numerous legal and practical obstacles, like the immediate reform of the housing ownership and rental law. In the area of publicly accessible charging infrastructure, attention should be paid to the implementation of quantitative requirements for equipping parking spaces, the elimination of regulatory obstacles in the energy industry law and a positive tax structure for electricity used for charging.

For the public sector, best practice examples should be developed in collaboration with the municipalities as a guideline, and relationships between vehicles and charging points with regional differentiation should be shown as examples.

There is currently no overall coordination of infrastructure development by the federal government, the federal states or local authorities. The result of these scattered responsibilities is that neither concrete overall goals nor obligations have been laid out, and infrastructure construction is fragmented and differs regionally.

For a rapid and coordinated development of charging infrastructure in the responsibilities of the federal government, the federal states and the local municipalities the following goals have to be met:

- Definition of verifiable targets (how much by when) for the installation of charging infrastructure at a certain location
- Definition of responsibility for charging infrastructure construction and expansion at all levels with control at federal level
- Elimination of regulatory hurdles in coordination between federal state, states and local authorities
- Strengthening the economic attractiveness of the installation and operation of charging infrastructure
- Exploration of all possibilities for a financial relief in electricity prices for driving (e.g. exemption from EEG levy)

The above measures must be put into action right now in order to enable a market ramp-up of electric mobility in Germany and to become a “lead market”. In addition, preparations should start now to successfully meet the requirements of an electric vehicle population that will continue to grow significantly after 2020.

Overview of charging locations

Overall, one distinguishes between private charging infrastructure and publicly accessible charging infrastructure. Approximately 85 percent of all charging processes currently take place at private charging points, e.g. the parking space at home, on parking lots of apartment buildings, on depots, on company parking lots, etc. In the future, the proportion of charging operations at private charge points will decline to 60-70 percent after 2020. The rest of the charging operations will be carried out at publicly accessible charge points, i.e. motorway service stations, shopping malls, inner-city service stations or public car parks.

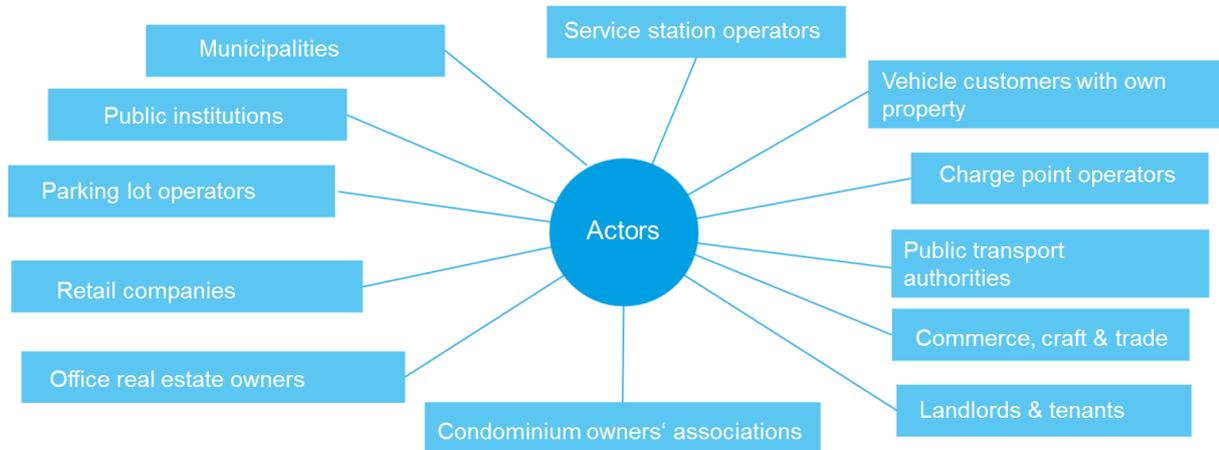
Charge process portions	Private installation location: Currently 85 % Perspective beyond 2020: 60–70 %			Publicly accessible installation location: Currently 15 % Perspective beyond 2020: 30–40 %		
Typical locations for charging infrastructure	 Single/double garage or parking space at privately owned home	 Parking spaces and/or underground parking in residential buildings, multiple dwellings, apartment blocks	 Company parking spaces on own premises	 Truck stop, highway service station	 Shopping center, car parks, customer parking spaces	 Roadside/ public parking
Parking duration & usage frequency	Duration: 10-12 h Usage: 10-12 h/day	Duration: 5-10h Usage: 5-10 h/day	Duration: 8-10min Usage: 1-5 h/year	Duration: 0-4 h Usage: 1-3 h/week		

Great potential for the development of charging infrastructure lies in the retail sector. German retailers have already installed over 1,000 charging stations in semi-public areas. In the future, there is considerable additional potential for the installation of charge points in the food retail sector alone, with its 38,000 locations and the associated parking spaces. There are 1.9 million parking spaces in the food retail trade, which are also located in suitable locations for charging processes in everyday life without additional effort for the charging process. The retail trade currently cannot claim any financial support for charge point installation, as parking spaces would have to be open around the clock (24/7) to comply with the current funding guidelines. This is obviously not possible especially in inner city locations. The legal requirements and the bureaucratic effort involved in setting up and operating charging stations are also considerable, especially if the electricity for charging is generated at the same time, e.g. by photovoltaic systems. Existing and future funding instruments should therefore be designed in a way that charging opportunities can be created at all stations along the everyday life of all users of electric vehicles.

Actors

Most actors are currently facing major obstacles while planning and constructing charging infrastructure. Above all, potential operators of charging stations do not see a positive business case in running public or private charging infrastructure, neither today nor in the near future. In addition, legal frameworks for

municipalities and public entities are often non-binding and owners and tenants are facing an uncertain legal situation.



Due to the multitude of different actors and interests, an overarching and coordinated approach across all stakeholders is recommended.

Recommendations

Previous funding calls by the German government have focused in particular on public charging infrastructure at car parks, motorways, service stations and along the roadside. However, these charging use cases are no longer sufficient for the future ramp-up of electric mobility.

VDA therefore recommends an overarching approach that addresses all use-cases of charging in private and public areas:

Coordinate charging infrastructure development across the board

1. Coordination of the ministries within the Federal Government with binding deadlines for the creation of the legal requirements for a rapid and sustainable charging infrastructure development
2. Regular monitoring of the implementation of the installation and expansion plans of the federal states, municipalities and public bodies as well as private institutions
3. Continuous information to citizens on the actual status of planned and completed charging points (on a national, supra-regional and local level)

Create legal requirements

1. Mandatory requirements for municipalities and other public planning bodies for the preparation of charging facilities and the installation of charging infrastructure (starting with every 10th parking space, increase according to vehicle ramp-up)
2. Swift adaptation of housing ownership and rental law and introduction of a “right to a private charge point”
3. Implementation of parking space equipment in the Energy Performance of Buildings Act at least in accordance with the EU Energy Performance in Buildings Directive.
4. Establish the preparation for charging infrastructure for new buildings and conversions in the building regulations of the federal states
5. Increase comfort through adaptation of EU Directive 2014/94/EU: Focus on a minimum share of charging stations with attached cable compared to charging stations with socket
6. Include supply of electrically driven commercial vehicles (classes greater than N1/M1) by extension of the German charge point regulation (“Ladesäulenverordnung”)
7. Define cross-industry framework conditions for grid-stabilizing control and scheduling of charging processes (intelligent charging)

Reduce practical barriers

1. Accelerate and simplify approval procedures for charging infrastructure (lead time less than 3 months)
2. Create uniform federal requirements and, if necessary, scenarios for interim solutions for the fulfilment of measurement and verification legislation ("Mess- und Eichrecht") (agreement with operators, max. 8 years of preservation of status quo)
3. Increase customer comfort by adapting the German charge point regulation to the EU directive (freedom to choose attached cable or socket)
4. Political support for the planning of cross-border charging infrastructure, including e-roaming
5. Develop an intelligent charging point register with dynamic data (e.g. malfunction and occupation status)
6. Develop an intelligent charge point register for commercial vehicles with parking situation data
7. Effective sanctioning of EV-parking space violations
8. Adaptation of the Low Voltage connection regulation and renunciation of the approval obligation by grid operators for the grid connection of charging devices (up to 11 kW for private charging points).

Initiate financial support

1. Set up an incentive program for public charging infrastructure to cover the fleet of approx. 7 to 10 million vehicles in 2030. With a 50 percent subsidy and current DAFI quota, this corresponds to a financing requirement of € 5 - 7.5 billion. A jump start financing of €1.6 - 2.2 billion would cover the demand until 2025.
2. Establish funding program for charging infrastructure including installation and grid connection for private and commercial use. With a 50 percent subsidy and the NPE quota of 1.125 charging points per vehicle, this corresponds to a total financing requirement including connection and installation of approx. €14 - 21 billion by 2030. A jump start financing of €4 - 5 billion would cover the requirement until 2025.
3. Enabling low-cost charging-electricity for all electrically powered vehicles, including commercial vehicles, e.g. through pragmatic exemption from taxes and levies (e.g. EEG, which corresponds to a reduction of 7 ct or 23% cost reduction at 30 ct/kWh). Public funding of investments in grid infrastructure and intelligent energy management systems as a supplement to the necessary grid expansion measures
4. Enable the possibility of feeding back electrical energy to private charging infrastructure up to a certain limit to be defined

Simplify funding rules for charging infrastructure

1. Accelerate the application process by predefined response options, flat rates for grid connection costs, reduction of documents to be submitted
2. Promote the development of charge points on employee and fleet parking areas
3. Eliminate the obligation for 24/7 charge point access in the funding calls
4. Replace the upper financial support limit by a limit for eligible parking spaces
5. Eliminate the need to forecast green electricity in the grant application
6. Eliminate double reporting to BNetzA and NOW GmbH when installing a charge point
7. Increase planning security by eliminating regional differences in the funding approvals
8. Introduce mutual service agreements to avoid delays in the construction start dates

The VDA and its member companies support the coordination of the consolidated development and expansion of charging infrastructure for all user groups and charging locations.