



Financing Resilient Electric Recharging Infrastructure

An Electro-Mobility Platform Recommendations Paper

Introduction

The deployment of private recharging infrastructure as well as an EU-wide interoperable public infrastructure remains a core pre-condition to bolstering electric vehicle (EV) market acceptance. The EU has already taken a first step to addressing consumer anxieties with regards to range and physical charging compatibility of EVs. The [Alternative Fuels Infrastructure \(AFI\) Directive 2014/94/EU](#), whose implementation deadline passed a year ago, mandates the installation of minimum numbers of publicly accessible charging points and sets EU-wide harmonised standards for their charging connectors. The ongoing reform of the Energy Performance of Buildings Directive (EPBD), on the other hand, is an important opportunity to ensure European buildings are adequately pre-equipped for EV charging points. The existing and future regulatory framework will need to be accompanied by adequate EU funding. **This paper suggests how the European Commission and Member States can play a key role in stirring investments towards the deployment of future-proof recharging infrastructure.**

Private domain: buildings

With 90% of the charging taking place in the private domain – overnight at home or daily at the workplace, the pre-equipment of buildings for the installation of smart EV charge points is crucial to satisfying charging needs and fostering the EV market uptake. The reform of the EPBD is an ideal opportunity to ensure buildings are accordingly pre-equipped.

The installation of charge points in particular in non-residential buildings, such as offices and commercial centers, is crucial. Since these larger buildings often provide parking spaces that are not limited to a single employee or customer, this ensures high visibility and intensive use of the installed charge points. What is more, installing charging points in the private domain is key to incentivising drivers to switch to EVs: data from a US department of Energy (DoE) survey suggests that employees having a charging point installed at work are 20 times more likely to buy an EV.¹ To avoid interoperability issues, installed charging points should comply with charging connector specifications stipulated in the AFI Directive.

Adequate pre-cablings² can enable up to 70% of costs savings during later installation in apartment and office buildings. In addition, simplification of approval procedures for owners and tenants in shared

¹ <https://energy.gov/eere/articles/survey-says-workplace-charging-growing-popularity-and-impact>

² Pre-cablings or pre-tubing is a cost-effective measure to ensure easy installation of charging points at a later point in time.

buildings can significantly accelerate actual deployment³. Both points should absolutely be included in the final EPBD since they lower the transition costs rather than increase them.

Mass uptake of EVs will have implications for the electricity system, especially in countries where the grid is relatively weak. Future infrastructure investments will therefore have to be directed towards charging points capable of smart charging. All charging stations installed as a result of the EPBD recast should be able to modulate the charging process in reaction to price and grid signals, either themselves, through a building energy management system, or through the vehicle itself. To mitigate the effects of charging at peak hours, demand response (as well as vehicle to grid mechanisms in the longer run) should be incentivised.

Given that EV charging in buildings is usually characterised by relatively long parking periods and normal power charging (3.7 to 22 kW), EVs' flexibility has a significant potential to serve the power system (ancillary services, RES integration). By competing on a level-playing field with other flexibility sources, it can help to reduce system costs and use existing assets (both generation assets and the grid) in the most efficient way. When economically relevant, the revenue from providing this service lowers the EV's total cost of ownership (TCO), thus generating an incentive for faster adoption.

Existing EU energy efficiency funding schemes, such as the Cohesion Policy Funding, and/or new funding schemes could be used to support the implementation of EPBD measures and subsequent rollout of private charging infrastructure in buildings.

Public charging points in urban areas

The deployment of publically accessible charging facilities should be based on clearly identified needs and EV uptake patterns. Local and regional authorities, together with local and regional entrepreneurs, are therefore best suited to take decisions regarding the optimal location of charging points, and should work to identify sites where charging points could be installed to meet the needs of local users. The final location should take into account traffic volumes, but also space limitations and the maximum acceptable distance from the electricity network.

Support should go to demand-driven positioning of EV charge points, drawing on the Dutch approach, which is a best practice in this regard. The Dutch approach focuses on deploying charging points in cities according to demand, avoiding stranded assets and resentment from conventional vehicle users over possible empty EV-only parking spaces.

Public transport authorities should also consider the electrification of mass/public transport (e.g. e-buses) as an efficient way to proceed in a first stage. Indeed, investments in infrastructure and vehicles can in this case be coordinated, avoiding the risk of stranded investments. In addition, the necessary electric infrastructure can serve as a backbone to deploy publically accessible charging points for other modes of transport.

For individual transport, one should prioritise the installation of charging points close to public transport stations (including airports, ports, train and bus stations) with the aim to facilitate inter-modal travelling, public parking lots as well as private spaces open to the public, and thus foster intermodal synergies and

³ See examples of Spanish, Portuguese, French and Norwegian property and tenancy regulations changes in this regard.

create mobility hubs. The European Commission could directly support the deployment of such infrastructures through Urban Innovative Actions⁴.

As a result, EU funding and financing instruments such as the Connecting Europe Facility (CEF) and Structural and Investment Funds should ensure that electrification projects of public transport systems are eligible for support, as well as investments in newly installed charging points for private transport have to be conditional upon them being part of an interoperable network. This should include requirements of the AFI Directive, such as providing real-time information to consumers, compliance with EU standards for charging connectors, and payment methods. In addition, application of EU standards for data communication of the EV and Electric Vehicle Supply Equipment (EVSE) are needed to address remaining interoperability gaps.

Electrification along and beyond the TEN-T network

The TEN-T Regulation already plans for a mandatory electrification of the railway comprehensive network. That should be maintained to enable the decarbonation of rail transport.

For cars, fast-charging stations should be placed in already built areas, gas stations and rest stations, shopping centers as well as in publically accessible private grounds, to minimise additional investment costs on the one hand and to provide services for customers on the other hand. Ideally several charging points should be made available at the same station, to decrease waiting times for EV users and minimise disruptions caused by possible technical problems.

Just like public charging points in urban areas, public charging points along major EU corridors should be compliant with EU standards for charging connectors and payment methods to allow cross border interoperability. In this regard, similarly, all new EU- or nationally-funded charging infrastructure that would link two urban nodes and/or Member States within the TEN-T corridors should include multi-standard, downward compatible 150kW (and above) ultra-fast charging points that can cater to all current and future EVs. In doing so, they may seek to exploit potential synergies with other innovative solutions for electric road freight, as well as sectoral synergies with energy projects.

The CEF is an effective instrument to remove energy, transport and telecommunications bottlenecks. In the near future, the European Commission and Member States should use the opportunity of the new Multi-Annual Financial Framework revision to increase resources allocated to the CEF, in order to support the further electrification of land transport modes.

Even if the CEF regulation and its respective calls focus on TEN-T core corridors and (to a minor extent) on urban nodes, it should be highlighted that flexibility regarding concrete location (i.e. distance from the TEN-T core corridor) is needed to support charge point operators in selecting and developing locations that are best suited for their customers and avoid imposing excessively high costs on them. It would be crucial that funds under the TEN-T framework are also allocated to projects to be developed outside of the TEN-T core network (e.g. on the TEN-T comprehensive network as well as outside of the TEN-T network entirely), provided that this does not hamper the completion of the core network by the given deadlines (2030). In fact, EV customer experience shows that EV use occurs mostly in urban and near-urban areas at the very beginning of the market – these areas are usually *not* part of the TEN-T corridors.

⁴ <http://www.uia-initiative.eu/en/about-us/what-urban-innovative-actions>

State of the art EV charging infrastructure projects should be, similar to other transport mode infrastructure projects, financed under the CEF regime – eligible for funding not only under “studies” but also “works” as well as the newly established “blending” regime, depending on how mature they are. This then provides for a sustainable development of European, interoperable EV charging networks and leverages innovative EV infrastructure from real life trial projects to roll out activities backed up with sustainable business models.

In addition, synergies between the three sectors covered by CEF should be facilitated and further developed. In particular, joint transport-energy calls for proposals could help fund both the deployment of charging stations and the reinforcement of electricity networks. Such a synergy call was already launched in 2016 but with a limited success (undersubscription leading to just over EUR 22 million allocated out of an available budget of EUR 40 million), notably due to the difficulties of combining strict eligibility criteria applying to projects under both sectors.

To satisfy the significant investment needs for a cleaner transport system, any leftover funds within the CEF-funded projects (e.g. due to lower than expected costs, better tender outcomes etc.), should be made available via further CEF calls for proposals (ideally in line with the above suggestions).

Finally, the current trend to enlarge the scope of innovative financing instruments through tools such as EFSI or the Clean Transport Facility can increase the leverage of the EU resources. However, it is also clear that due to the maturity of the technologies or the lack of a sufficient return on investment, grants will remain a necessary tool to support the electrification of transport.

