

Background paper on supporting the European electric vehicle (EV) market

Disclaimer: We aim to reach a decision on a pressing issue and are committed to engaging in thorough negotiations. Our objective is to prevent any potential problems and misunderstandings by approaching this process with humility and respect. To ensure our negotiations are effective and inclusive, we are guided by the principles outlined in the Antwerp Declaration, which emphasizes the importance of constructive dialogue with market stakeholders. By adhering to these principles, we hope to foster a collaborative environment that supports a fair and well-informed decision-making.

I. The current state of European electric vehicles (EV) market

Could you provide an overview of the current state of the European electric vehicle (EV) market? Additionally, what are your projections for the future of the vehicle market?

The European Union has made a significant commitment to achieve carbon neutrality through green transition, by taking part in the Paris Agreement since 2016 and contributing to the climate goals to enhance green investments and transformation. Decarbonisation is a need for all of us living in Europe, and there is no question, that if we do not change, the future of our planet is at stake. To achieve carbon-neutrality, the EU pledged to significantly reduce emission from cars and vans, which are responsible of the 15% of the total CO₂ emissions in the EU¹.

The automotive sector is experiencing one of the most profound changes in its history. Vehicle production is currently undergoing a major transformation, driven by the imperative to reduce carbon emissions and mitigate climate change. In 2022, transportation was responsible for 24% of the total European Union's carbon dioxide emissions, with 71.2% originating from road transport. Of this share, cars accounted for 59.2%, heavy-duty vehicles for 27.5%, and light commercial vehicles for 12.1%. Over the past decade, the automotive industry has projected the ascent of electric vehicles (EVs), identifying them as pivotal to achieving targeted reductions in carbon dioxide emissions.²

The automotive industry is the engine of growth in Europe, contributing 7% of EU GDP and a healthy trade balance of more than 100 billion EUR, and brings in well over 390 billion EUR in government revenue, while employs directly and indirectly 13 million people. The EU is the 2nd largest automotive manufacturer in the world, and the automotive industry is the largest private investor in research and development³.

In 2023, electric vehicles accounted for 14.6% of all car sales in Europe⁴, with fully battery electric vehicles making up a significant portion of that market. However, the early figures for 2024 show a slight decline, with the share of new electric vehicle registrations dropping to

¹ https://climate.ec.europa.eu/eu-action/transport/road-transport-reducing-co2-emissions-vehicles_en

In case of light duty vehicles. ca. 12% of emissions coming from road transport specifically, and the remaining ca. 3% from non-transport sectors.

² Source: <https://www.transportpolicy.net/standard/eu-vehicle-definitions/>, <https://www.aecc.eu/passenger-cars-light-commercial-vehicles/>

³ Source: ACEA European Automobile Manufacturers' Association

⁴ Source: European Alternative Fuels Observatory

around 12%. Despite this, there was an overall 3.8% increase in the EV market in the first quarter of 2024 compared to 2023, with significant growth in some European markets such as Belgium and France, while Germany experienced a decrease. The market share of new zero-emission trucks (>3.5t) is beginning to grow as well, from 0.8% (2022) to 1.5% (2023) and 2.0% (Q1 2024). More than 15.5% (2023) of all newly registered buses are zero-emission, primarily battery-electric in the urban bus segment. However, this shift may be attributed to changes in support schemes in certain Member States and delays in the introduction of new models in the medium and small car segments. Additionally, the share of battery electric vehicles saw a moderate increase of 2.5% in 2023, compared to larger increases in previous years. Overall, electric vehicles, including both battery electric and plug-in hybrid vehicles, held a market share of 22.3% in 2023, with the rise predominantly driven by increased sales of plug-in hybrids.

Meanwhile, capacity expansion and technological development investments have been advancing at a faster pace than actual demand, but due to deteriorating expectations, adjustments can be already seen.

As the 2035 deadline for a complete transition approach in the European Union, mounting concerns are evident. The withdrawal of the German electric vehicle (EV) subsidy scheme has led to a significant decline in the growth rate of demand, underscoring the risks associated with the green transition. Notably, since 2020, the growth rate of sales in Germany has steadily declined, plummeting to 30.5% in 2022 and further to 10.6% in 2023. All of this points to serious challenges in the European automotive industry and the achievement of environmental goals. These trends clearly indicate that the green transition will not be smooth and may have significant feedback effects on the automotive industry and the EU's green objectives.

It is without question that electric vehicles will play a dominant role in clean mobility, but accelerated efforts are needed to make the green transition smoother. De-escalation of above concerns and achieving smooth green transition should be the biggest priority of the European community, which requires joint efforts. One of the major bottlenecks of EV demand, following consultations with the industry, is the lack of sufficient charging infrastructure, which is hindered by in many cases stable electricity network. There is a well-identifiable market friction here, as without proper infrastructure, widespread usage of EVs will be in peril, while more cars are need to make a larger infrastructure economical. To tackle the problem, we suggest an EU-wide subsidy programme for charging infrastructure for all vehicle segments coupled with stricter regulation on public charger deployment, to achieve a more comprehensive spread. In addition, accelerating permitting procedures, enabling flexibility regarding new network codes, standards and dynamic tariffs, as well as ensuring Distribution System Operators (DSO) make anticipatory investments through a cooperation with Member States on capacity planning (based on the charging infrastructure deployment plans under AFIR) would further assist the infrastructural development.

The other major issue is to support competitiveness of European vehicle manufacturers. The EU should further support R&D and innovation processes in carbon-neutral transport and mobility, significantly simplify state aid rules in the value chain of such vehicle production, while working together with the industry to ease meaningfully regulatory burden. Nevertheless,

given the global competition situation, we think that EU-level subsidy is needed on the demand side as well that values short supply chains, bearing in mind that criteria must be similar across Europe to ensure Original Equipment Manufacturers (OEM) can navigate the incentives schemes easily.

Our following proposals focus on the most critical aspects of the EV market that need to be addressed at the internal market level. They do not cover support measures at the individual member state level, issues such as taxation require handling within the jurisdiction of each member state.

Table Briefings

II. Public and household charging - Developing the electric vehicle infrastructure

Infrastructure is crucial because it provides the foundational systems and services necessary for the efficient functioning of the EV ecosystem. What is your opinion on the importance of the current state of charging infrastructure, how could it be improved? How can the decision-makers of the EU make a more effort to promote green transition?

Proposal 1: Tightening AFIR regulation with mandatory EV charging infrastructure for light-duty vehicles every 50km (by 2027) with at least 4 charging points, at least 150 kW each, but preferably 300 kW, where the total power output for BEVs is at least 3 kW, for PHEVs is at least 1,5 kW. The capacity of each recharging pool should be increased to 900 kW. The subject matter scope of the regulation could be extended with the mandatory installation of charging points outside the trans-European transport TEN-T network.

Proposal 2: EU level operators of 80% of all service stations to provide fast-charging options with at least 150 kW, but preferably 300 kW for e-cars. Charging possibilities should be introduced in publicly attractive areas as well.

Proposal 3: Establish a dedicated EU subsidy programme EUR 15-15 billion up to 2035 altogether for public charging for all vehicle segments, including trucks, buses and coaches, and grid development, while further subsidy for household charging stations EUR 900-1500 or 60% of costs per stations with the total budget of EUR 20 billion. The programme should be in line with the Commissions Electricity Grid Action Plan⁵.

Proposal 4: To help the electricity grid to faster develop, permitting procedures should be simplified and enable flexibility. This proposal should be primarily focusing on the administrative assistance of the sector.

The past three years have shown a notable increase in the EU's charging infrastructure. The number of AC chargers has tripled (in mid-2024 to 610,000) and the number of DC-chargers quadrupled (to 97,000 charging points). However, this growth may be insufficient. The Member States are currently on track to meet the goals outlined in the Smart and Sustainable Mobility Strategy from 2021. While the objective of having 1 million charging points by 2025 seems achievable, the target of 3 million charging points by 2030 is overly ambitious. At the current pace of deployment, it's unlikely that the criteria will be met until 2035. According to ACEA, the EU needs around 8 million EV charging points by 2035 to adequately meet the demand for electric vehicles and to have the desired impact on increasing demand. However, the concentration of deployment in only a few Member States continues to present a significant challenge.

Meaningful disparities exist among EU member states regarding publicly available charging stations. To foster the demand for EVs, a capacity ratio of 7-8 EV/charging station should be set as goal in the expansion period, while finally targeting 10 EV/station in order to maximize the benefits of the infrastructure. EV charging should be available where there is a considerably

⁵ Commission sets out actions to accelerate the roll-out of electricity grids:
https://ec.europa.eu/commission/presscorner/detail/en/ip_23_6044

high number of cars parked (i.e., malls, P+R car parks), at petrol stations alongside motorways, as well as also on the streets of smaller and bigger cities.

Despite early signs of infrastructure rollout dedicated to heavy-duty vehicles, the availability of publicly accessible high-performance chargers with charging speeds high enough to serve the electrification of heavy-duty vehicles remains one of the key bottlenecks in the decarbonisation of commercial road freight and passenger transport.

A notable point is, that public charging stations must be available to charge all types of vehicles, which is why we suggest tightening the AFIR. AFIR sets out uniform charging station deployment obligations for all EU Member States along the TEN-T network to deploy e-mobility infrastructure for light and heavy electric vehicles. The Regulation should be tightened to incentivise the public charger infrastructure by setting more ambitious instalment targets, standardising the charging cables and mobile apps for charging.

The tightening could be applied to regulation which stipulates that fast-recharging stations of at least 150kW for cars and vans need to be installed every 60 km along the EU's main transport corridors, the trans-European transport (TEN-T) network. In the new regulation every 60 km regulation could be modified to every 50km (by 2027) with at least 4 charging points which individually can provide at least 150 kW charging capacity, but preferably 300 kW for future needs and even faster charging. The power output provided through publicly accessible charging stations should be elevated to at least 3 kW for BEVs and to at least 1,5 kW for PHEVs. To ensure that each recharging pool offers adequate amount of power output and serves the needs of the future, the power output should offer at least 900 kW of energy, with the mentioned 4 individual charging outputs per pool.

The subject matter scope of the regulation could be extended with the mandatory installation of charging points outside the TEN-T network, including main roads, urban public areas, bus and truck depots, shopping malls and hotels, campuses.

Besides we suggest a law which will force gas stations to install EV charging stations. For example, a similar law to the Germans announcement from last year - which required operators of 80% of all service stations to provide fast-charging options with at least 150 kW, but preferably 300 kW for e-cars – would be appropriate to provide people suitable places for charging their cars (usual places with adequate infrastructure). To ensure convenient charging possibilities, publicly attractive areas (i.e. smaller and bigger shopping facilities) should be equipped with fast-charging pools as well, with the adequate charging capacity.

In parallel with tightened regulation, an EU-level subsidy program for public infrastructures is suggested until 2035, with funds allocated on a country level based on density. The budget would include €15 billion for chargers, maintaining technological neutrality to support alternative fuel stations, and an additional €15 billion for strengthening and developing the grid. Many potential electric car owners can optimize their expenditures by charging at home, which is a major advantage of electric vehicles. However, this convenience comes with significant initial extra costs compared to traditional cars. Therefore, a subsidy scheme of €900-1500 for home chargers is recommended to boost demand for BEVs, with a total budget of €20 billion. The scheme includes private charging subsidies of €900 per normal charger and €1500-2000

for bi-directional chargers. Since private charging costs vary greatly, the subsidy can be adjusted with a limit set at 60% of total installation costs. To address the specific needs of heavy-duty vehicles (HDVs), a dedicated scheme to accelerate depot charging and dedicated public charging infrastructures could be introduced. Similar to the infrastructure development plans for passenger vehicles, HDVs should also have dedicated charging stations. However, to facilitate transport for HDVs, these charging stations should be strategically located near motorways and trunk roads.

Regarding the administrative easing, it should be highlighted, that simplification of permitting procedures in Member States as well as ensuring the flexibility of the grid (charging with local photovoltaic production and local Battery Energy Storage Systems) would further play a decisive role in developing the infrastructural system.

Financial resources to promote both public and household charging can be found through the Connecting Europe Facility (CEF) and the Recovery and Resilience Facility (RRF). The CEF provides EU budget support for transport, energy and digital infrastructure development projects between EU Member States, while the RRF is a temporary instrument that is the centrepiece of NextGenerationEU - the EU's plan to emerge stronger and more resilient from the current crisis.

It is crucial from an environmental standpoint that the European Union strictly adheres to the 2035 target date for phasing out the sale of petrol and diesel cars and the 2050 target date for achieving carbon neutrality. The establishment of charging infrastructure will be vital in reaching these goals.

III. Production – Supporting competitiveness of European automotive industry

How can the competitiveness of the European automotive industry be improved? What measurements should be implied?

Proposal 5: Easing of rules regarding state aid in case of R&D and their industrial implementation and production of carbon neutral vehicles and its supply chain, including initiatives of 100% state aid involvement and the significant reduction of administration processes of state aid.

The competitiveness of the European vehicle industry is at stake. The previously globally dominant automotive industry of the EU is being pushed back by the other countries gaining ground. The industry is under pressure to keep up with the global market in battery electric vehicle (BEV) technology and production, requiring heavy investments in research and development. It is therefore crucial to preserve and enhance the competitiveness of our industry on the global scale. It also means, that – in line with the climate goals – the demand for the EVs has to be strengthened, thus increase their production. In addition, component dependency is a strategic vulnerability for the automotive industry. Sourcing of semiconductors, printed circuit boards, and other electronics components remains an increasing vulnerability, especially for EVs who have a significant dependency on electronics to function. Hence the supply chain for the whole electric vehicle industry should be handled with special attention, mining of raw materials and battery production is therefore utmost important. Nevertheless, the importance of recycling and reusing the batteries and other components of the used EVs, or the ability to repair them has to be also emphasised. To enhance the competitiveness of the industry, the manufacturing and recycling processes necessitate improvements.

Given the scale of the transformation challenges, The EU should support research and development in carbon neutral mobility and significantly simplify state aid rules, minimize administrative burdens. A common European solution is necessary to support the sector in its transition, based on tax reductions. This includes reforming the EU internal market subsidy scheme for better industry output and employment.

The industry has already invested over EUR 200 billion in the process to make green transition a reality by 2035. The damages of stepping backwards now would be estimated much higher, if the smooth transition towards e-mobility cannot be ensured, and the future transition of the market cannot be performed effectively.

The electric vehicle industry holds immense potential due to its environmental benefits compared to internal combustion engine vehicles. However, challenges remain, particularly regarding range and charging times. To unlock the full potential of EVs and enhance mass expansion, significant R&D efforts are crucial on the fields of increasing battery capacity to achieve 1000 km range on a single charge would significantly improve user experience and eliminate "range anxiety." More importantly, developing faster charging technologies that are close to the refuelling time of gasoline vehicles is essential for convenient long-distance travel. Research on efficient and standardized battery swapping systems, which could be a practical alternative to fast charging for certain applications should be considered as optional R&D

trajectory. In addition, it is worth creating new R&D projects or strengthening existing ones as well (i.e., hydrogen fuelled vehicles, hood/roof-mounted solar panels, solar windscreen, etc.).

In addition to electric cars, we suggest to extend the support for other carbon neutral technologies, although we believe that electric cars will be the dominant technology, it is important to support other competing technologies and maintain technology neutrality.

The above-mentioned R&D activities and entrepreneurial incentives could be financed by the Important Projects of Common European Interest (IPCEI). This special instrument is designed for national funding of projects of European public interest in line with EU State aid rules. These projects allow to use the project's funding gap as the basis of State aid instead of the eligible investment costs: they can receive up to 100% aid to bridge the funding gap. The support would be extended to production developments of R&D results in the automotive industry, including the supply chain, particularly battery industry. In addition, we suggest to consider whether State aid rules are still fit for the purpose of ensuring smooth and timely green transition.

IV. Subsidies for EU citizens – Making carbon neutral vehicles available to customers

Currently, the cost of an EV is significantly higher, than a vehicle with an internal combustion engine. What other incentives would you suggest to promote these cars the public? How would you depress the prices, to make them more affordable to the European citizens?

Proposal 6: A 4,500 EUR subsidy should be introduced to European citizens in case of purchase of battery electric vehicles to enhance the demand. This EU-funded one-off subsidy can be funded from the income of CO₂ premium of automotive industry and from 2028 to 2034, in the new budget cycle, EUR 50 billion from MFF.

Proposal 7: The purchase and leasing of used EVs should be promoted by launching specific subsidies on the secondary user market.

Proposal 8: A European fleet renewal scheme dedicated to commercial road transport fleets should be introduced to accelerate the transition of transport operators to zero-emission medium- and heavy-duty trucks, buses and coaches.

Studies and statistics indicate that reducing the total cost of ownership can significantly boost demand in both developed and developing countries. If electric vehicle prices are competitive with internal combustion engine (ICE) vehicles, consumers are more likely to choose EVs. Previous research shows that consumers are generally satisfied if they can buy an EV for the same price as an ICE vehicle or even up to 20% more. European examples confirm this: the demand for battery electric vehicles increases when public incentives like purchase subsidies, tax reductions, and toll exemptions are provided, making the total cost of ownership significantly lower.

The support for competitive vehicle industry coupled with the support of charging infrastructure might be not sufficient for a smooth green transition as the long term benefits of buying an EV is hard to measure by customers. Therefore, we suggest EUR 4,500 subsidy for the purchase of both new and used battery electric vehicles (BEVs) by consumers, funded from the common EU budget, with applications managed by Member States. We suggest that countries participate in the scheme in proportion to their population size. It is important to promote purchases of electric cars in line with international trade rules. In addition, we suggest to consider supporting used vehicles as well in case of insurance and recycling of batteries. To make used EVs attractive to the public, the purchase and leasing of used EVs should be promoted by launching specified subsidies as in the recently announced Polish scheme or in the closed German program – although in the German case with strict limits. The Polish scheme supports the purchase of used EVs up to 4 years old with a purchase price cap. Promoting used EV-s would also increase the demand for new EVs considering the potential for future sales.

With the focus on primary and secondary user markets, the residual values of BEVs can be stabilised. To further support the uptake of EVs, temporary toll exemptions could be introduced all across the EU, which would be phased out gradually during the transition period until 2035.

The source of funding for the programme to support the final consumers could be the revenue of the taxes that impose a burden on additional CO₂ emissions (amended Regulation no.

2019/631⁶). The regulation sets target for emissions and if the average CO2 emissions of a manufacturer's fleet exceed the specific emissions target each year, the manufacturer will have to pay an additional emissions premium of EUR 95 per g/km for new vehicles registered in that year that exceed the target. This would be the primary source labelled for the subsidy scheme. Furthermore, we suggest in the next budget cycle from 2028 to 2034 in the MFF altogether EUR 50 billion dedicated for the demand subsidy scheme. As far as possible, to maximise impacts, it should be implemented from 2025 onwards.

Table. Briefings

⁶ This amendment confirmed the emission targets applicable from 2030 and set a 100% emission reduction target for both cars and vans from 2035. EU CO2 emission targets for 2020-2024 are 95g CO2/km for cars and 147g CO2/km for vans, falling to 93.6g CO2/km and 49.5g CO2/km respectively between 2025 and 2034.

V. Repair, replace, recycle and reuse – Thinking green & circular economy

What ecological and environment friendly measures would you apply to electric vehicles? How can you ensure costumers that the used electric vehicle they bought still has a good functioning battery pack?

Proposal 9: It is suggested to promote technology neutral procedures for the replacement of batteries or parts of it, thereby supporting the longevity of used vehicles.

Proposal 10: The introduction of a mandatory recycling method for used batteries and a new reliability certificate issued by state-supervised certification agencies is suggested for used batteries.

Currently, two issues arise regarding the purchase of used EVs among consumers. On the one hand, the older EVs have lower battery capacity than the new ones so the older EVs allow only a shorter range (150-200 km). On the other hand, the used EVs' batteries are no longer able to run with full capacity that also shortens the distance range. Although the new Euro 7 requirements from 2027 necessitate lower battery degradation, there should also be solutions for the replacement or reuse of old battery packages up to 2027. This should be in line with the EUs reduce, reuse and recycle policy⁷, hand in hand with the Right to repair⁸.

A targeted solution to the battery problem could be to subsidise the replacement of battery modules up to a maximum of 3,000 Euro (instead of replacing the whole battery pack) or simplifying such process by establishing battery swapping stations. High-performance EVs use highly integrated batteries, and there may be difficulties with the replacement of single modules, since the new ones can interfere with the car, therefore reducing the vehicle's overall performance and safety. Also, future batteries will not use a module strategy to increase energy density and reduce costs. The solution might be, that in case individual cells are degrading too fast these cells are made passive and substituted by activation of reserve cells. This procedure is from a technical and economical point of view the most feasible approach.

Batteries contain several heavy metals and toxic chemicals and disposing of them by the same process as regular household waste has raised concerns over soil contamination and water pollution. The new Battery Regulation (EU 2023/1542) mandates that the sourcing and manufacturing of products marketed and sold in the Union must be conducted in a sustainable manner. Manufacturers of portable batteries (or designated producer responsibility organizations) are responsible for collecting all waste portable batteries. This includes establishing a take-back and collection system with collection points, transporting the waste batteries to a waste management facility, and ensuring that they are handled in compliance with the regulations. In line with the current legislation, we suggest the introduction of a mandatory recycling method of used vehicle batteries, where 100% of the battery should be recycled or reused. It is important to regulate the collection of used batteries: end-of-life electric vehicles should be deregistered together with the battery so that the battery's location can be tracked after deregistration.

⁷ On 24th April 2024, the European Parliament adopted new measures to make packaging more sustainable and reduce packaging waste in the EU. The idea of reduce, reuse and recycle should be extended to areas like batteries.

⁸ The new rules reinforce the right to repair, aim to reduce waste and bolster the repair sector by making it easier and more cost-effective to repair goods. European customers should have the right to fully repair their vehicles.

VI. Logistic – Improving the sustainability of the transportation in the automotive industry

How would you ensure that the compartments of electric vehicles are distributed across the EU in the most environment friendly way, inflicting the less pollution?

Proposal 11: Make transport more sustainable: in addition to prioritising rail transport, road transport solutions should be made carbon neutral using the Multiannual Financial Framework (MFF).

The transition to climate neutrality within the available timeframe demands decisive and coherent action in all modes of transport. Sustained, massive investments must be made by vehicle manufacturers, transport operators, providers of charging and refueling infrastructure, and others. Upgrading and expanding existing infrastructures, including safe and secure truck parking areas and combined transport terminals, is imperative. Placing limits on improving one mode of transport to ensure relative competitive advantages of another mode will likely result in Europe failing to meet its ambitious climate targets, particularly in the road transport sector. All transport modes must innovate further and contribute to necessary CO₂ reductions while supporting the European economy. The expected growth of the European freight transport market requires better intermodal transport solutions and more efficient use of existing infrastructure capacities to meet the projected future demand.

The next Multiannual Financial Framework (MFF) should encompass provisions for clean railway transportation alongside electric vehicle (EV) and battery production to effectively address CO₂ footprint goals. Integrating these elements into the framework is crucial for achieving the objectives of the European Green Deal and significantly reducing carbon dioxide emissions. While EVs and battery production are pivotal in this transition, the inclusion and support of railway transportation within the supply chain is also essential.

Rail transportation offers a substantial advantage in emissions reduction, emitting 75% less CO₂ per tonne-kilometer compared to road freight transport. Despite this, its current share in the EU freight transport landscape is only approximately 19%, with road transport dominating at 75% and inland waterways at 6%.⁹ Therefore, integrating railway transportation into the MFF is imperative to bolster sustainable transportation initiatives and effectively mitigate carbon emissions.

This proposal is based on consultations with: ACEA, particular OEMs and key sector representatives

⁹ Source: Association of American Railroads