



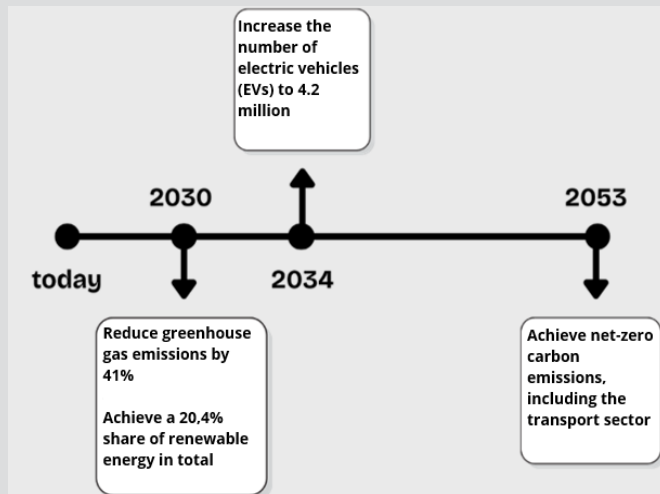
POLICY PAPER

DRIVERS & BARRIERS TO THE DEPLOYMENT OF CHARGING INFRA-STRUCTURE FOR ELECTRIC VEHICLES IN TÜRKİYE

This paper discusses the current stage of development of the charging infrastructure in Türkiye, the obstacles hindering further expansion as well as positive factors and recommendations for improving the situation.

1. Introduction

Türkiye has set itself the target of zero carbon emissions by 2053. Intermediate targets have also been established, which include a 41 % reduction in greenhouse gas emissions (695 Mt CO₂e) relative to the 'business-as-usual' reference trajectory as well as a 20,4 % share of renewable energies by 2030. The electrification of the transport sector will play a major role in the fulfilment of these goals.



Own illustration with data from the Turkish Ministry of Environment, Urbanization and Climate Change

According to the Turkish Ministry of Industry and Technology, more than 4.2 million electric vehicles should be on Turkish roads by 2035.

To support this development, the Turkish-German Energy Partnership (TGEP, initiated by the German Federal Ministry for Economic Affairs and Energy (BMWE) and the Turkish Ministry of Energy and National Resources) – in consultation with dena and the German-Turkish Chamber of Industry and Commerce (AHK Türkiye) – has investigated the relevant 'barriers and drivers'.

To this end, the survey 'E-Mobility 2024' was conducted with representatives from the private and public stakeholders [1]. In addition, a workshop and a panel discussion were also held on the current status, barriers and drivers of the expansion of charging infrastructure for electric vehicles in Türkiye [2]. The aim was to discuss the status quo, the challenges and the potential for expanding the charging infrastructure, along with best practices from various stakeholders to promote the adoption of e-mobility, including comparative insights from Germany.

In addition to promoting the bilateral exchange of knowledge and experience between Türkiye and

Germany, participants discussed measures, solutions and incentive mechanisms for further expanding charging infrastructure and increasing e-mobility.

This policy paper addresses representatives from the public sector, in particular ministries, as well as companies from the energy industry and network and charging point operators. It summarises the main findings from the survey and panel discussion around the key question: ‘How can we advance the expansion and deployment of charging infrastructure in Türkiye?’

Türkiye has already taken significant steps to promote electric mobility. These include government incentives such as tax exemptions. The government is also driving forward the development of domestic electric vehicle (EV) production, particularly through the manufacturer TOGG.

Despite this progress, there are still considerable challenges ahead. Experience from Germany has shown that the expansion of the charging infrastructure is a complex process and requires close cooperation between the public and private sectors. In addition, technical challenges such as electricity grid capacities and the strategic selection of suitable locations for charging stations – in cooperation with the government, EPDK (Energy Market Regulatory Authority) and private investors – need to be addressed.

In the following sections, we will present the drivers and barriers identified in the survey and in the panel discussion with regard to the expansion of the charging infrastructure in Türkiye and derive specific recommendations for action. In doing so, we will include both the specific conditions in Türkiye and the experiences from Germany in order to develop practical and effective solutions.

2. Drivers and barriers

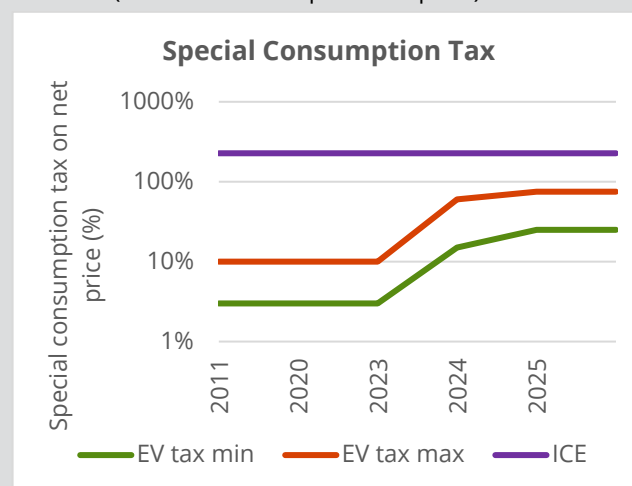
The development of the electric vehicle market and the charging infrastructure in Türkiye presents a complex picture of progress and challenges. This chapter highlights the drivers and barriers that are shaping the future of electric mobility in the country.

Government incentives and market development

The Turkish government has introduced a number of incentives to promote the EV market. These include lower customs duties, tax rebates (e.g. value added tax) and help with insurance premiums. The most frequently

mentioned incentives from the survey results were the following:

- In 2022, the Ministry of Industry and Technology launched the ‘Grant Programme for Fast Charging Stations for Electric Vehicles’ (budget 300 million TL) for the installation of fast charging stations at 1,560 different locations.
- Since 2011, EVs have been subject to a significantly lower special consumption tax (Özel Tüketim Vergisi, ÖTV; initially 3 % - 15 %, over 10 % - 60 % last year and now 25 % - 75 % of the net purchase price, depending on the price and engine power) than ICEs (227 % of the net purchase price).



Own illustration with data from the Energy Market Regulatory Authority

These measures aim to reduce investment costs and increase profitability in the private sector. Some survey participants also mentioned that there are few advantages for EV owners (such as low parking or toll charges) aside from lower taxes for EV purchase (ÖTV). The rate of new EV registrations in Türkiye is growing steadily (increased to 17,6 % in June 2025) but is still relatively low compared to the German average (20,3 % in 2024) which leads to a comparatively lower growth of the EV market. Between December 2023 and June 2025, the Turkish passenger car inventory increased from 15.2 million up to 16.7 million (according to the Turkish Statistical Institute, TÜİK). At the same time, the number of electric vehicles increased by more than 320 % (from an EV-share of 0.5 % up to 1.6 %). This development is leading to increasing demand and more investment in charging infrastructure. The number of public charging stations increased by 400 %.

Competition and domestic vehicle production

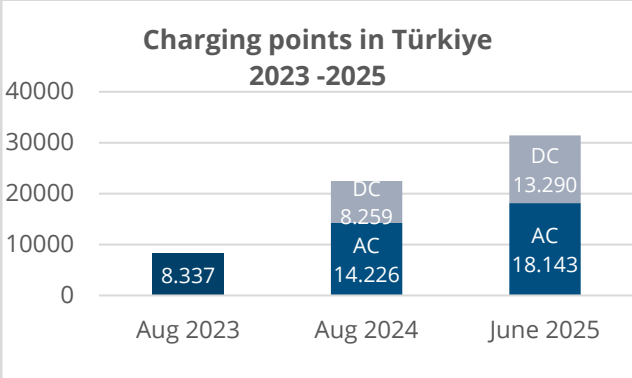
The growing market has led to an increase in the number of charging network operators. By October 2023, there were already 143 licensed providers, with five operators controlling around 80 % of the public charging infrastructure. This competition is seen as positive as it is driving innovation, lowering prices and improving service for users.

A significant milestone for the Turkish EV industry was the start of mass production by TOGG, the first domestic electric vehicle manufacturer. TOGG quickly became the market leader for EV sales in Türkiye, selling 30,093 units in 2024. This development not only increases the acceptance and demand for EVs but also supports the local supply industry and promotes the expansion of the charging infrastructure for example by the leading operator of Turkish charging networks Trugo (a subsidiary of TOGG).

Infrastructure and strategic choice of location

Türkiye has a favourable ratio of one public charging points per 8.4 electric cars. This puts the country well above Germany (with one public charger per 10.2 EVs). This helps to reduce range anxiety and promote the acceptance of EVs. Compared to the European average (with one charger per 4.4 EVs), the growth potential is shown.

The number of charging and charging points is constantly increasing. At the end of June 2025, there were 31.433 charging points in Türkiye, with 18.143 AC and 13.290 DC charging points. The improved availability of the charging infrastructure makes EVs attractive to more consumers.



Own illustration with data from the Energy Markets Regulation Authority

However, there is an uneven distribution of charging stations. Especially in rural areas the ratio is very limited, which hinders the use of EVs and increases range anxiety in these areas. In cities, a lack of space is making it

difficult to find further suitable locations for charging stations.

Technical and regulatory challenges

Despite the growth, there are considerable technical challenges. A lack of available grid capacity, especially for fast charging stations with high power output (DC), and difficulties with the short-term provision of grid connections are delaying the expansion of the charging infrastructure, particularly in rural areas.

A temporary solution could be to increase battery storage capacity on overloaded distribution lines, helping to reduce line congestion, contribute to grid stability and enable the expansion of electric mobility infrastructure until the necessary grid is in place. The continuous cost degression in battery technologies is also a significant factor favouring this option for the short term. However, considering batteries' limited lifespan (approximately 10 years), over the long term, expanding the grid (lifespan of 80 years) would likely be more cost-effective.

Regulatory and institutional challenges represent further obstacles. Some market players deem administrative processes to be complex, poorly synchronised and inconsistent (e.g. interplay between EPDK regulations and conditions in municipalities or for the promotion of charging stations). Hence, the time required for planning, project design and implementation – with various firms, public authorities and stakeholders involved in processes at each of these stages – is perceived as too long. Moreover, long waiting times for hardware and rising import duties (e.g. for power electronics and transformers) also make rapid expansion more difficult.

Financial aspects and market dynamics

High initial investments and electricity costs that are difficult to calculate (due to frequently changing adjustments by EPDK) make investments difficult and reduce the profitability of charging stations. As a result, the long-term planning necessary for the investments cannot be ensured. In addition, high import tariffs for non-Turkish manufacturers makes hardware more expensive and reduces competition because of low price pressure. These financial challenges could slow down the growth of the market.

Future prospects and forecasts

Despite the challenges, participants are optimistic about the future prospects for the Turkish EV market. Forecasts point to continued growth for both EV adoption and the charging infrastructure. Accordingly, the EPDK's 'Electric Vehicle and Charging Infrastructure Projection' suggests, in the medium scenario, that the number of electric vehicles in Türkiye will reach 1,321,932 and the number of installed charging points will reach 142,824 by 2030.

The introduction of new brands and further investments will strengthen the ecosystem. Incidentally, international manufacturers such as BYD have announced investment plans. BYD plans to build a production plant in Türkiye with a capacity of 150,000 vehicles per year by 2026.

Conclusion

The Turkish EV market and the associated charging infrastructure are in a phase of rapid growth, but at the same time face significant challenges. While government incentives and domestic production are driving the market forward, technical, regulatory and financial barriers need to be overcome in order to realise the full potential.

The future of electric mobility in Türkiye depends on a balanced policy mix that both promotes domestic production and supports the deployment of charging infrastructure. At the same time, incentives for consumers need to be strengthened, grid capacity be made available and technical innovation (e.g. for faster charging, more range) driven forward to increase the acceptance of EVs.

In order to become an important player on the global EV market, Türkiye should address the aforementioned drivers and barriers.

3. Recommendations for decision-makers

The following recommendations have been drawn up based on the identified drivers and barriers.

Promote regional expansion and into rural areas

In order to address the uneven distribution of charging stations and to reduce range anxiety, targeted measures are needed to promote expansion of charging infrastructure in rural areas. This can be achieved through increased financial subsidies and tax relief for charging stations in these regions, the definition of minimum

distances between charging stations along motorways and the simplification of approval procedures. Local authorities must also provide active support for the selection of locations and availability of space.

Furthermore, it would be beneficial to develop business models that make the operation of charging stations in rural areas economically attractive. This can be achieved by fostering combined services (e.g. service stations, cafés) and cooperation with local businesses (e.g. hotels, tourism businesses). Moreover, targeted location analyses are necessary to identify demand and optimise the positioning of charging stations.

Improve the regulatory framework

A consistent law to regulate the operation of charging infrastructure would be helpful in order to define clear standards for safety, accessibility, billing (roaming) and data protection. It is also crucial to accelerate approval procedures for grid connections through fixed deadlines, digitalisation processes and clearly defined responsibilities. In addition, an interministerial body for electric mobility could be set up to improve the coordination of the various government institutions and translate the EPDK's regular forecasts [3] on grid capacity into appropriate expansion of the charging infrastructure.

Provide economic incentives

Support programmes for the expansion of the charging infrastructure must be continued and expanded, especially for high-power fast charging stations (350 kW +). Furthermore, import tariffs on charging stations and components should be reviewed and, if necessary, reduced to create more competition. Incentives for EV owners – such as tax breaks, reduced tolls and preferential parking, as well as direct subsidies for the purchase of electric vehicles, especially for low-income households and businesses – can help to stimulate demand.

Ensure grid stability and technological development

The increase in load due to the growth of e-mobility will have an impact on the planning and operation of distribution grids, and the question is how to manage the load in a cost-effective way without compromising grid security and quality of supply. The impact of electric vehicles on the grid depends on the number of electric vehicles charging simultaneously in a given grid area, i.e. the simultaneity factor. The higher peak loads caused by this must also be taken into account in system planning. The option to control the charging process so as to

avoid peak hours, for example, makes electric vehicle charging flexible and is also a cost-effective solution for grid integration.

Ultimately, to address grid congestion and ensure grid stability, the distribution grid needs to be reinforced and eventually expanded. Smart power grids as well as the use of battery storage can help to optimise the charging process. It is also possible to steer charging processes through mandatory requirements or economic incentives. In particular, appropriate tariff structures and incentives for smart, grid-friendly charging behaviour can contribute to the optimised operation of distribution networks and help manage additional demand.

Investments in high-power fast charging stations (350 kW + and megawatt charging for lorries), bi-directional charging (vehicle-to-grid) and smart charging systems (load management) are necessary in order to shorten charging times and to improve grid integration and, ultimately, grid stability as well as the acceptance of e-mobility.

Promote private charging infrastructure

In addition to public charging stations, it is also possible to build charging stations on private property and company premises (depot charging). These are summarised as 'private charging'. The expansion of private charging points can make the operation of EVs more attractive. With private charging stations, EV drivers are less dependent on public charging networks and their occupancy. Private chargers offer additional benefits when used together with home solar panels: electricity generated at home can be used to charge the car directly or after storing it in a battery, reducing the need to draw from the power grid. Electricity costs for private households are usually lower than for public charging stations and can be reduced further by using self-generated electricity (from PV systems). Smart charging also makes it possible to shift charging to periods of low demand, such as overnight. This helps avoid placing a simultaneous load on the power grid during peak hours. A new subsidy programme for the purchase and installation of private charging points could be helpful in this regard. Such an incentive would complement the existing advantages of installing private PV systems, such as income tax credits. This would complement the existing feed-in remuneration for private PV electricity well. Together, these measures would strengthen the case for households to invest in both solar energy and electric mobility.

Promote cooperation

Strategic partnerships with energy suppliers (grid connections), car manufacturers (marketing), retail companies (locations) and technology providers are of great importance. Cooperation with petrol station operators to integrate charging stations into existing petrol stations and with the property industry to install charging stations in residential complexes should also be pursued.

[1] Participants in survey 'E-Mobility 2024': Zorlu Enerji (ZES), Vestel Mobility (VM), TRUGO, Star Charge Europe, EPDK, ETKB, Ministry of Transportation, ISBAK, Tübitak / Tüside and Enerjisa Enerji

[2] Participants in online workshop and panel discussion on the current status, barriers and drivers of the expansion of charging infrastructure for electric vehicles in Türkiye (07/01/2025): Shura Energy Transition Center, Enerjisa Enerji, Vestel Mobility, Borusan EnBW Enerji and dena

[3] The Law (6446 Electricity Market Law) gives the mandate to EPDK to ensure that necessary capacity is available in distribution networks. In that regard, EPDK has to prepare a projection EV development and charging infrastructure needs. The projection needs to depend on policies set by Ministry of Industry and Technology and Ministry of Transport and Infrastructure. The data for projection comes from Electricity Distribution Companies, Charging Network Operators, EV Manufacturers and Importers. According to the results of the projection EPDK has the duty to take all necessary measures to ensure that necessary capacity is available in distribution networks. EPDK also has to notify other necessary measures and support proposals to relevant Ministries including: Ministry of Energy and Natural Resources, Ministry of Treasury and Finance, Ministry of Interior, Ministry of Industry and Technology, Ministry of Trade, Ministry of Environment, Urbanization and Climate Change, Ministry of Transport and Infrastructure

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