ERRA 25 Years of Regulatory Cooperation

E-Mobility: Status update, development plans & related regulatory issues

Prepared by:
ERRA ERRA Energy Transition Committee (ET COM)

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Energy Regulators Regional Association
44/B Logodi Street, 1012 Budapest, Hungary
Tel.: +36 1 477 0456 I Mobile: +36 70 392 5986
E-mail: secretariat@erranet.org I Web: https://erranet.org

E-MOBILITY: STATUS UPDATE, DEVELOPMENT PLANS AND RELATED REGULATORY ISSUES

Based on the results of an internal survey within the ERRA Energy Transition Committee

Prepared by:

Georgi Shengelia, GNERC Georgia
Okan Yardimci, EMRA Türkiye
Mirmahammadali Aslanov, AERA Azerbaijan
Mikheil Odisharia, ERRA
Luca Lo Schiavo, ERRA

Review by Regulatory Assistance Project (RAP)

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List of Contributors

The Energy Regulators Regional Association (ERRA) acknowledges the authors of this report and the ERRA members who contributed their time and insights to its development:

Name	Country	Organization
Gledis Kalemi	Albania	Albanian Energy Regulator Authority (ERE)
Davit Muradyan	Armenia	Public Services Regulatory Commission (PSRC)
Harald Proidl	Austria	E-Control
Mirmahammadali Aslanov Vusal Sattarov	Azerbaijan	Azerbaijan Energy Regulatory Agency (AERA)
Emina Đulić	Bosnia and Herzegovina	Regulatory Commission for Energy in Federation of Bosnia and Herzegovina (FERK)
Adam Chromčák	Czech Republic	Energy Regulatory Office (ERO)
Khaled Khallaf	Egypt	Gas Regulatory Authority (GASREG)
Tornike Apriashvili Georgi Shengelia Ina Osikmashvili	Georgia	Georgian National Energy and Water Supply Regulatory Commission (GNERC)
Yuriy Bilen	Greece	Regulatory Authority for Energy, Waste and Water (RAAEY)
Miklós Budai	Hungary	Hungarian Energy and Public Utility Regulatory Authority (MEKH)
Ravshan Ikhaza	Kyrgyzstan	Department for Regulation of the Fuel and Energy Complex under the Ministry of Energy of the Kyrgyz Republic
Eriks Eihenbergs	Latvia	Public Utilities Commission (PUC)
Jelena Diliene Lina Sveklaitė	Lithuania	National Energy Regulatory Council (NERC)
Alisa Martinov	Moldova	National Agency for Energy Regulation (ANRE)
José Jamal	Mozambique	Energy Regulatory Authority (ARENE)
Umar Mohammed	Nigeria	Nigerian Electricity Regulatory Commission (NERC)
Elizabeta Arsova	North Macedonia	Energy, Water Services and Municipal waste management services Regulatory Commission (ERC)
Zainab Al Lawati	Oman	Authority for Public Services Regulation (APSR)
Witold Żuchowski	Poland	Energy Regulatory Office (URE)
Ilie Viorel	Romania	Romanian Energy Regulatory Authority (ANRE)
Yousef Alshaya	Saudi Arabia	Saudi Electricity Regulatory Authority (SERA)

Okan Yardimci Vedat Akdağ Melike Ozan Biçer Hakan Kaysi	Türkiye	Energy Market Regulatory Authority (EMRA)
Elie Matar	UAE	Regulatory and Supervisory Bureau for Electricity and Water of Dubai (RSB)
Taisiia Zaika	Ukraine	National Energy and Utilities Regulatory Commission (NEURC)
Mamurjon Abdukhalilov	Uzbekistan	Energy Market Development and Regulatory Agency (EMDRA)

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EXECUTIVE SUMMARY

Electric mobility continues to gain momentum across ERRA member countries, driven by climate commitments, technological advances, and evolving consumer preferences. This report presents the findings of the 2025 ERRA E-Mobility Survey, capturing regulatory developments, infrastructure deployment, grid integration challenges, and the evolving role of national regulatory authorities across the region.

Building on previous surveys conducted in 2020 and 2022, this edition provides updated insights into how ERRA members are navigating the transition to electric transportation, with particular attention to regulatory frameworks, market models, the roll-out of charging infrastructure, and the impacts on electricity systems.

Key Findings

1. REGULATORY FRAMEWORKS: GRADUAL CONSOLIDATION WITH PERSISTENT GAPS

The regulatory landscape for e-mobility across ERRA countries shows incremental progress but remains heterogeneous. As of 2025, **56% of member countries** now operate under a defined e-mobility legal framework, up from 53% in 2022. However, **20% still lack specific formal provisions**, relying instead on general energy legislation or ad hoc administrative practices.

Licensing and market entry approaches vary significantly: the majority (68%) of countries do not require licensing for EV charging operators, treating charging services as largely unregulated commercial activities. Only a small minority (16%) have established formal licensing regimes through energy regulators or other authorities; another 16% has “other arrangements”. Where Jurisdictions choose to introduce oversight, a proportionate registration or notification regime, rather than full licensing requirements, is generally considered sufficient to ensure market monitoring without creating unnecessary barriers to entry.

Pricing of EV charging services remains predominantly market-based, with **84% of countries** allowing operators to set charging prices freely. Direct regulatory intervention is rare, applied in only 8% of jurisdictions, while in the other 8% it’s limited to network tariff components, service fees remaining competitive. As public charging markets mature, price levels and transparency emerge as consumer protection concerns that regulators may need to monitor more actively, even where direct price intervention remains premature.

DSO involvement in the ownership of charging infrastructure is one of the most contested regulatory questions. Approximately **28% of countries allow DSO ownership**; an equal share explicitly prohibits it; and the remainder apply conditional models that permit DSO participation only in specific circumstances, such as early-stage market development or market-failure scenarios. This distribution underscores ongoing tensions among unbundling principles, competitive neutrality, and the practical need to accelerate the initial deployment of infrastructure.

Fair and non-discriminatory access rules are in place in only **40% of countries**, with another 20% developing such provisions. Roughly one-third still rely on voluntary practices or undefined arrangements, leaving significant room for unequal treatment and creating uncertainty for both investors and consumers.

2. Infrastructure Roll-Out: Steady Growth but Uneven Coverage

The number of electric vehicles in ERRA member countries continues to grow steadily, reflecting a stable upward trend consistent with that of comparable emerging markets. Although the EV share of the overall vehicle fleet remains modest, the pace of increase indicates rising consumer interest, driven mainly by import dynamics and cost considerations.

Charging infrastructure development across ERRA member countries is progressing alongside the steady increase in electric vehicle uptake, reflecting positive momentum in the e-mobility transition. Compared with the 2022 study, EV adoption and charging deployment are now more widespread geographically, with several markets moving beyond the initial phase of electrification and already operating extensive public charging networks. While many countries still rely primarily on smaller or private charging solutions, this largely reflects transitional market conditions, and overall, the results point to a solid foundation for continued infrastructure expansion as e-mobility adoption accelerates across the region.

Responsibilities for infrastructure development are not yet fully defined in several countries. In most countries surveyed, roll-out is market-driven with municipalities handling spatial planning. As for DSO roles, an absolute majority of NRAs state that DSO responsibilities should be limited to grid connection, while DSOs are currently rolling out charging stations in only a very few countries, raising questions about the long-term market structure.

National action plans for charging infrastructure exist in approximately half of the surveyed countries, but several members still lack official strategic frameworks. International experience shows that national-level planning helps streamline development, secure investor confidence, and ensure system preparedness. The absence of a clear institutional policy might create uncertainty for investors and therefore slow down market formation.

Support mechanisms for EVs and charging infrastructure remain limited. In several countries, targeted incentive schemes—including reduced import duties, VAT exemptions, grants for public infrastructure, and preferential parking policies—have been introduced, especially during the early phase of EV uptake. Most ERRA countries have yet to implement comprehensive support frameworks.

Funding sources are primarily private-sector driven, though the absence of structured support mechanisms may limit expansion in less commercially attractive areas. Where purely market-driven deployment risks leaving rural or low-density areas underserved, public tender mechanisms, with a variable share of infrastructure costs covered by public funds, have proven effective in ensuring more equitable geographic coverage. Mixed funding models, including co-investment schemes and public-private partnerships, are emerging in some countries but remain rather limited.

3. Electricity System Effects: Early Steps Toward Smart Integration

The integration of e-mobility into electricity systems presents both challenges and opportunities. EV adoption is beginning to reshape load curves, particularly during evening home-charging periods, and creates potential for new demand peaks during holiday travel. At the same time, EVs represent a significant flexibility resource if properly managed.

V1G (smart charging) and V2G (vehicle-to-grid) technologies remain largely unexplored across ERRA countries. While some jurisdictions report ongoing studies or pilot projects, operational V2G implementations are virtually absent. This represents a missed opportunity for utilizing EV batteries as distributed storage assets to support grid stability, integrate renewable energy, and provide ancillary services.

V1G (smart charging) and V2G (vehicle-to-grid) technologies are at different stages of development and should be considered separately. Smart charging (V1G), which shifts EV charging to off-peak periods through price signals or managed charging, is a less complex technology than V2G and may already be partially enabled in countries with time-of-use tariffs, though the survey did not specifically measure V1G uptake. Vehicle-to-grid (V2G), which enables EVs to return energy to the grid, remains virtually absent in operational terms across ERRA countries despite growing analytical interest. This represents a missed opportunity for utilizing EV batteries as distributed storage assets to support grid stability, integrate renewable energy, and provide ancillary services.

Separate metering for home EV charging is not common practice. Most countries apply ordinary tariffs based on user category, with only a minority offering dedicated EV charging tariffs or time-of-use rates designed to encourage off-peak charging.

Incentives for off-peak charging exist in around one quarter of surveyed countries and are under discussion in another quarter. Where present, they typically take the form of time-of-use tariffs or differentiated network charges. However, most jurisdictions don’t have (and don't intend to develop in the next years) regulatory mechanisms to shift EV charging demand away from peak periods.

Renewable energy integration with EV charging infrastructure remains limited. While some countries have established regulatory measures linking charging with renewable generation—such as guarantee-of-origin systems or requirements for on-site solar installations—most have not yet developed explicit policies to ensure that EV charging contributes to decarbonization goals.

Grid congestion management measures are in early stages. Most countries rely on standard grid-connection procedures and capacity allocation mechanisms, with few implementing dynamic load management, smart charging mandates, or grid-service procurement from EV charging operators. As EV penetration grows, more sophisticated tools, such as flexible connection agreements or dynamic capacity allocation, are likely to become relevant for ERRA members currently in early adoption phases.

4. Role of National Regulatory Authorities: Limited but Evolving

Energy NRAs' role in e-mobility remains limited. Because e-mobility spans multiple sectors (energy, transport, telecommunications, data security), progress requires a clear definition of roles and cross-sector regulatory coordination.

Current regulatory roles vary widely. Some NRAs focus primarily on technical grid-connection standards and consumer protection, while others extend oversight to licensing, tariff design, and market monitoring. A significant number of NRAs report having no formal e-mobility responsibilities.

Tariff-specific regulation is limited to 2–3 countries. Most jurisdictions do not regulate EV charging service prices, and dedicated tariff structures for EV owners (such as special time-of-use rates) are rare.

Inter-sectoral cooperation is emerging but inconsistent. Some NRAs coordinate actively with transport ministries, municipalities, and telecommunications regulators, while others operate in relative isolation. Greater cross-sectoral coordination is essential for addressing the multi-dimensional nature of e-mobility regulation.

Price transparency and consumer protection mechanisms are underdeveloped. Less than half of surveyed NRAs actively monitor or enforce pricing transparency in EV charging services, and formal consumer protection frameworks (e.g., service quality standards, dispute resolution) are absent in most countries. About 68% of surveyed countries treat EV charging as a purely market-based service with no dedicated consumer safeguards. As charging markets expand rapidly, this gap risks exposing EV users to price volatility and inconsistent service quality at a critical moment for consumer confidence in e-mobility.

Data collection on charging service prices and usage is limited. Few NRAs have systematic data-gathering mandates, constraining their ability to assess market dynamics, identify anti-competitive behaviour, or design evidence-based policies.

Main Barriers to E-Mobility Development

Respondents identified a range of obstacles to infrastructure deployment. The most frequently cited barriers include:

- **Lack of incentives for developers** (cited by approximately one-third of countries)
- **Absence of special tariffs** for EV charging (one-fifth of countries)
- **Lack of specific provisions in spatial planning legislation** (one-fifth of countries)
- **Administrative burdens** in permitting and connection processes
- **Regulatory uncertainty** regarding long-term market structure and DSO roles
- **Insufficient grid capacity** in selected areas, though less prominent than economic and regulatory factors

Several countries also noted the absence of a dedicated legal framework as a fundamental constraint.

In the Conclusions chapters, some **final strategic recommendations** are drawn from this research, grouped according their recipient:

- **national governments and policy makers**
- **national regulatory authorities**
- **distribution system operators**.

BACKGROUND INFORMATION

ERRA decided to launch a survey about e-mobility development among its member organisations. As electric vehicle adoption accelerates across ERRA member countries, the regulatory implications for grid management, market structure, consumer protection, and cross-sector coordination are becoming increasingly pressing for national regulatory authorities. The survey updates an earlier survey conducted in 2020 (conducted by the ERRA Licensing/Competition Committee) and 2022 (conducted by the ERRA Renewables Committee).[1]

The purpose of this report is to update the results of the 2022 survey by looking at 2024 data and information on e-mobility. Twenty-five countries participated in the current survey. The questionnaire of the 2025 survey is reported in the Annex.

The findings reflect the state of e-mobility regulation and infrastructure deployment as reported by national regulatory authorities and do not constitute policy recommendations binding on any ERRA member organisation.

Report Structure:

- **Chapter 1:** Legal and Regulatory Framework of E-Mobility
- **Chapter 2:** Current and Planned Future Roll-Out of EV Charging Infrastructure
- **Chapter 3:** Electricity System Effects of E-Mobility
- **Chapter 4:** Role of the National Regulatory Authority Regarding E-Mobility

[1] ERRA Renewable Committee Survey: E-Mobility -Status Update, Plans and Related Regulatory Issues (2022): https://erranet.org/re-com-survey-e-mobility-status-update-plans-and-related-regulatory-issues-erra-internal-survey/

List of the ERRA Energy Transition Committee Members involved in the development of the report

This research paper reflects inputs from the 25 following member organizations of the ERRA Energy Transition Committee (referred to as ET COM):

Country	Flag	Organization Name	Country Code
Full Members			
Albania		Albanian Energy Regulator Authority (ERE)	AL
Armenia		Public Services Regulatory Commission (PSRC)	AM
Austria		Energie-Control (E-Control)	AT
Czech Republic		Energy Regulatory Office (ERO)	CZ
Georgia		Georgian National Energy and Water Supply Regulatory Commission (GNERC)	GE
Greece		Regulatory Authority for Energy, Waste and Water (RAAEY)	GR
Hungary		Hungarian Energy and Public Utility Regulatory Authority (MEKH)	HU
Kyrgyzstan		Department for Fuel and Energy Complex Regulation under the Ministry of Energy of the Kyrgyz Republic	KG
Latvia		Public Utilities Commission (PUC)	LV
Lithuania		National Energy Regulatory Council (NERC)	LT
Moldova		National Energy Regulatory Agency (ANRE)	MD
Mozambique		Energy Regulatory Authority (ARENE)	MZ

Nigeria		Nigerian Electricity Regulatory Commission (NERC)	NG
North Macedonia		Energy, Water Services and Municipal Waste Management Services Regulatory Commission (ERC)	MK
Oman		Authority for Electricity Regulation (AER)	OM
Poland		Energy Regulatory Office (URE)	PL
Romania		Romanian Energy Regulatory Authority (ANRE)	RO
Saudi Arabia		Water & Electricity Regulatory Authority (WERA)	SA
Türkiye		Energy Market Regulatory Authority (EMRA)	TR
UAE		Regulatory and Supervisory Bureau for Electricity and Water of Dubai (RSB)	AE
Ukraine		National Energy and Utilities Regulatory Commission (NEURC)	UA
Uzbekistan		Energy Market Development and Regulatory Agency (EMDRA)	UZ
Associate Members			
Azerbaijan		Azerbaijan Energy Regulatory Agency (AERA)	AZ
Bosnia and Herzegovina		Regulatory Commission for Energy in Federation of Bosnia and Herzegovina (FERK)	BA
Egypt		Gas Regulatory Authority (GASREG)	EG

List of Abbreviations

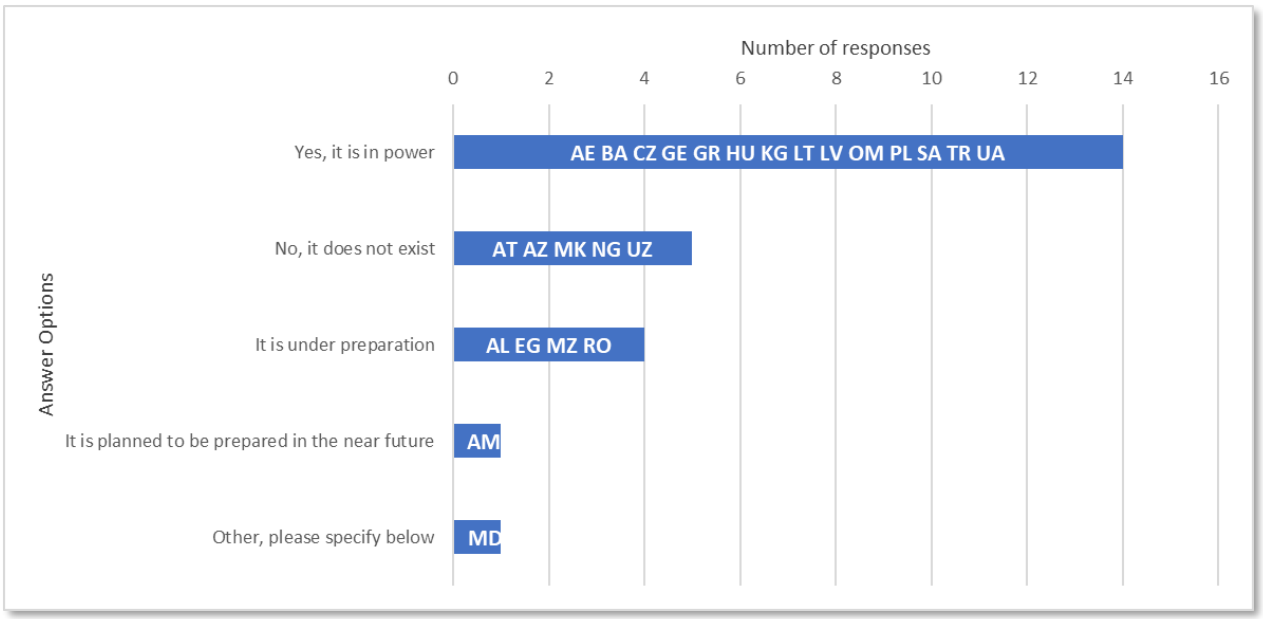
AC/DC	Electric (alternating [~] and/or direct [=]) current voltage
AFIR	Alternative Fuels Infrastructure Regulation of EU
BEV	Battery Electric Vehicle
CPO	Charging Point Operators
DSO	Distribution System Operator
EV	Electric vehicles
HDV	Heavy Duty Vehicles
ICV	Internal Combustion Vehicles
LDV	Light Duty Vehicles
NRA	National Regulatory Authority
PHEV	Plug-in Hybrid Electric Vehicle
RTP	Real time pricing
TOU	Time of use rates
TSO	Transmission System Operator
V1G	Smart charging / unidirectional managed charging
V2G	Vehicle to Grid

I. LEGAL/ REGULATORY FRAMEWORK OF E-MOBILITY

The regulatory landscape for e-mobility continues to evolve across ERRA member countries, reflecting diverse national approaches and differing stages of market maturity. While overarching principles—such as consumer protection, competitive neutrality, and safe integration of charging infrastructure—are recognized across the region, national legislation varies significantly in scope and detail. In many jurisdictions, legal frameworks now define the roles of charging service providers, market operators, DSOs, and other stakeholders, including the extent to which market entry, pricing, and technical requirements are regulated. As e-mobility expands, regulatory frameworks increasingly incorporate issues such as licensing or registration of charging operators, obligations to ensure open and non-discriminatory access, tariff-setting principles, and alignment with broader energy-sector legislation. The continued development of these frameworks is essential for enabling investment certainty, supporting competitive markets, and ensuring that EV charging infrastructure is integrated efficiently and transparently into national power systems.

1. A LEGAL FRAMEWORK REGULATING E-MOBILITY

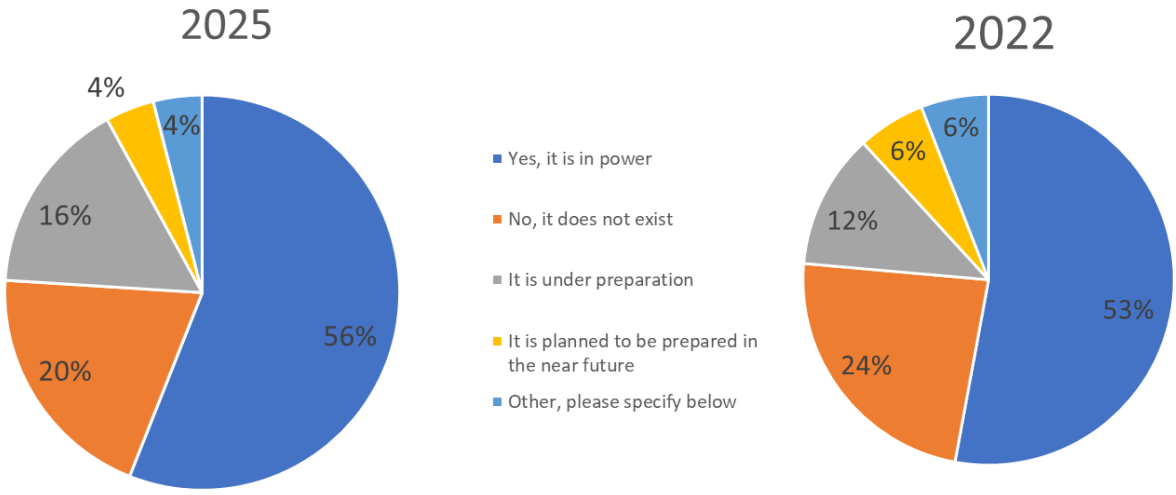
Q.1.1. Is there legal framework regulating the e-mobility related issues in power in your country?



1. Figure

Key points: Most ERRA members now operate under a defined e-mobility legal framework, confirming a gradual consolidation of regulatory foundations across the region. Despite this improvement, several countries remain without formal provisions, and others are still drafting or planning frameworks. Countries without defined rules tend to rely on general energy legislation or ad-hoc administrative practices. The overall trend indicates incremental alignment with broader international and regional regulatory expectations. As market activity grows, the existence and clarity of legal frameworks will increasingly influence investment certainty, infrastructure rollout, and consumer protection.

Comparison with 2022 report

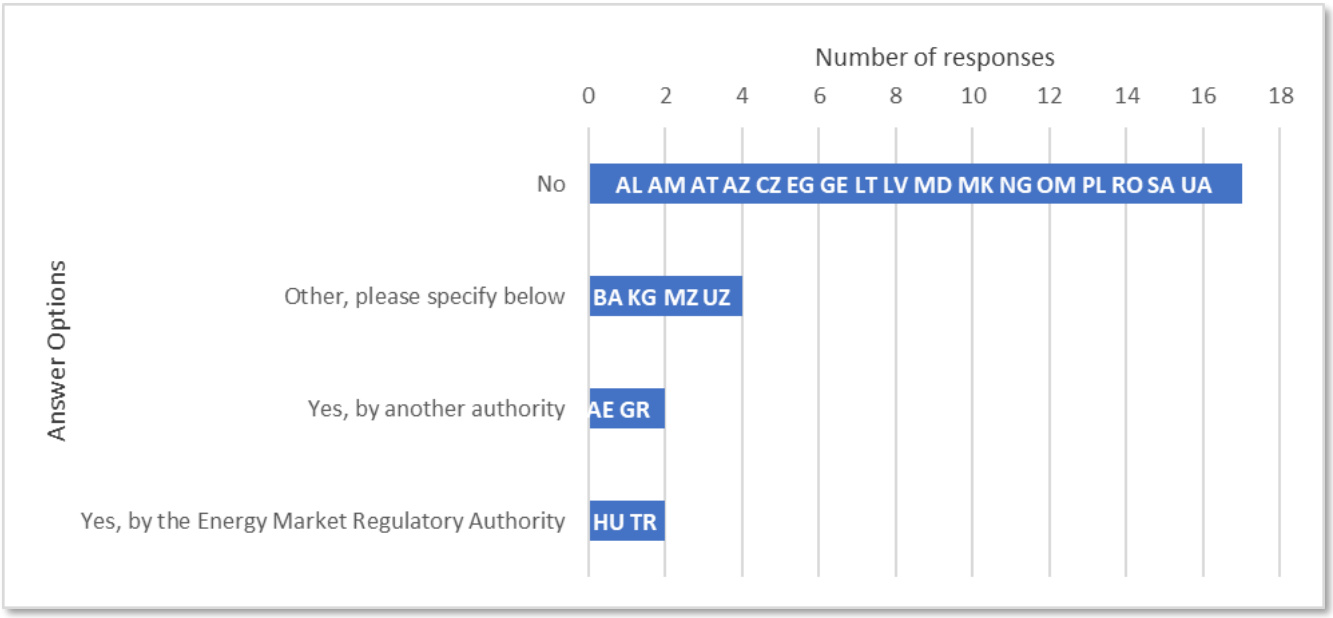


2. Figure

Between 2022 and 2025, the share of countries with e-mobility legal frameworks rose from 53% to 56%, while those without any framework fell from 24% to 20% - indicating steady but modest regulatory expansion.

1.B Market Regulation of EV Charging Operators – Q1.2–Q1.4

Q.1.2. If yes, are the electric vehicle charging operators licensed?

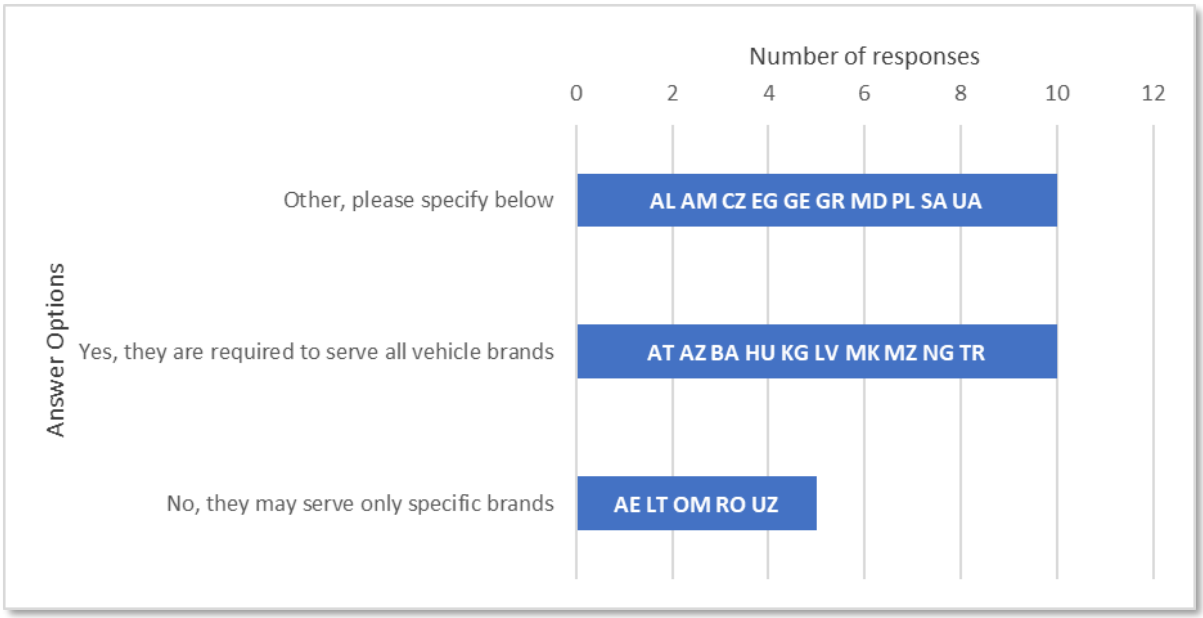


3. Figure

Key points: The 2025 survey shows that 68% of responding countries (17 of 25) do not license EV charging operators. Only a small group of license operators, either through the energy market regulator (8%, 2 countries) or another authority (8%, 2 countries), while 16% (4 countries) fall under "Other" arrangements, typically reflecting transitional regimes or rules still under development.

This indicates that, in most ERRA jurisdictions, EV charging is treated as a largely unlicensed or lightly regulated activity rather than a fully licensed utility-type service.

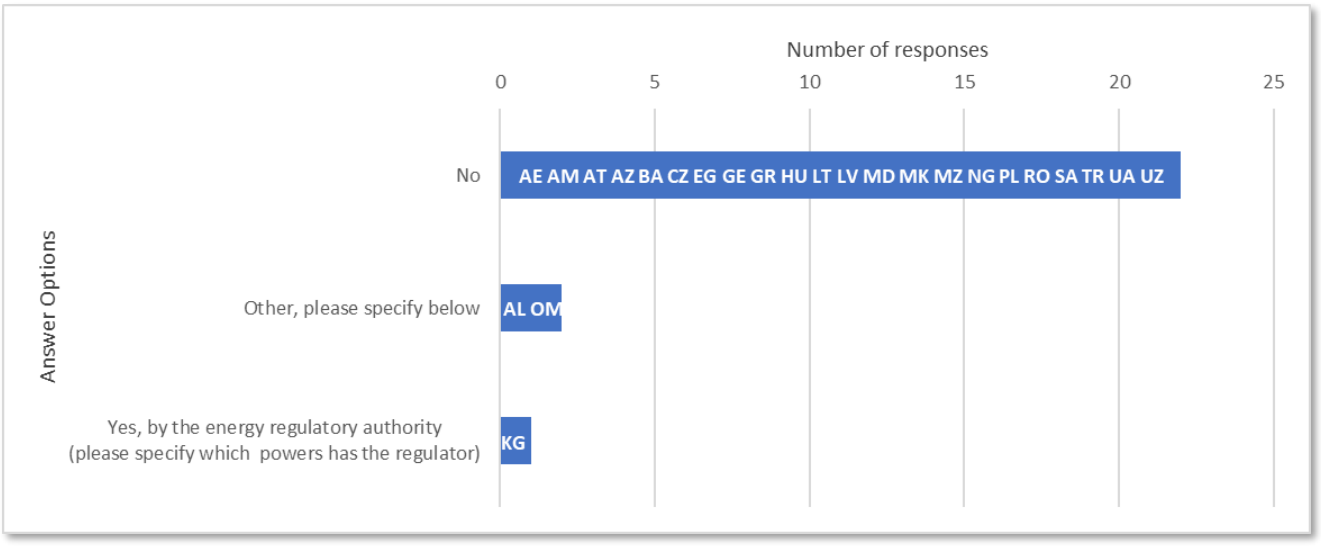
Q.1.3. Are electric vehicle charging operators required to serve all vehicle brands?



4. Figure

Key points: On service obligations, responses are evenly split: 40% of countries (10 of 25) require charging operators to serve all vehicle brands, while another 40% (10 of 25) selected "Other" – usually meaning that no explicit brand-neutral obligation exists in law, or that conditions apply only indirectly. The remaining 20% (5 of 25) allow operators to serve only specific brands, often in contexts such as dealer-linked or manufacturer-backed charging networks. This reveals a mixed picture on non-discriminatory access at the point of service.

Q.1.4. Are the charging prices regulated?

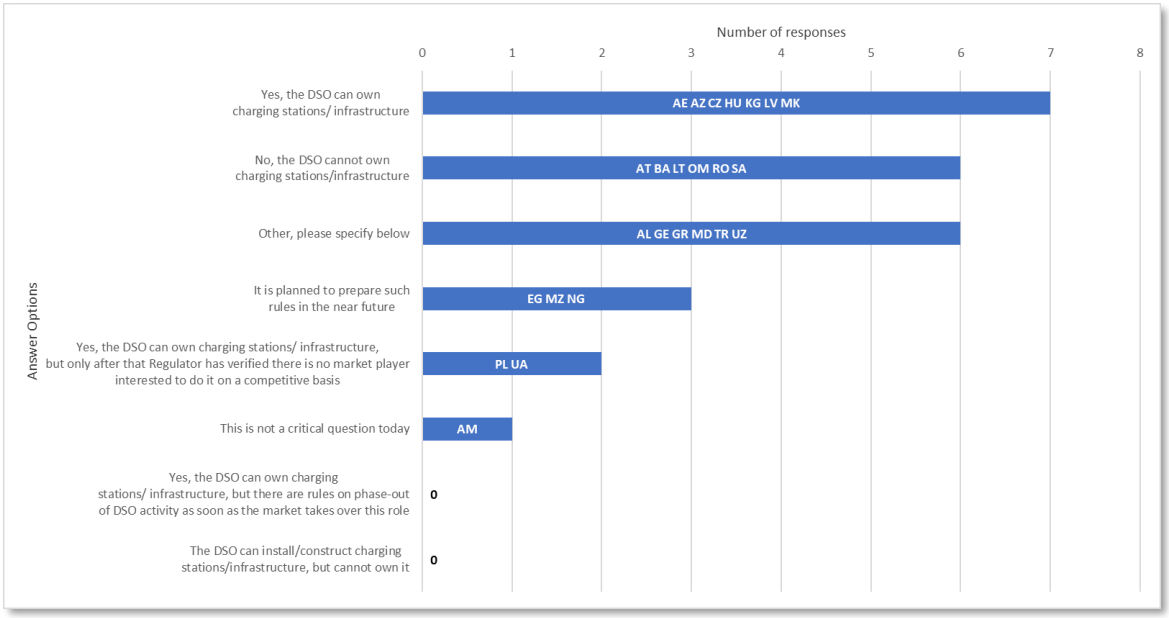


5. Figure

Key points: Price formation is predominantly market-based: 88% of countries (22 of 25) report that EV charging prices are not regulated. Only 4% (1 country) apply direct regulation by the energy regulatory authority, and 8% (2 countries) fall under "Other", typically meaning that network tariffs are regulated while the service fee remains competitive. Overall, ERRA markets largely rely on competition to discipline charging prices, with only a few jurisdictions reserving the option of tariff intervention.

1.C DSO Ownership of Charging Infrastructure

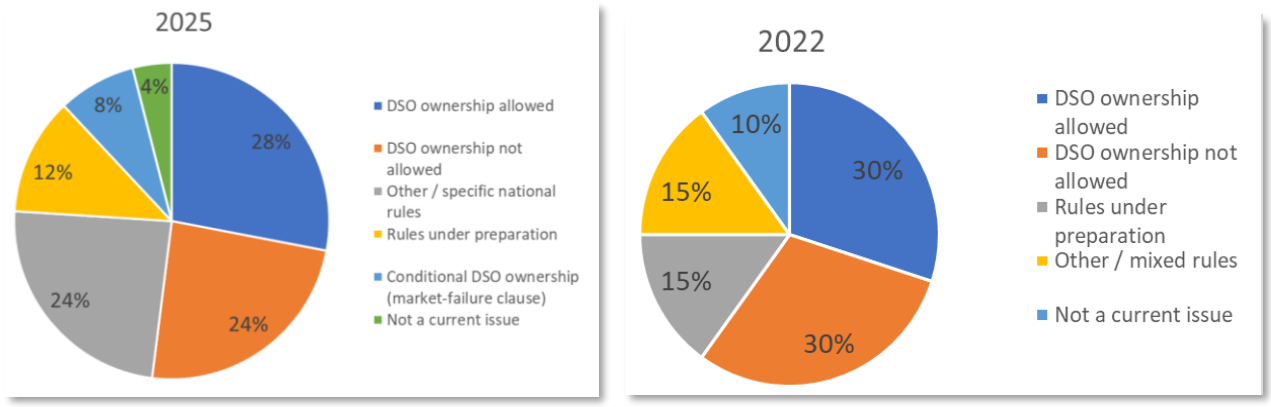
Q.1.5. Does the market model (set by the legal/regulatory framework) allow or disallow utility (DSO) ownership of charging stations/infrastructure?



6. Figure

Key Points: The 2025 survey reveals that DSO ownership of EV charging infrastructure remains one of the most heterogeneous regulatory areas across ERRA countries. Approximately 28% of members allow DSOs to own charging infrastructure, while an equal share explicitly prohibits such involvement. The remaining jurisdictions apply conditional or transitional models that permit DSO participation only in specific circumstances, such as early-stage market development, private-use installations, or market-failure scenarios. This distribution underscores the diversity of national approaches and reflects broader efforts to balance unbundling principles, competitive neutrality, and the practical need to accelerate initial infrastructure deployment. Where DSO involvement is permitted, it is generally advisable to limit it to temporary and clearly justified circumstances, with defined sunset clauses and a clear transition toward market-led deployment — as reflected in the Strategic Recommendations of this report.

Comparison with 2022 report

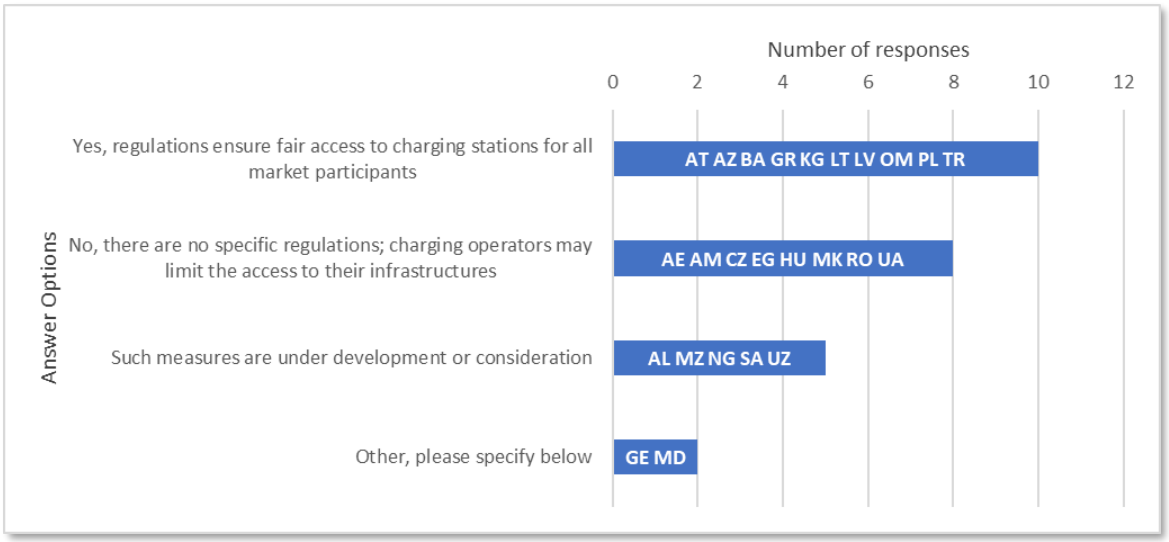


7. Figure

Compared with 2022, the regulatory stance on DSO ownership shows only incremental change: the share of countries allowing DSO ownership remains roughly the same at around one-quarter of respondents, and the share prohibiting it also stays consistent. The main shift is the increase in the number of countries adopting conditional or limited-scope models in 2025, signalling a more nuanced, middle-ground approach rather than a decisive move toward or away from DSO involvement. Overall, regulatory evolution has been gradual, with ERRA members refining existing frameworks rather than fundamentally altering their positions.

1.D Fair and Non-Discriminatory Access to Charging Infrastructure

Q.1.6. Are there regulatory measures in place to ensure fair and non-discriminatory access to charging infrastructure?



8. Figure

Key points: The 2025 survey shows that only 40% of ERRA members have binding fair-access rules for EV charging, 20% are developing such rules, and roughly one-third still rely on voluntary or undefined practices—demonstrating uneven progress toward non-discriminatory access across the region. This indicates that fair-access obligations are not yet consistently safeguarded, with only a minority of countries providing clear, enforceable rules and many others still in

transition. The reliance on voluntary or unspecified arrangements leaves room for unequal treatment of users or operators and may reflect either a preference to allow competition to evolve before regulation or a lag in adapting legal frameworks to rapidly growing EV markets. In both cases, the absence of clear access rules creates uncertainty for investors and consumers as infrastructure deployment accelerates.

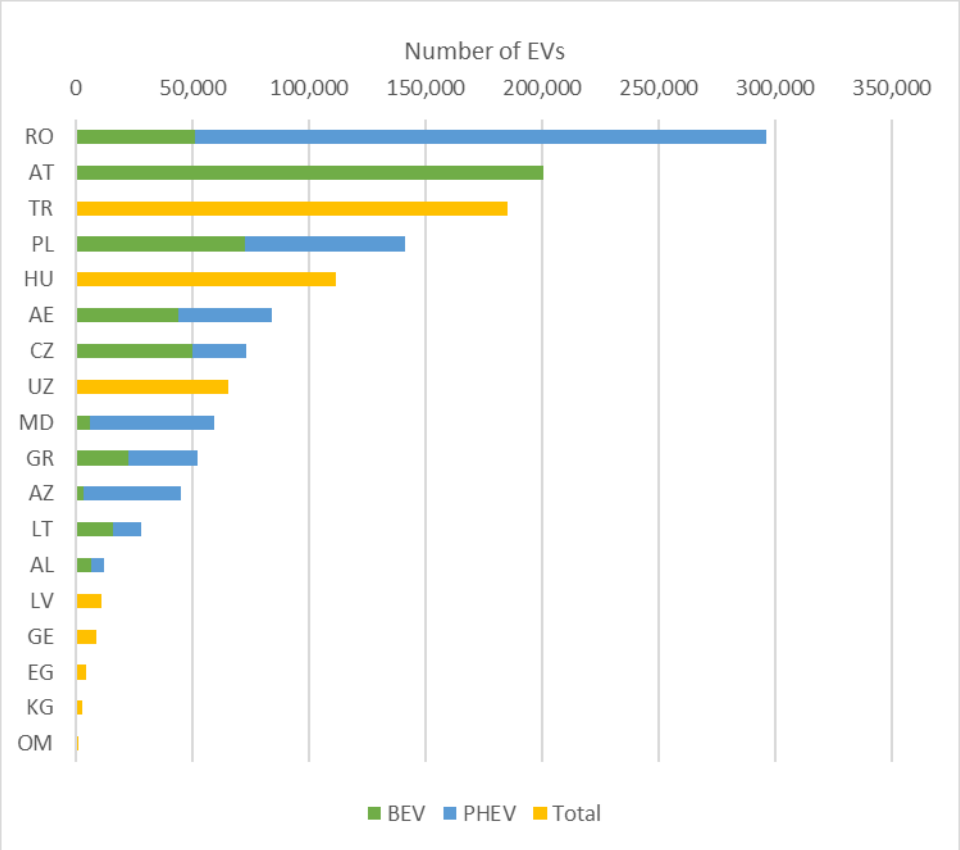
II. Current and Planned Future Roll-Out of EV Charging Infrastructure

Sufficient accessible charging infrastructure remains a key prerequisite for accelerating the uptake of electric vehicles in ERRA member countries. While early-stage EV users are mostly individuals able to charge at home or at private parking locations, the expected expansion of the EV fleet in the coming years will require a balanced mix of home, workplace and public charging solutions.

Publicly accessible charging infrastructure, especially fast charging along main transport corridors and in urban centres, is essential to ensure user confidence and to support inter-city mobility. Planning of charging infrastructure development should be based on projected EV uptake, grid availability and urban mobility needs. The experience of several countries suggests that an indicative benchmark—such as maintaining an appropriate EV-to-charger ratio and securing fast-charging availability along strategic routes—could support long-term system readiness.

A structured and coordinated national approach for the roll-out of charging infrastructure will be increasingly important as the EV market develops and private operators enter the sector. Closer cooperation between relevant public authorities, DSOs and private investors will be required to ensure minimum geographic coverage, efficient grid integration and the establishment of a competitive charging market.

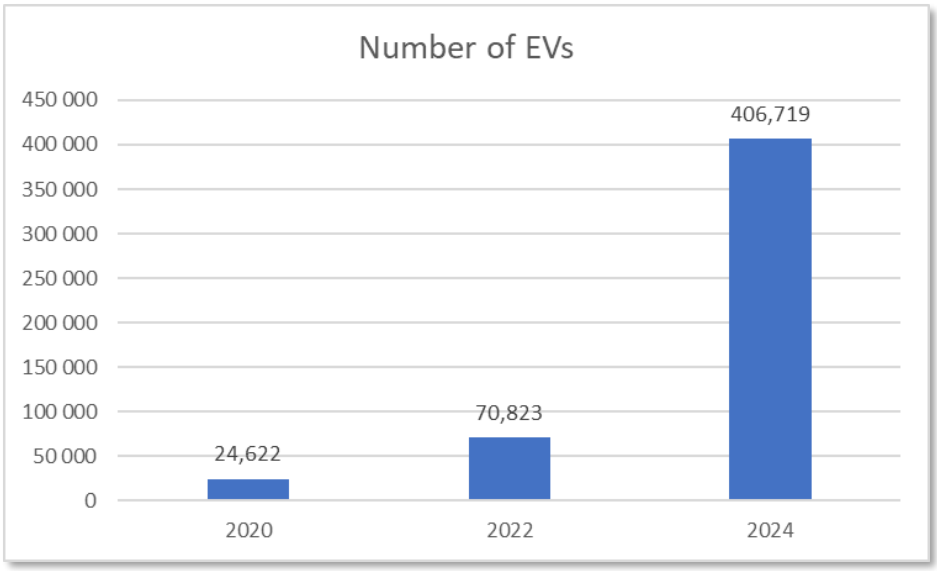
Q.2.1. Number of EVs (BEV= Battery Electric Vehicle; PHEV= Plug-in Hybrid Electric Vehicle) at the end of 2024 or last available year (please indicate the year if not 2024)?



9. Figure

Note: MK, NG, MZ, AM, BA, SA do not provide any data

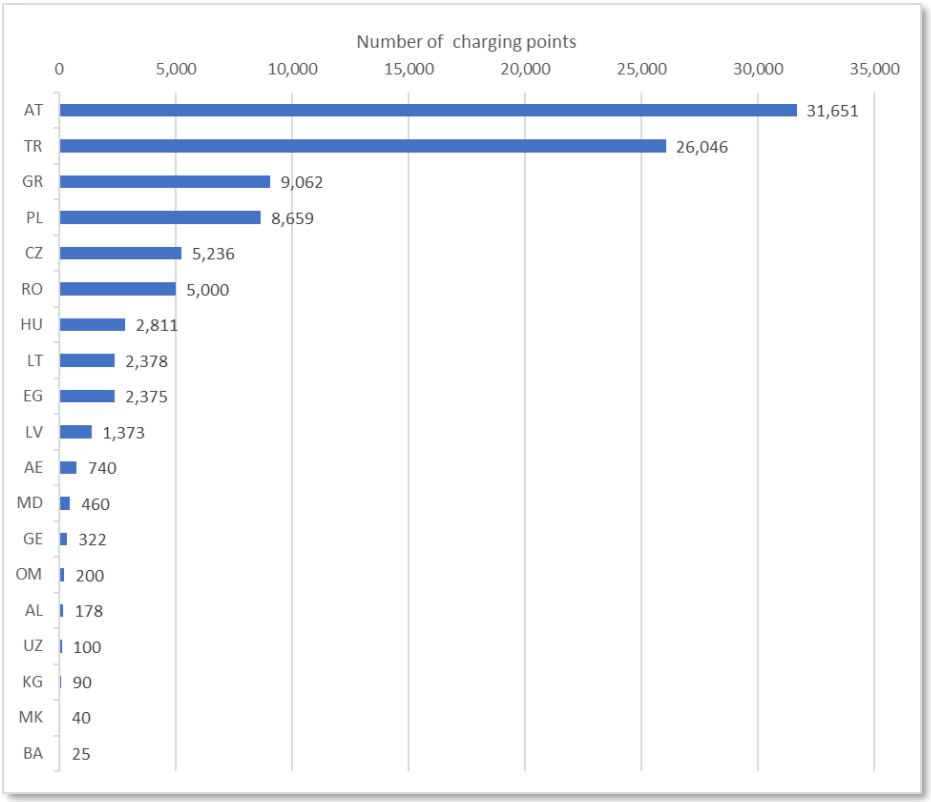
Number of EVs in countries participating in 2020, 2022 and 2024 surveys: Armenia, Azerbaijan, Czech Republic, Georgia, Hungary, Latvia, Oman, Türkiye



10. Figure

Key points: The 2025 survey shows a continued increase in the number of electric vehicles across ERRA member countries, confirming steady progress in market development, although with significant differences in scale between countries. The composition of EV fleets in several countries still includes a high share of plug-in hybrid vehicles, indicating a gradual transition toward full electrification. Compared with the 2022 study, which showed lower EV numbers concentrated in a few countries, the 2025 results demonstrate clear overall growth and a wider geographic spread of e-mobility uptake, indicating that several ERRA jurisdictions are moving beyond the initial phase of electrification. This progress makes it increasingly urgent to establish a stronger foundation for further infrastructure and regulatory development.

Q.2.2. Number of electric charging points in publicly accessible charging stations, at the end of 2024 or last available year (please indicate the year if not 2024)?

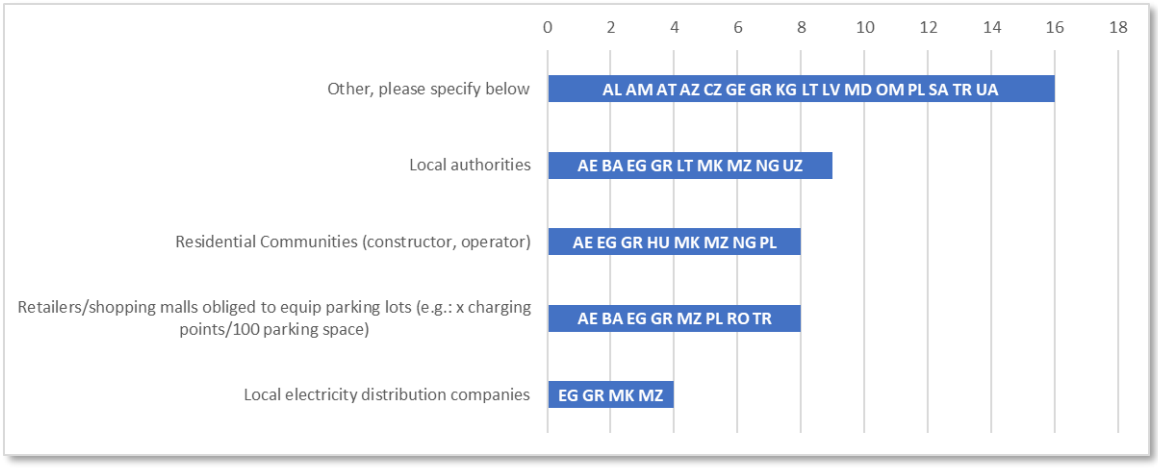


11. Figure

Note: NG, MZ, AM, SA, AZ do not provide any data

Key points: The 2025 survey shows continued growth in EV charging infrastructure across ERRA member countries, with several markets already operating thousands of public charging points, reflecting steady investment and policy support. While many countries still report smaller networks or rely more heavily on private charging, this indicates an early or transitional stage rather than stagnation. Overall, the results suggest positive momentum in infrastructure rollout, with a clear foundation for further expansion as EV adoption increases across the region. To ensure that growth translates into adequate coverage, regulators and policymakers need visibility into actual mobility and charging needs, ideally reflected in national charging infrastructure plans with clear density targets.

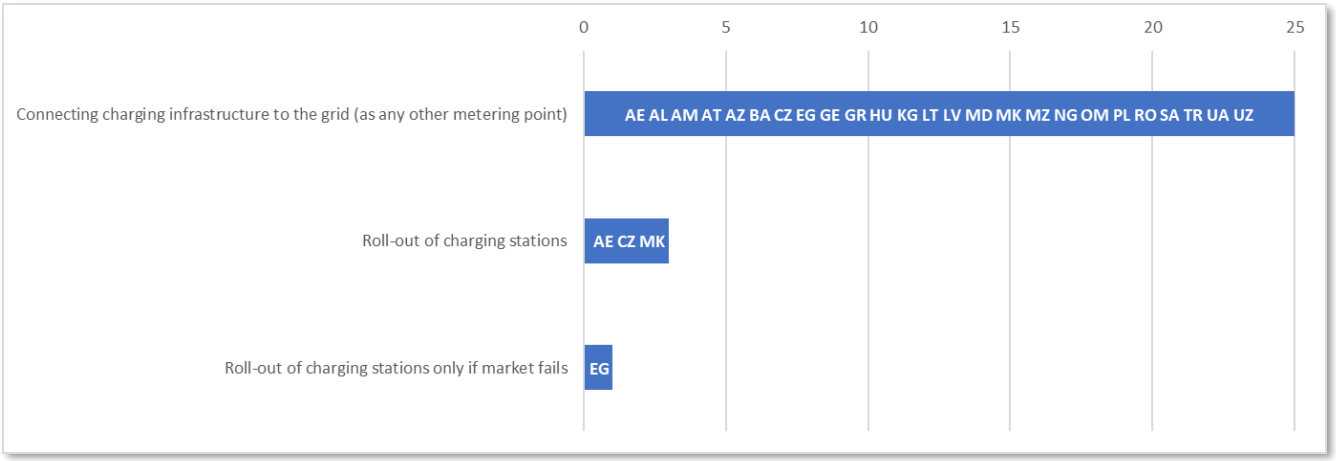
Q.2.3. Responsibilities for development of charging infrastructures?



12. Figure

Key points: Responsibilities for charging infrastructure development in several ERRA member countries are not yet fully defined in legislation. Similar to several countries in earlier surveys, the absence of a clear institutional division creates uncertainty for investors and slows market formation. It is worth noting that responsibilities may differ significantly depending on the type and location of charging infrastructure, for instance, public fast charging along highways typically involves different actors and planning processes than private or workplace charging.

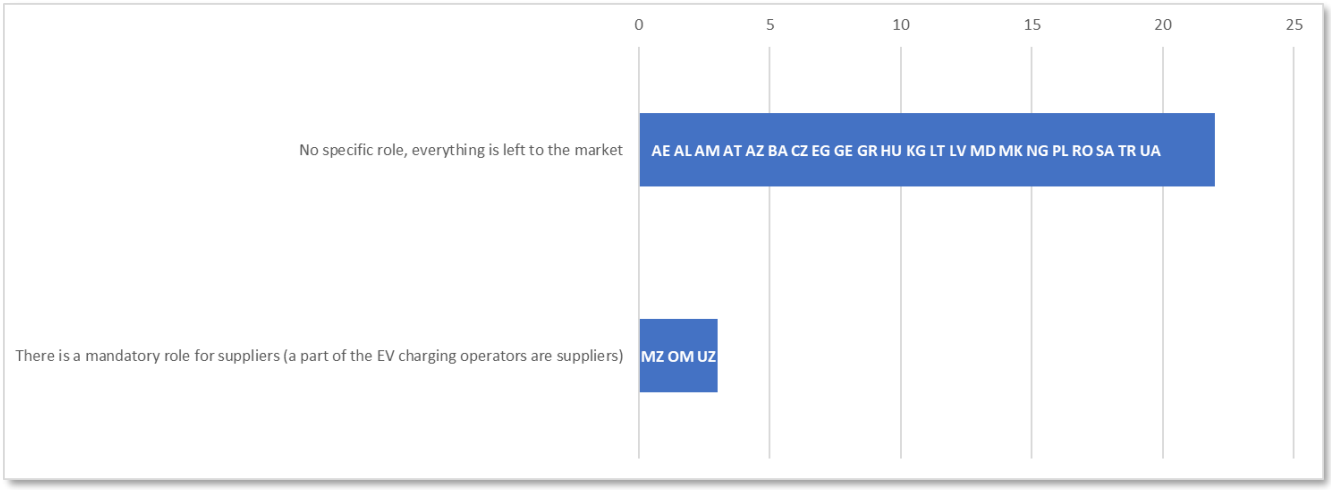
Q.2.3.1. What is the role of the DSO?



13. Figure

Key points: An absolute majority of the NRAs stated that the role of DSOs regarding charging infrastructure is limited to grid connection. DSOs are currently rolling out charging stations in Azerbaijan and Romania. The role of DSOs should primarily concern network planning, grid connections and ensuring technical compatibility. In nascent markets, DSOs may temporarily support deployment, but long-term ownership/operation is not recommended.

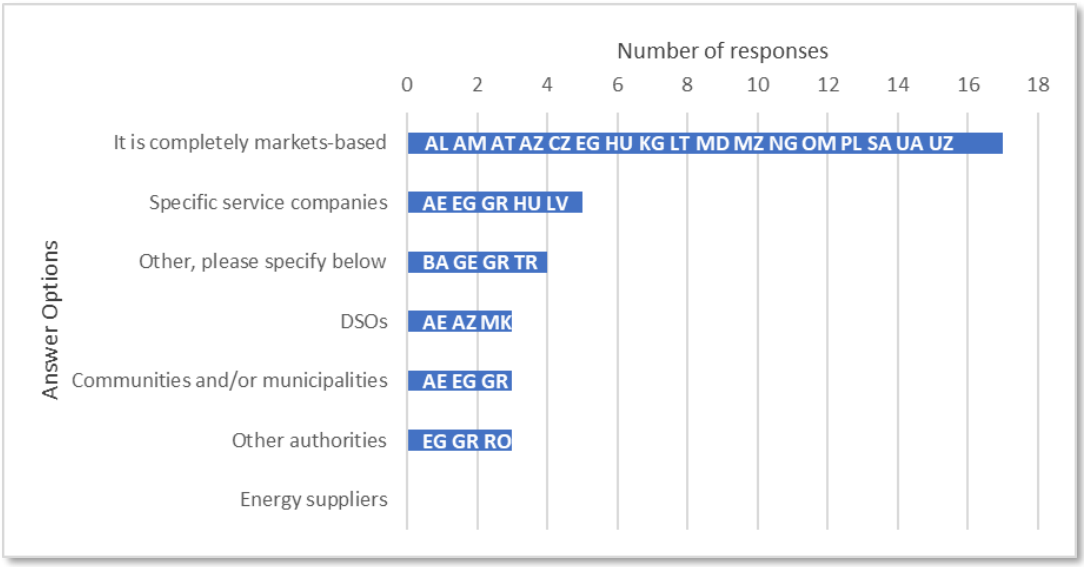
Q.2.3.2. What is the role of the energy supplier?



14. Figure

The role of energy suppliers in EV charging markets varies across ERRA countries, with some suppliers actively offering EV-specific products and others having no defined involvement. Where energy markets are unbundled, it is important to maintain a clear distinction between the role of the energy supplier, who provides and bills for electricity, and the role of the charging point operator, who owns and manages the charging infrastructure and service. Conflating these roles risks distorting competition and undermining the neutrality principles that underpin liberalised energy markets.

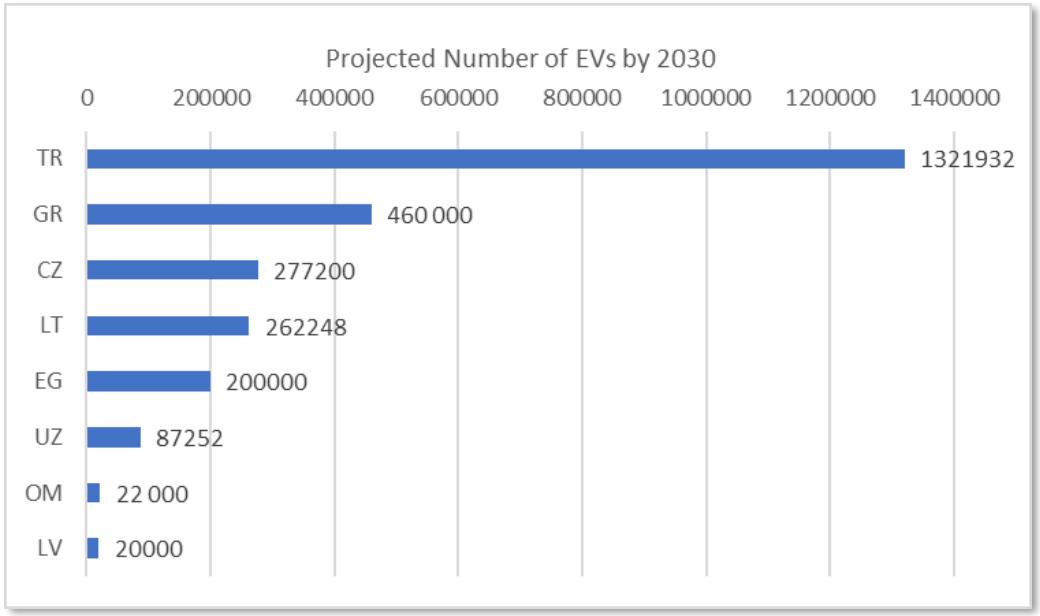
Q.2.3.3. Who is responsible for the roll-out of charging stations?



15. Figure

Key points: In most countries surveyed, roll-out is market-driven with municipalities handling spatial planning.

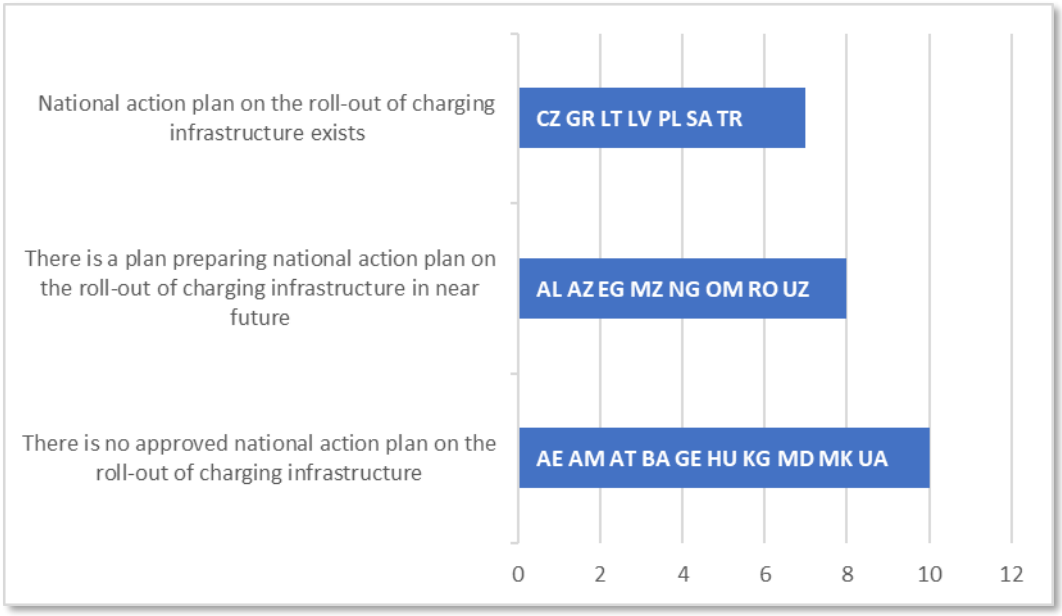
Q.2.4. Projected number of EVs (SEPARATELY BEV, PHEV, HDEV cars, buses, lorries) in 2030 and 2035?



16. Figure

No data MK, NG, RO, MZ, AM, AL, KG, BA, HU, GE, SA, AZ, PL, AT

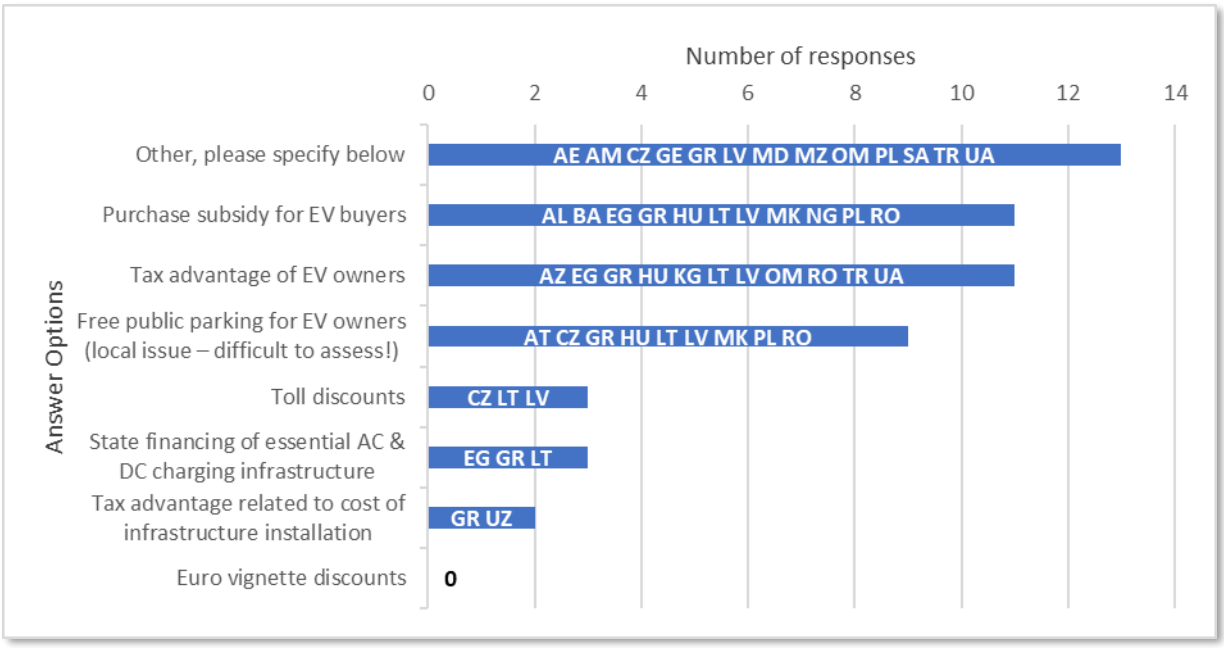
Q.2.5. Is there any national action plan on the roll-out of charging infrastructure?



17. Figure

Key points: Several countries currently do not have an official national action plan for charging infrastructure. International experience shows that national-level planning helps streamline development, secure investor confidence and ensure system preparedness.

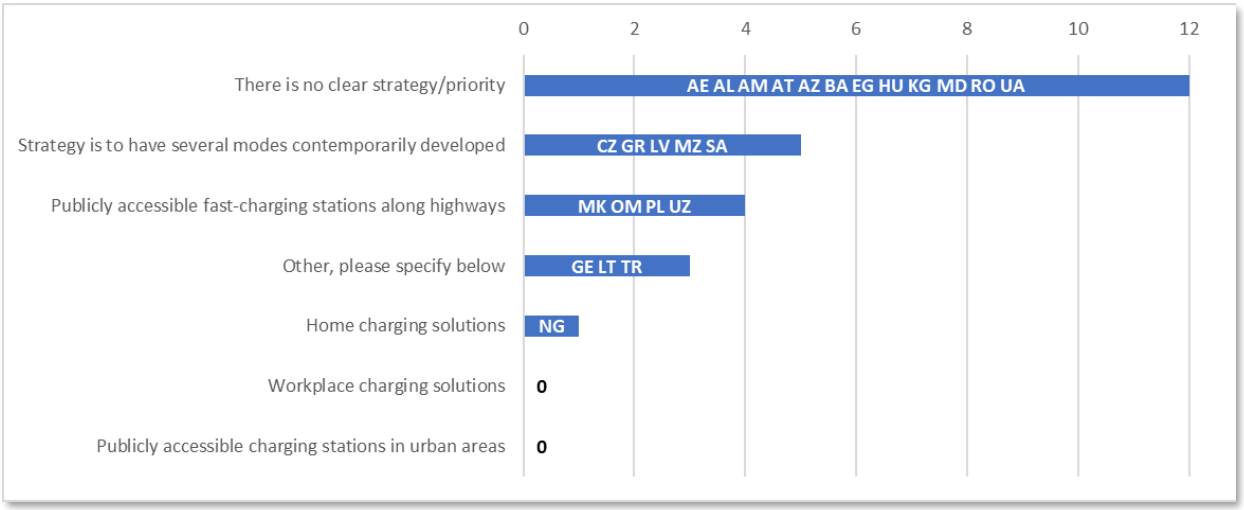
Q.2.6. Is there any support (purchase subsidy, tax advantage, free parking, etc.) for EVs and charging infrastructure?



18. Figure

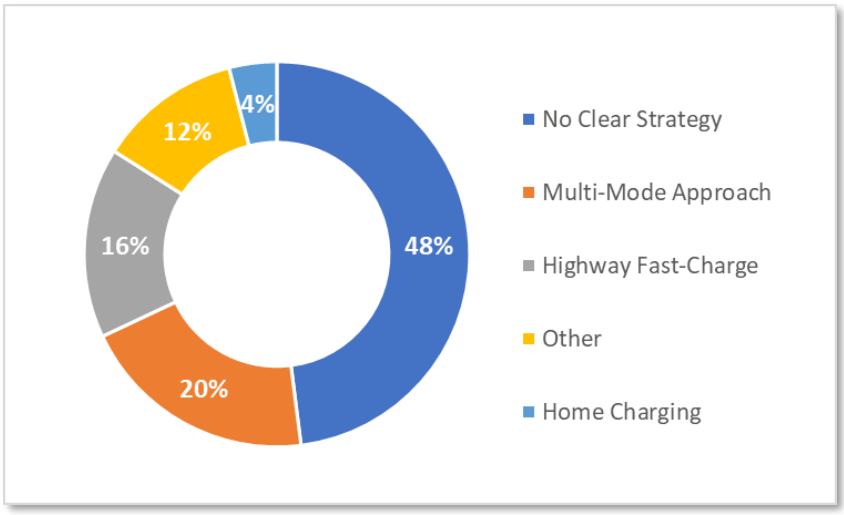
Key points: Support mechanisms for EVs and charging infrastructure remain limited in several countries. In peer countries, support schemes have significantly accelerated EV uptake in early phases.

Q.2.7. What types of charging infrastructure are prioritized in your country's strategy?



19. Figure

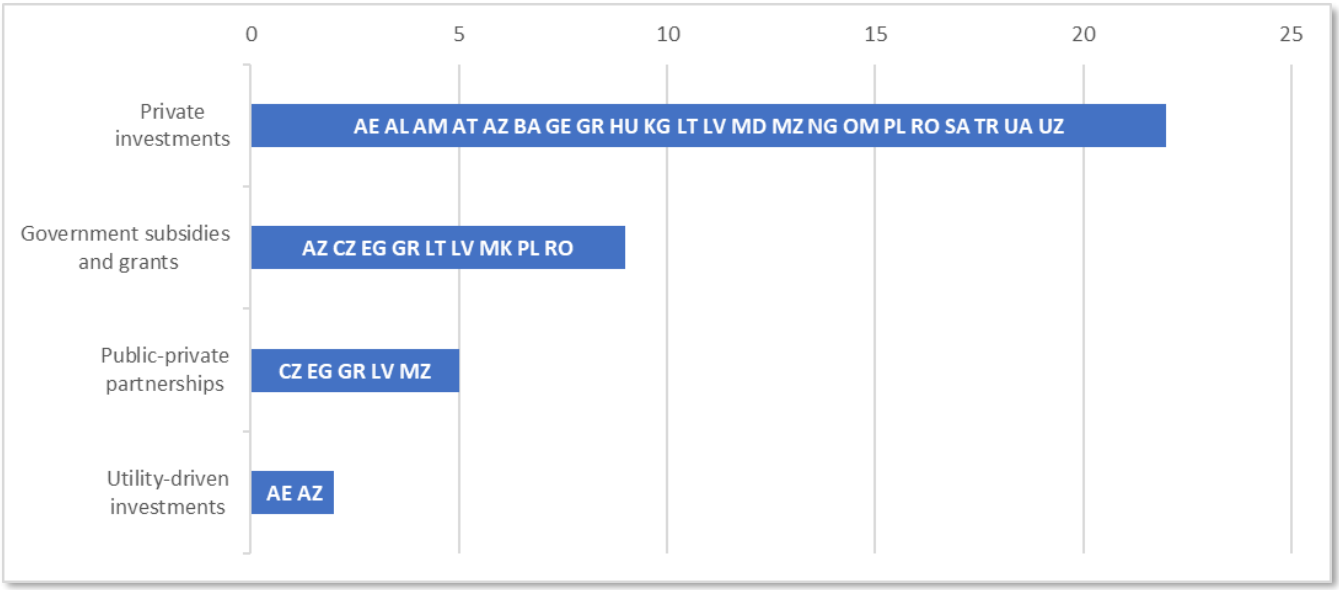
In most countries, deployment is limited, and there is no formal prioritisation of charging infrastructure types. For the purposes of this question, 'type' refers to the technical charging mode, principally slow AC charging versus fast or ultra-fast DC charging, rather than the location or ownership model.



20. Figure

Key points: In most of the country deployment is limited, and there is no formal prioritization. For countries in an early adoption phase, a balanced mix of AC and DC infrastructure is recommended, with strategic emphasis on fast chargers along corridors.

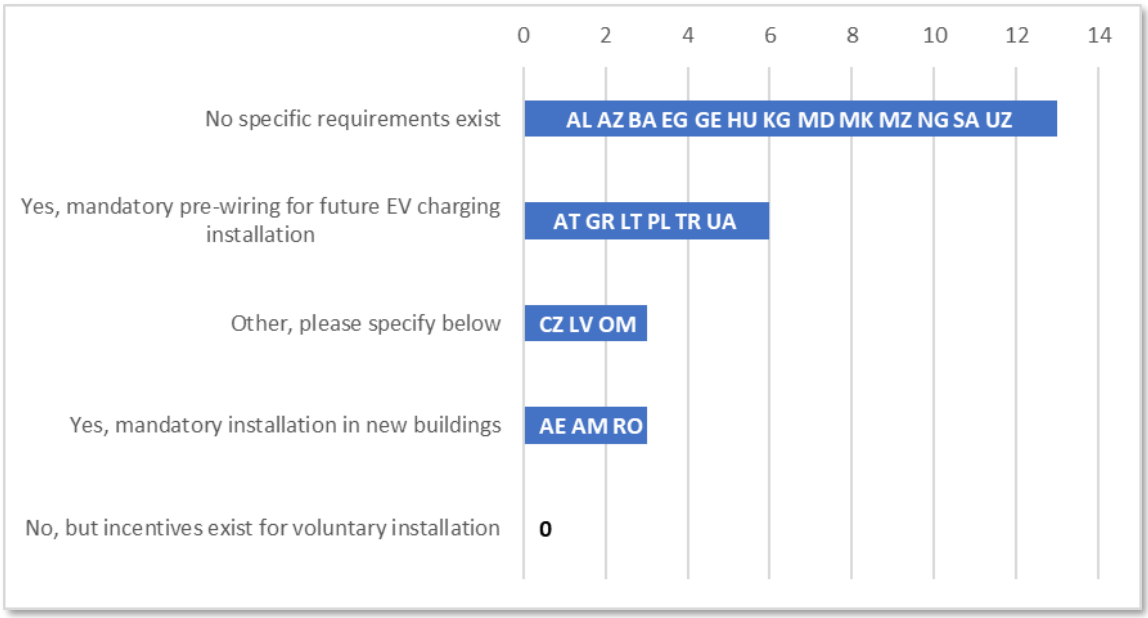
Q.2.8. What is the main funding source for publicly accessible charging infrastructure deployment?



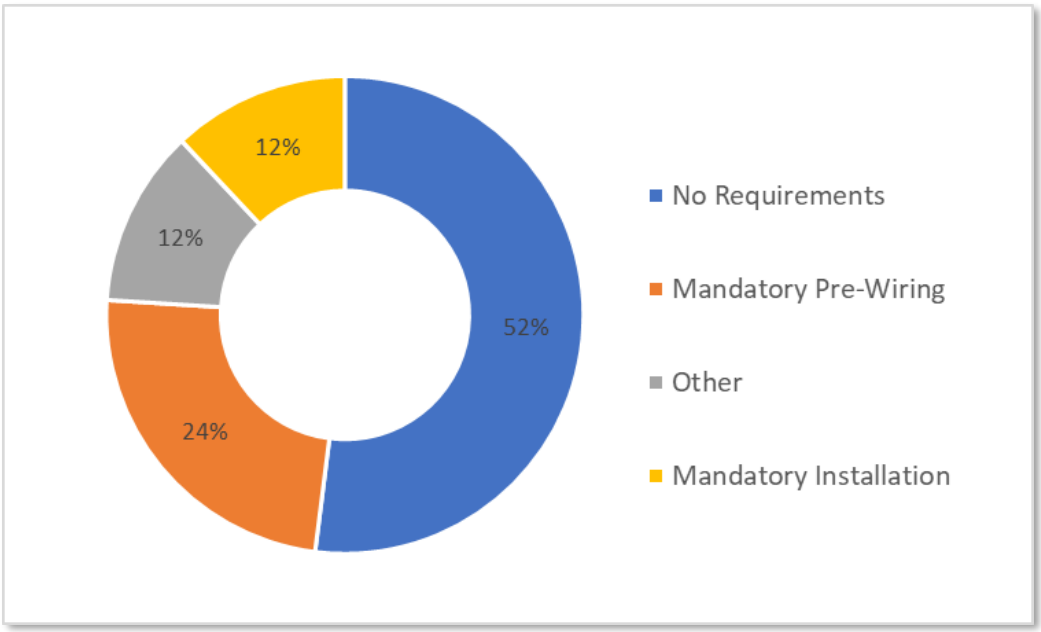
21. Figure

Key points: Funding for charging infrastructure in some countries is primarily driven by the private-sector, but the absence of structured support mechanisms limits expansion. Other countries use mixed funding, including private investment, targeted grants and municipal support.

Q.2.9. Are there requirements for new residential or commercial buildings to have EV charging points?



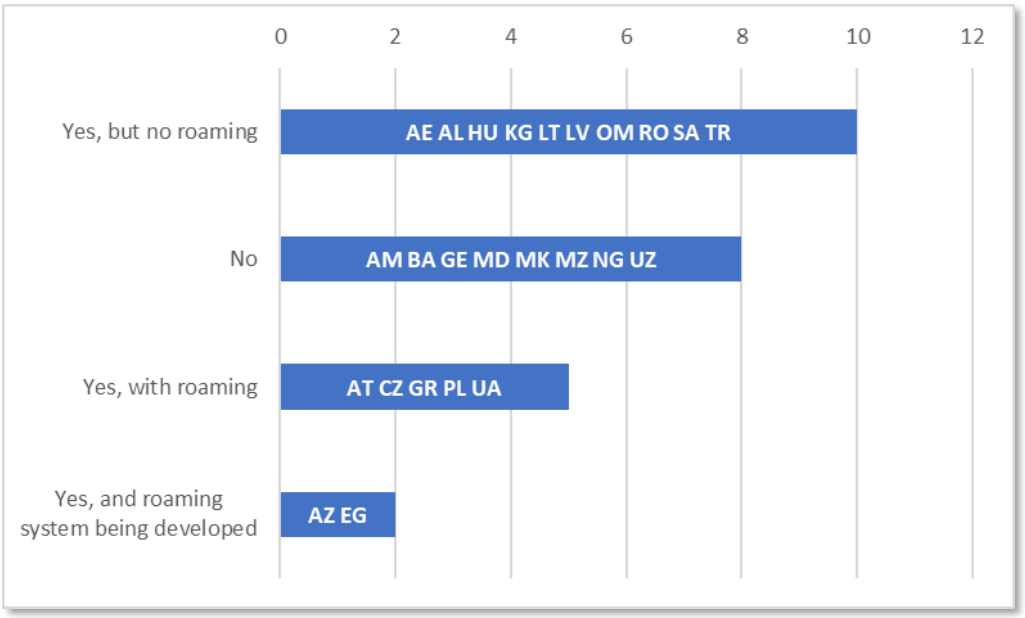
22. Figure



23. Figure

Key points: There are currently no mandatory requirements in the several countries. Many countries have already adopted building code provisions for EV-ready infrastructure, such as pre-cabling or ducting requirements for new residential and commercial building, reflecting growing recognition that retrofitting is significantly more costly than building EV-readiness in from start. For example, the EU's Energy Performance of Buildings Directive (EPBD) requires member states to incorporate EV infrastructure readiness into building codes for new constructions and major renovations, providing one model of how such requirements can be structured.

Q.2.10. Are there multiple EV charging station market players in your country? If yes, are they operating by themselves or under a roaming system?



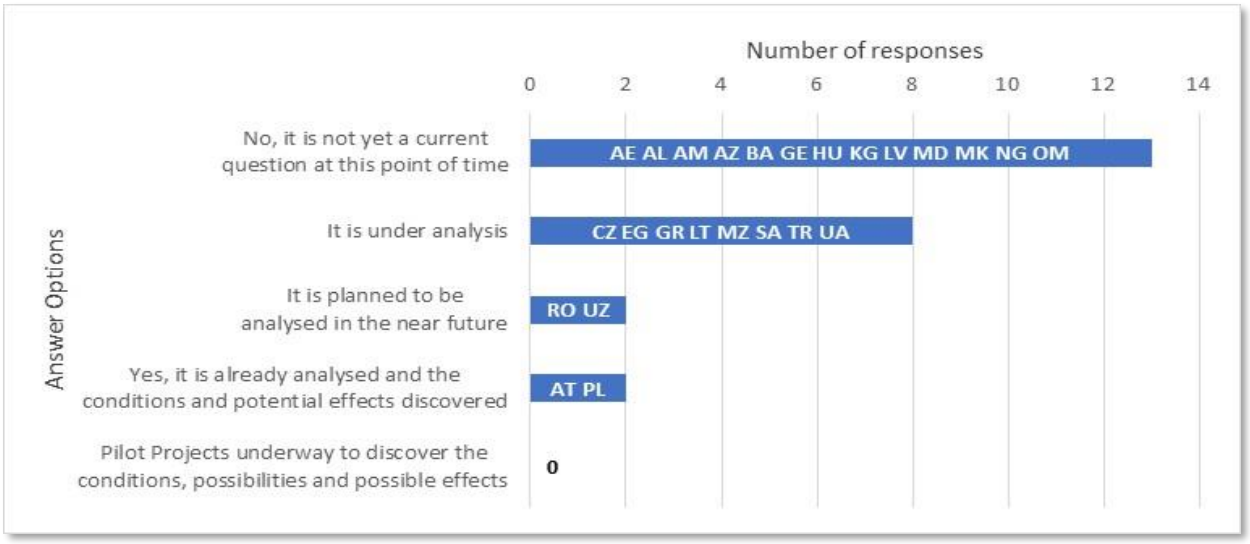
24. Figure

Key points: Roaming systems are not yet implemented in several countries. In more advanced markets, interoperability and roaming significantly improve user experience and strengthen market competition. Common technical standards and communication protocols, interoperability agreements between charging operators, and sufficient charging point density to make roaming commercially viable are still absent or underdeveloped in most ERRA markets. In more advanced markets, interoperability and roaming significantly improve user experience and strengthen market competition, suggesting this should be a medium-term priority as charging networks grow.

III. ELECTRICITY SYSTEM EFFECTS OF E-MOBILITY

Several studies (e.g., IEA Global EV Outlook 2025) indicate that EV adoption will significantly reshape the electricity load curve, elevating demand during evening home-charging periods and contributing to additional peaks during holiday times due to increased travel and irregular charging behavior. At the same time, EVs represent a new flexibility resource for the electricity system. With smart charging (V1G), EV charging can be shifted to off-peak periods or times of high electricity generation from renewables. In later stages, vehicle-to-grid (V2G) capability can enable EVs to function as distributed storage assets that return energy to the grid and support services such as voltage or frequency regulation. Smart grids and V1G-V2G capabilities offer significant opportunities for managing the impacts on electricity grids as the EV ecosystem develops. ERRA survey findings point to the countries that are further along in this direction.

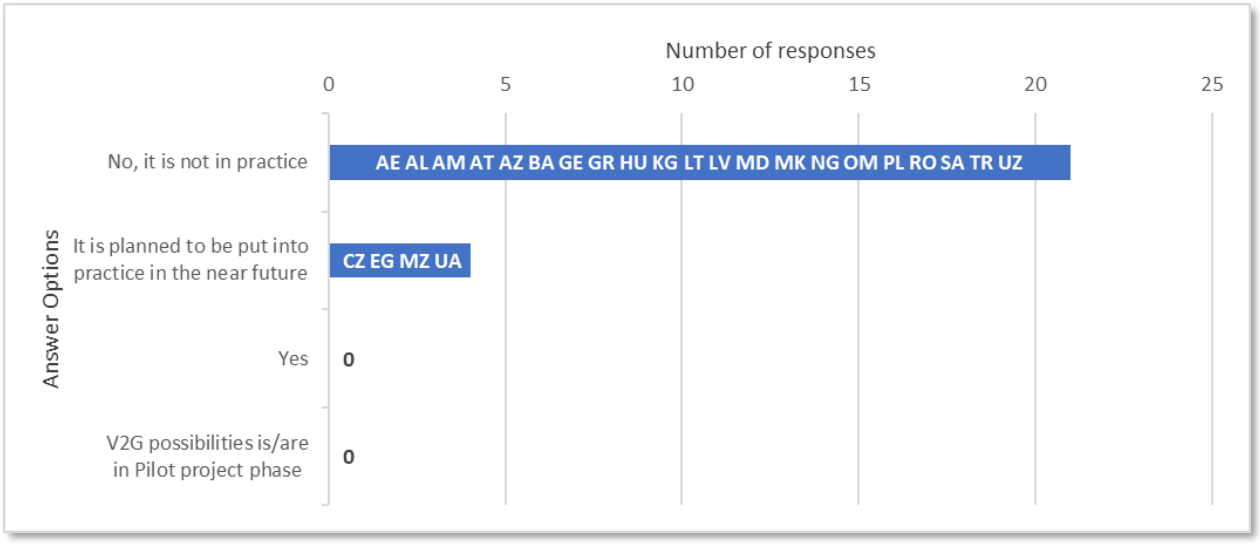
Q.3.1. Are the V1G and V2G possibilities and the conditions of these additional grid services analysed and discovered in your national electricity system?



25. Figure

Key Points: Both V1G and V2G have progressed from pilot exploration toward regulatory assessment for some countries. Eight countries are currently analyzing V1G and V2G integration into their national electricity systems, and two countries have already completed the analysis and identified potential impacts. Unlike 2022, no pilot projects are ongoing, indicating a shift from "testing" to "regulatory preparation". It is important to note that V1G and V2G represent fundamentally different levels of technical and regulatory complexity. V1G smart charging that shifts load without returning energy to the grid is less complex and may already be partially enabled in countries with time-varying tariffs, even if not explicitly tracked as V1G. V2G, by contrast, requires bidirectional metering, grid-integration standards, and market-access rules that are largely absent across ERRA countries. Overall, awareness and maturity regarding V1G and V2G have increased, and countries are now focusing on defining the regulatory and market framework needed for future implementation.

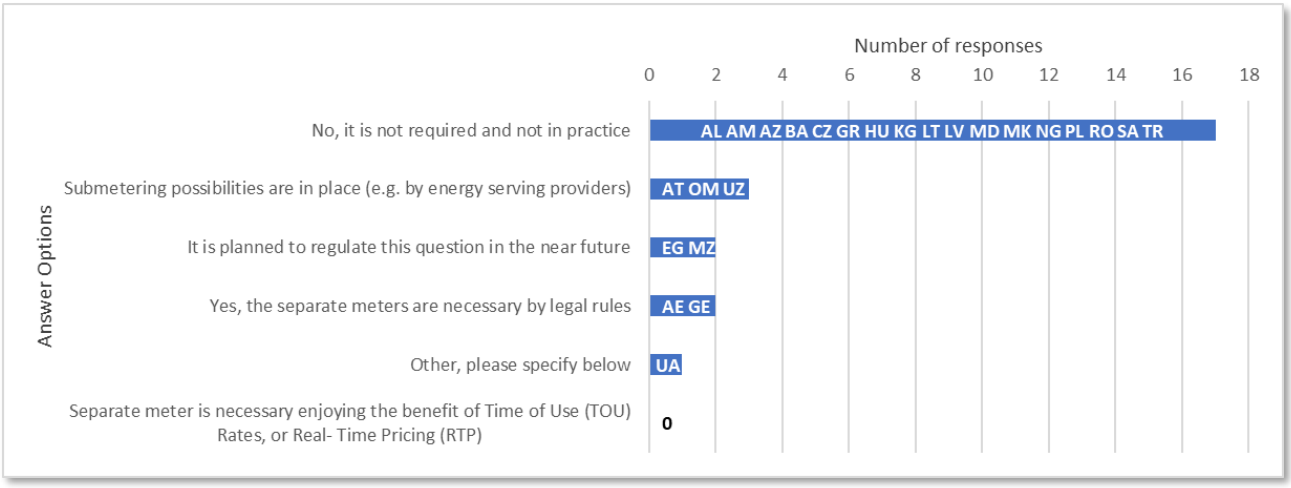
Q.3.2. Are there any elements of the V2G possibilities in operation?



26. Figure

Key Points: The 2025 survey results show that V2G is still not in operation in almost all ERRA countries. The majority of countries report that V2G is not yet implemented in practice, and only a few ones plan to initiate an operation in the near future. This indicates that despite growing regulatory interest and analytical progress, no advancement has been achieved in real-life implementation or operational deployment of V2G. The main regulatory and technical elements that remain unresolved across most jurisdictions include: bidirectional metering standards, grid integration and communication protocols, market access rules enabling V2G participation in ancillary services markets, and billing arrangements for energy returned to the grid. These gaps are explored further in Section V.

Q.3.3. Are there separate meters for the EV home charging?



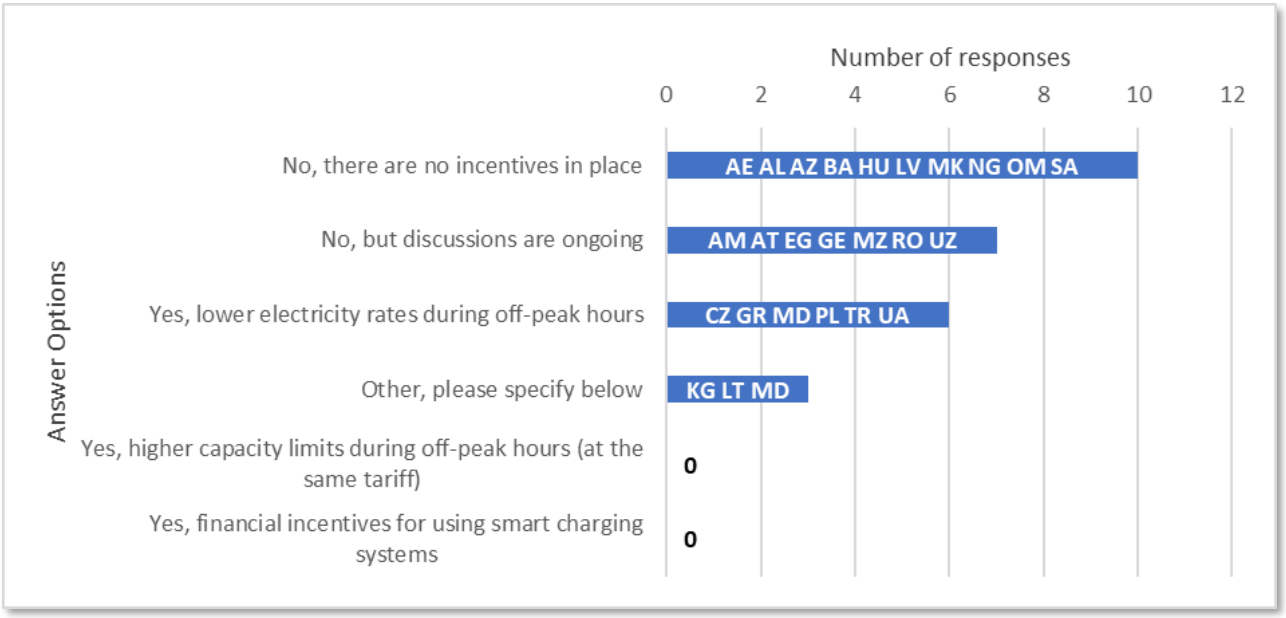
27. Figure

Comments:

AE	Uniform tariff for private charging apply for all user categories.
AT	Ordinary tariffs apply, based on user category.
GE	The individual enters into a contract with the supplier, and the supplier determines the price.
OM	Ordinary tariffs apply, based on user category.
UZ	Ordinary tariffs apply, based on user category.

Key Points: Separate metering for EV home charging remains largely uncommon across ERRA countries. About two-thirds of respondents indicate that separate meters are neither required nor used, showing almost no progress compared to 2022. Overall, despite growing interest in smart and flexible charging, the adoption of separate metering has not advanced, and position of NRAs remains largely unchanged.

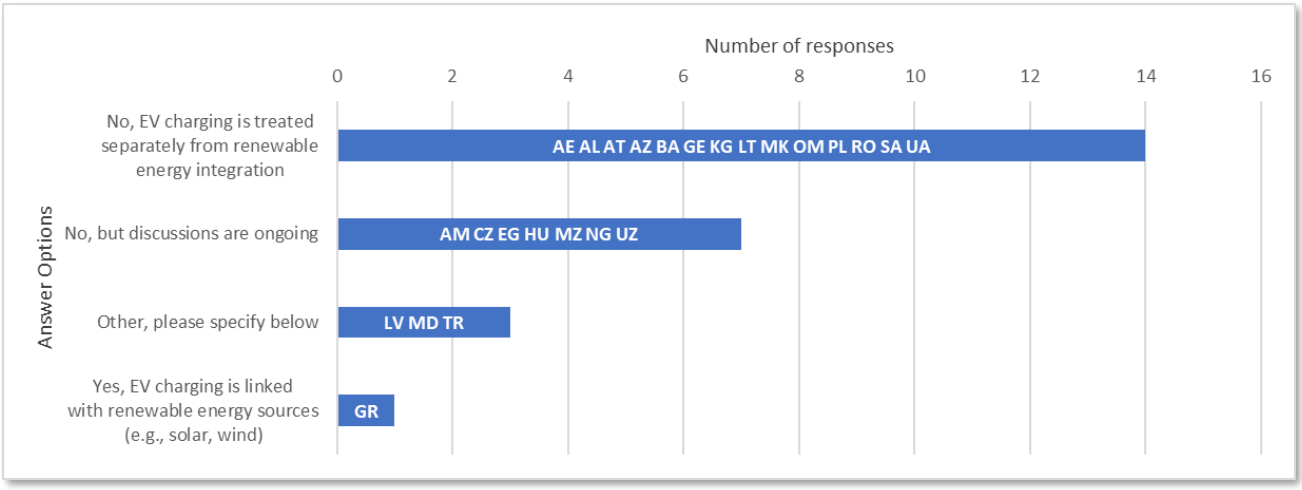
Q.3.4. Are there any incentives or mechanisms in place to encourage off-peak EV charging?



28. Figure

Key Points: Most ERRA countries do not yet offer incentives to encourage off-peak EV charging. Only 23% currently support off-peak charging through lower electricity tariffs, and no country provides direct financial incentives or smart charging payments. This shows that although smart charging and flexibility are being discussed, incentives remain limited and fragmented, and most countries have not yet moved toward implementation.

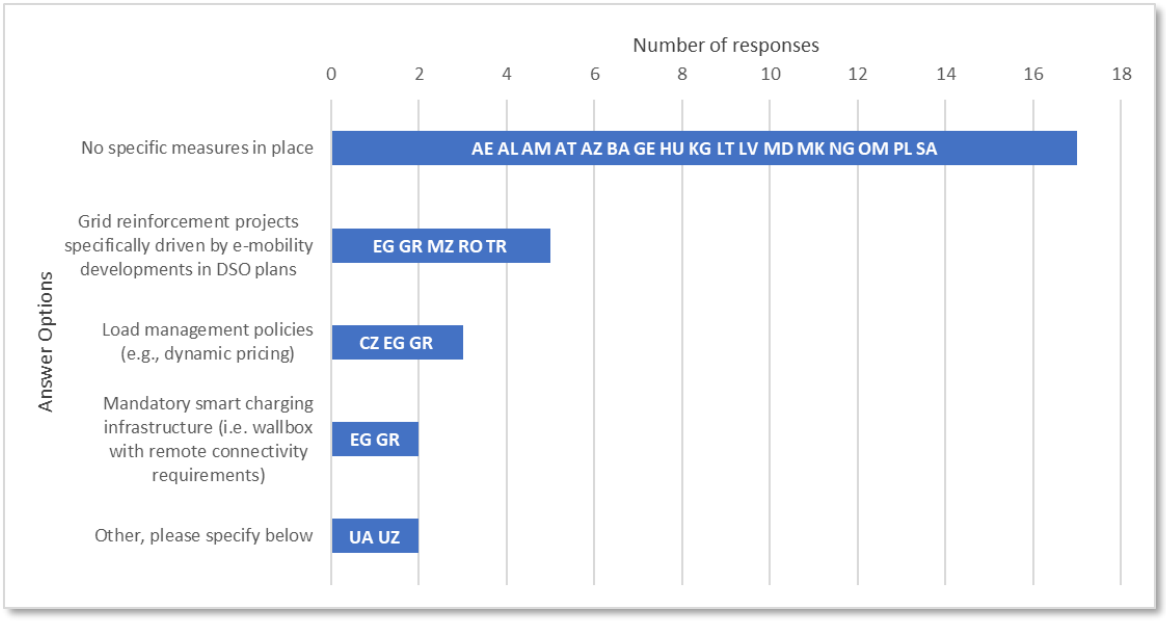
Q.3.5. Are there existing regulatory measures to integrate renewable energy with EV charging infrastructure?



29. Figure

Key Points: Most ERRA countries do not have regulatory measures linking EV charging infrastructure with renewable energy sources. The majority treat EV charging and renewable integration as separate regulatory areas, while several countries are still in the discussion or exploratory stage. This shows that although EV charging and renewables are both strategic priorities, their integration has not yet translated into regulation or coordinated policy frameworks.

Q.3.6. What measures are in place to prevent grid congestion due to EV charging?



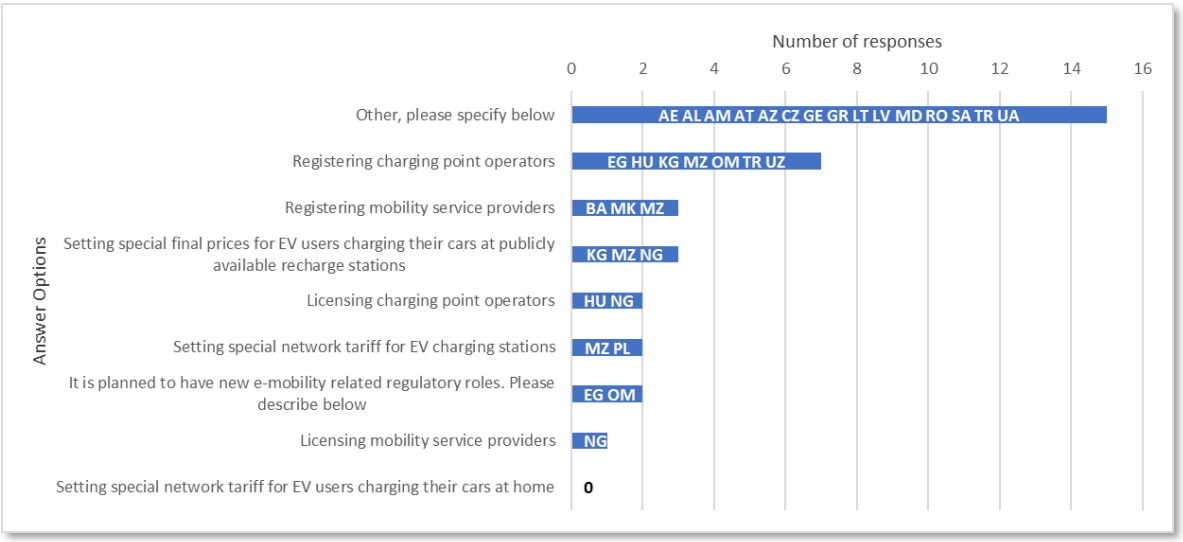
30. Figure

Key Points: Most ERRA countries (around 60%) do not have specific measures in place to prevent grid congestion caused by EV charging. Around 20% indicated that grid reinforcement projects have been incorporated into DSO planning to address future EV-related demand. Overall, this indicates that EV adoption is progressing faster than grid preparedness, and many countries still follow a reactive rather than proactive approach.

IV. ROLE OF THE NATIONAL REGULATORY AUTHORITY REGARDING E-MOBILITY

The NRAs' authority on e-mobility is limited but appears to be improving. Survey results show that regulatory roles remain unclear and fragmented. Tariff-related regulatory actions (special charging tariff, special public charging price) are limited to 2–3 countries. Because e-mobility spans multiple sectors (energy, transport, telecommunications, data security), progress requires clear definition of roles and cross-sector regulatory coordination. Greater clarification on the roles and responsibilities of NRAs will contribute to overall EV development, particularly EV user confidence in charging infrastructure.

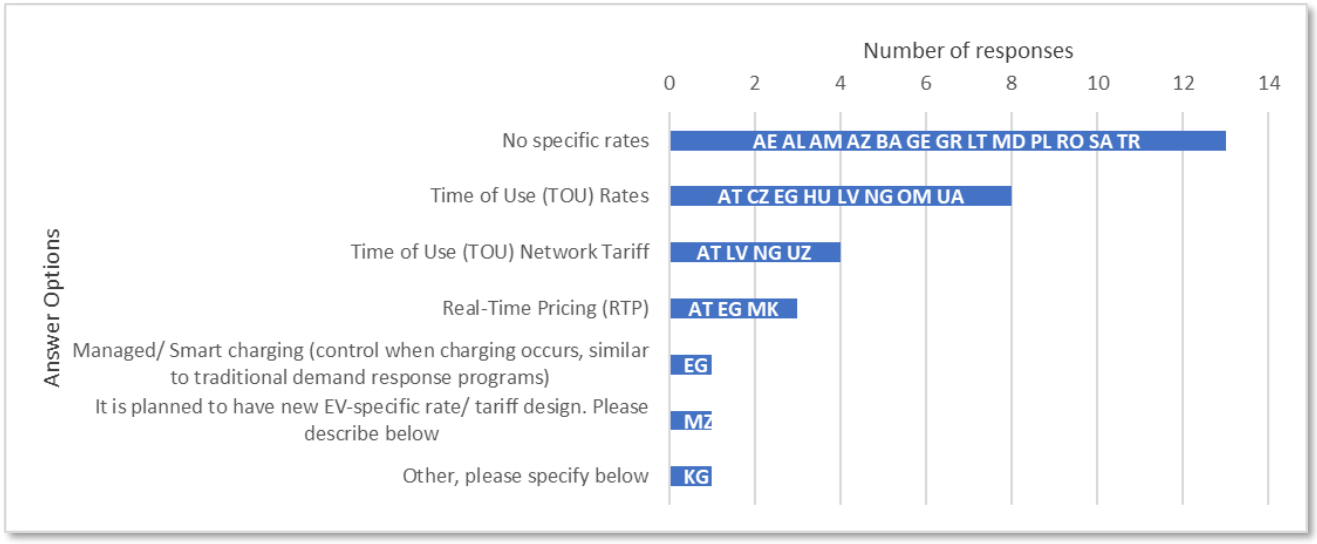
Q.4.1. What are the present regulatory roles regarding e-mobility?



31. Figure

Key Points: Regulatory roles in the e-mobility sector varies in ERRA countries. The majority of respondents selected “Other / no defined regulatory role,” indicating that NRAs still lack a structured mandate for EV-related regulation. Only a limited number of countries have defined roles such as registering/licensing charging point operators (CPOs) or mobility service providers (MSPs), and setting basic pricing rules for public charging. Compared to 2022, some countries declared active involvement, in 2025 these structured regulatory roles have not expanded, and many countries shifted back to undefined / other categories. Regulatory clarity has not progressed; instead, the landscape has become more heterogeneous.

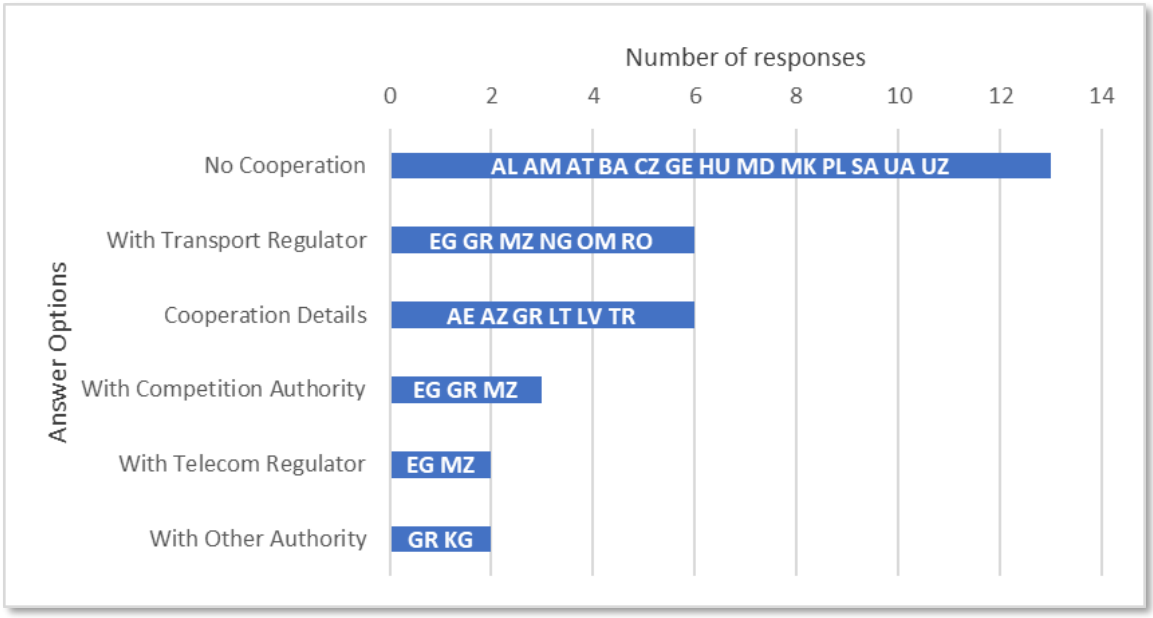
Q.4.2. Which EV-specific rate/tariff design elements and/or smart charging are under consideration (or implementation) in your country?



32. Figure

Key Points: A large majority continues to apply "no specific rates", showing that tariff innovation for EV charging remains limited. Compared to 2022, more countries in 2025 have begun considering smart-charging–related tariff tools such as TOU tariffs, TOU network tariffs, RTP, and managed/controlled charging. In 2022, these mechanisms were introduced only by a small group of frontrunners (e.g., HU, PK, AZ). In 2025, more countries show interest and are planning, even if implementation remains limited. Countries are moving from "planning" to "discussion," but not to "execution". This indicates that while awareness of EV-specific tariffs is increasing, practical deployment remains slow. An open regulatory question emerging from these findings is whether dedicated EV-specific tariff structures are necessary, or whether making general time-of-use pricing widely available to all consumers would be sufficient to incentivise grid-friendly charging behaviour. The answer is likely context-dependent: in markets with strong aggregator ecosystems and dynamic contracting, general ToU pricing may suffice, whereas markets at earlier stages may benefit from more targeted EV-specific rate structures to kick-start demand response.

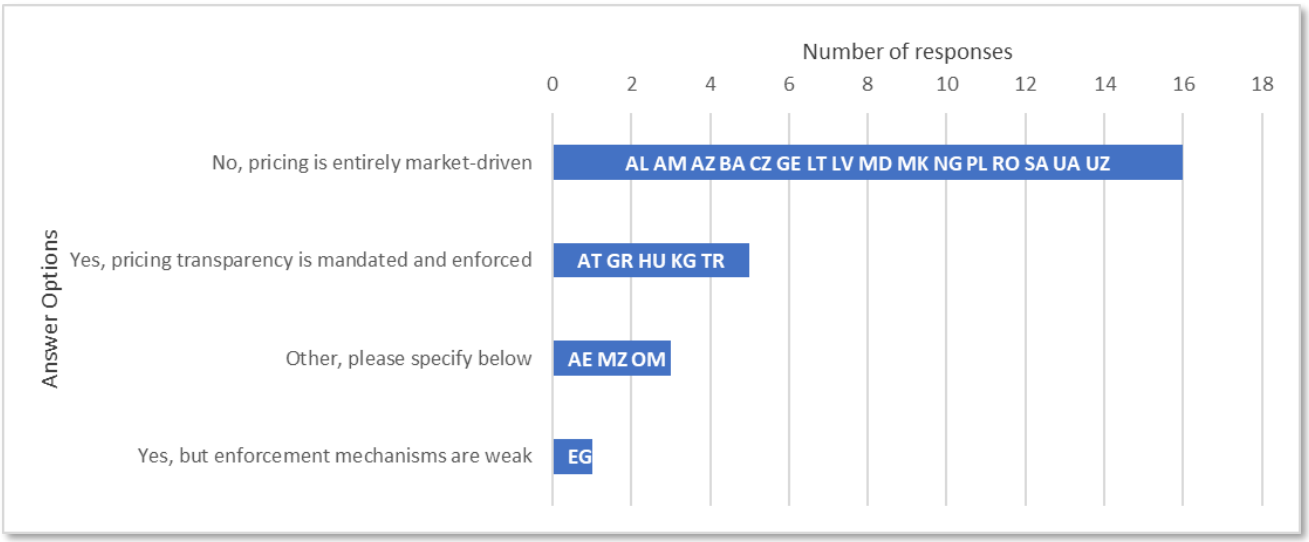
Q.4.3. Does your regulatory authority co-operate with other sectoral regulatory authorities with regard to e-mobility?



33. Figure

Key Points: Cooperation between regulatory authorities on e-mobility remains very limited across ERRA countries. 13 countries (about 40%) reported no cooperation at all, not even informal. Compared to 2022, there is no significant improvement. In fact, several countries that previously reported some level of coordination have now moved into the "no cooperation" category. This indicates that regulatory roles are still fragmented and institutional coordination has not kept pace with the growth of EV infrastructure.

Q.4.4. Does the regulatory authority monitor and enforce pricing transparency in EV charging services?

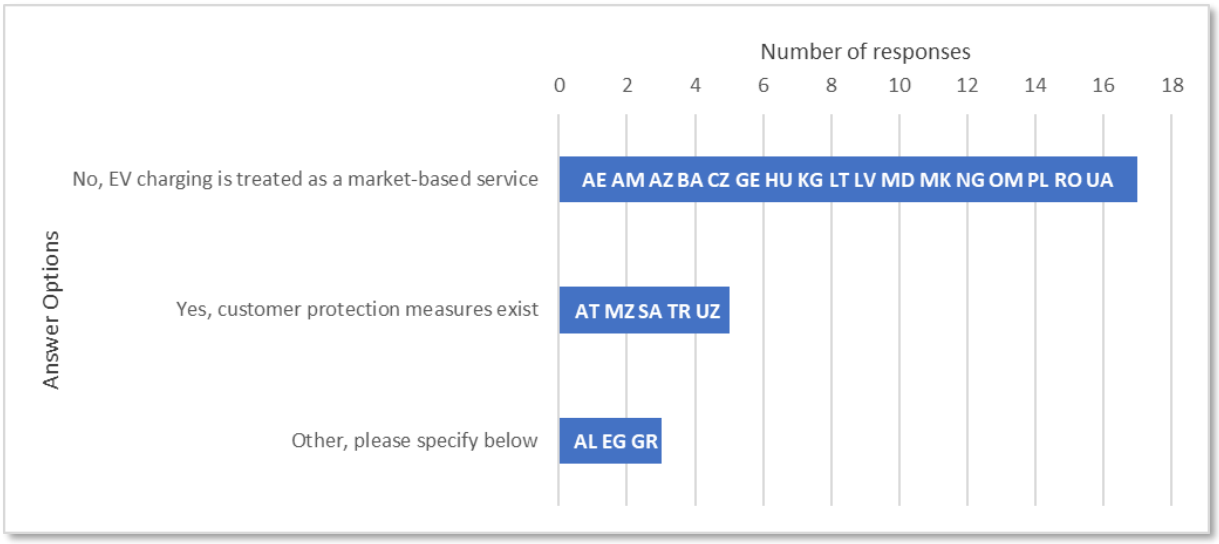


34. Figure

Key Points: Pricing transparency in EV charging services is still largely unregulated across ERRA countries. About 65% of respondents stated that pricing is entirely market-driven, meaning regulators do not monitor or enforce transparency. Only a minority (about 20%) mandate and enforce pricing transparency. This shows that EV charging markets are maturing faster than

regulatory oversight, and lack of transparency can lead to inconsistent pricing for consumers and limited trust in public charging infrastructure.

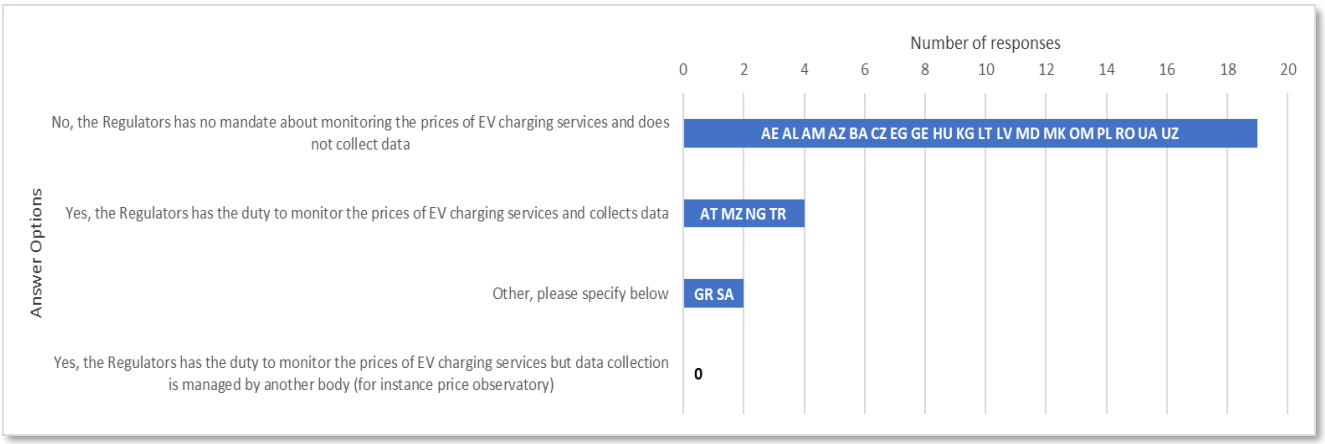
Q.4.5. Is there a mechanism for customer protection regarding EV charging services (e.g., price caps, service quality standards)?



195. Figure

Key Points: Customer protection mechanisms in EV charging services remain very limited across ERRA countries. About 68% of respondents indicate that EV charging is treated purely as a market-based service, meaning no dedicated customer protection (no price caps, no service rules). Only about 20% of countries report having specific customer protection measures (price transparency rules or quality standards). This shows that while EV charging markets are expanding, consumer safeguards are not developing at the same speed, increasing the risk of price volatility, inconsistent service quality, and limited transparency for EV users.

Q.4.6. Data collection on pricing: is your Authority charged to monitor and/or collect data on charging service prices in your country?



36. Figure

Key Points: Most ERRA countries do not collect or monitor price data for EV charging services. About 76% (19 countries) report that regulators have no mandate to monitor EV charging prices and do not collect any pricing data. Only about 16% (4 countries) collect pricing data as part of

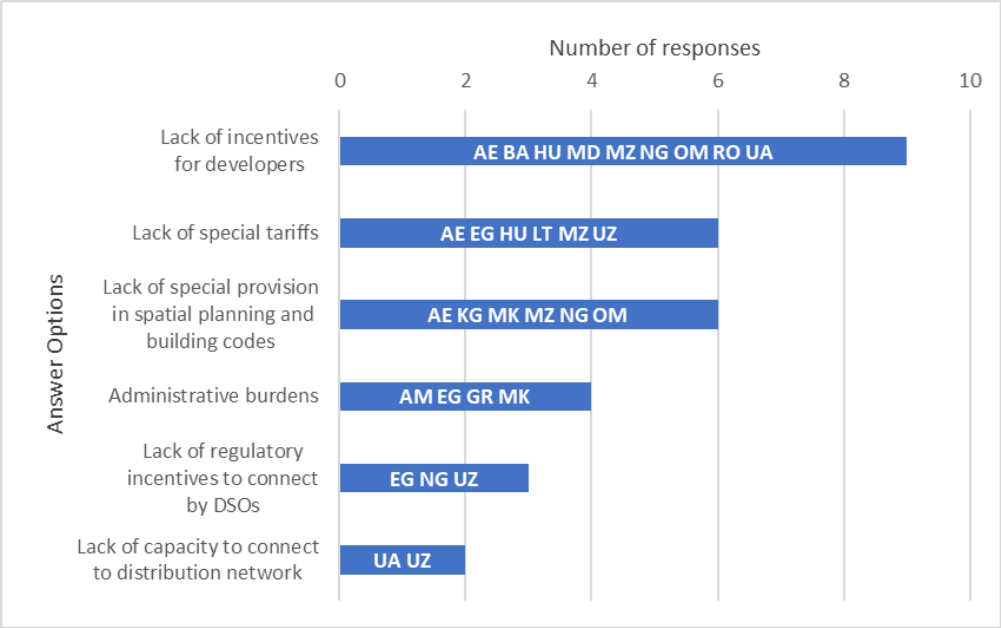
regulatory oversight. This shows that pricing transparency and data-based oversight remain weak. Without data collection, regulators cannot identify price spikes, market failures, or unfair charging practices. In a fast-growing market, “no data = no oversight”,” regulation can only follow where visibility exists”.

V. BARRIERS AND EMERGING TOPICS

Persistent Barriers to E-Mobility Development:

The 2025 survey confirms that ERRA members face a broad set of interrelated barriers to EV infrastructure development.

Main barriers to the development of EV infrastructure



37. Figure

Key points: The 2025 survey confirms that ERRA members face a broad set of barriers to EV infrastructure deployment, with notable variation across countries. Out of 28 respondents, the most frequently selected explicit barrier is the lack of incentives for developers (9 countries, around one-third of the sample). Lack of special tariffs and lack of specific provisions in spatial-planning or similar legislation are each reported by 6 countries (about one-fifth), while administrative burdens are highlighted by 4 countries and lack of regulatory incentives for DSOs by 3 countries. Only 2 countries point to lack of capacity to connect to the distribution network as a barrier, suggesting that grid-connection issues are currently less prominent than economic and regulatory uncertainties. However, this likely reflects the early stage of EV adoption across most ERRA members rather than an absence of underlying risk. As EV penetration grows, grid capacity constraints are likely to emerge more widely, particularly in areas with ageing distribution infrastructure, and regulators would be well advised to begin proactive grid planning now rather than waiting for congestion to materialise. The “Any other” option is selected by 12 countries; in several of these cases, respondents describe either the absence of a dedicated legal framework or specific national circumstances (such as high initial costs or limited public charging), while a few explicitly state that there are no major barriers or that existing networks already provide comprehensive coverage. Compared with the 2022 study—where lack of legal basis, absence of special tariffs and administrative burdens were identified as dominant obstacles—the 2025 results indicate continuity in regulatory and administrative challenges, but add a stronger emphasis on the investment climate and targeted incentives needed to mobilise private developers.

Economic and Investment Barriers:

Lack of incentives for developers emerges as the most frequently cited barrier, reported by approximately one-third of countries (9 answers; multiple answers were allowed). This reflects investor uncertainty regarding long-term market viability, particularly in nascent markets with low EV penetration. Without clear revenue models or public support mechanisms, private operators remain reluctant to deploy charging infrastructure in areas where utilization rates may be low for several years.

Several countries explicitly noted that the **absence of financial support schemes**—such as grants, tax incentives, or subsidized connection fees—limits infrastructure roll-out to commercially viable urban locations, leaving rural areas and secondary routes underserved. This absence risks creating a charging network that reinforces geographic inequalities in EV access.

Regulatory and Legal Barriers:

Absence of special tariffs for EV charging was reported as the second most frequent answer (6 respondents). The lack of differentiated electricity tariffs that reflect off-peak availability or renewable energy surplus constrains the business case for smart charging and demand-response services. Without price signals that incentivize grid-friendly charging behavior, EV users default to charging during peak hours, exacerbating grid stress.

Some respondents – particularly Albania and Armenia – noted the **absence of a dedicated legal framework** as a fundamental constraint. In jurisdictions without e-mobility-specific legislation, charging infrastructure deployment depends on ad-hoc administrative decisions or general energy laws not designed for the multi-sectoral nature of electrified transport. This creates legal uncertainty for investors and complicates regulatory oversight.

Lack of specific provisions in spatial planning legislation was reported by 6 countries as a barrier. Municipal planning processes often fail to reserve space for public charging infrastructure or to require EV-ready installations in new buildings. Without coordination between urban planning, transport, and energy policy, charging infrastructure deployment becomes reactive and fragmented.

Administrative Burdens and Lack of Institutional Coordination:

Administrative burdens in permitting and grid connection processes were highlighted by 4 countries. Lengthy approval procedures, unclear responsibilities among different authorities, and complex technical requirements delay infrastructure deployment and increase costs. In several cases, respondents noted that grid connection fees are prohibitively high or that connection timelines extend beyond 12 months, discouraging investment.

The 2025 results also reveal weak **cross-sectoral coordination**: while some NRAs report formal cooperation with transport, telecommunications, or competition authorities, many operate in isolation. E-mobility spans energy, transport, data security, and urban planning domains—yet institutional silos persist, hindering coherent policy development.

Technical and Infrastructure Barriers:

Lack of capacity to connect to the distribution network was cited by only 2 countries, suggesting that grid-connection issues are currently less prominent than economic and

regulatory uncertainties. However, this may reflect the early stage of EV adoption in many countries: as penetration increases, grid capacity constraints are likely to emerge more widely, particularly in areas with ageing distribution infrastructure.

An interesting comment comes from the Czech Republic: the barrier is not grid capacity but rather **underutilization of existing infrastructure**. The EV charging capacity is ahead of vehicle adoption by a factor of four, leading to low asset utilization and uncertain revenue streams for operators. This highlights the need for coordinated planning that aligns infrastructure deployment with realistic EV adoption scenarios. Demand-based network tariff structures and targeted support mechanisms can also play an important role in improving the business case for CPOs, particularly in markets where utilization rates are still building up.

Emerging Priorities and Innovation Areas:

The survey's question on special sub-topics of interest (Q.6) reveals where ERRA members see the most pressing challenges and opportunities for future development. While responses vary by country context, several themes emerge consistently across jurisdictions.

Vehicle-to-Grid (V2G) and Smart Charging

Vehicle-to-Grid (V2G) and smart charging (V1G) dominate the list of priority topics. Multiple countries – including Egypt, Moldova, Ukraine, and Kyrgyzstan – expressed strong interest in understanding V1G, V2G and "V2X" (Vehicle-to-Everything) regulatory frameworks, technical requirements, and market structures. This interest reflects growing recognition that EVs can serve as distributed flexibility resources—not just as loads to be managed, but as active participants in balancing markets and grid support services.

However, the survey results confirm that V2G remains at pilot or planning stage in almost all ERRA countries, with no operational deployment at scale. Technical standardization, metering requirements, and market access rules remain unresolved in most jurisdictions.

Key priorities identified:

- Regulatory frameworks enabling V2G participation in energy and ancillary services markets
- Technical standards for communication protocols and cybersecurity
- Metering arrangements and billing systems for bidirectional energy flows
- Pilot projects demonstrating feasibility and economic benefits
- Integration of V2G with renewable energy generation and grid balancing needs

Interoperability, Roaming, and Technical Standards

Interoperability emerged as a priority topic, particularly for Egypt and several other countries concerned about fragmented charging networks. Without common technical standards and roaming agreements, EV users face multiple payment systems, incompatible charging protocols, and limited transparency on pricing and availability.

Some countries specifically highlighted the need for regulatory frameworks that enable multi-actor business models and roaming services. The 2025 survey confirms that roaming systems are

not yet implemented in several countries, constraining user convenience and market competition.

Key priorities identified:

- Open communication protocols (OCPP, ISO 15118) and standardized physical connectors
- Roaming agreements enabling cross-operator charging with single payment
- Real-time data platforms for charger availability, pricing, and technical specifications
- Regulatory requirements mandating interoperability for publicly accessible charging

Tariff Design and Rate Structures

Greece, Lithuania, and several other countries expressed interest in EV-specific tariff issues, both for regulated tariffs for the grid and not regulated price structures used by suppliers for EV charging. The survey results confirm that tariff innovation remains limited: most countries apply "no specific rates," and awareness of time-of-use (TOU) pricing, real-time pricing (RTP), or managed charging programs is increasing but practical deployment remains slow.

Key priorities identified:

- Case studies on successful tariff structures from mature EV markets
- Regulatory guidance on cost-reflective pricing that balances grid optimization with consumer affordability
- Dynamic pricing mechanisms that incentivize off-peak charging and renewable energy utilization
- Network tariff design for EV home charging and public infrastructure

Business Models and Financing Mechanisms

Nigeria identified the topic of **multiple business models**: public-private partnerships for charging networks, financing models for EV adoption (leasing, pay-as-you-go), and e-mobility as a service (electric ride-hailing, buses).

These priorities reflect the challenge of mobilizing private investment in early-stage markets where revenue certainty is low. Without innovative financing mechanisms – such as concessional loans, revenue guarantees, or green bonds – charging infrastructure deployment will remain concentrated in high-density urban areas.

Key priorities identified:

- Public-private partnership models that balance public interest with commercial viability
- Innovative financing structures (leasing, energy-as-a-service, fleet contracts)
- Role of development finance institutions and multilateral banks
- Business models for low-density areas and underserved communities

Renewable Energy Integration and Sustainability

A few countries highlighted the linkages between e-mobility and renewable energy, as well as environmental lifecycle impacts of EVs. As EV adoption grows, ensuring that charging is powered by clean electricity becomes critical to achieving climate and air quality objectives.

The environmental impact of batteries depends on both production and disposal. While EV operation generates zero tailpipe emissions, the carbon intensity of battery manufacturing and end-of-life management must be considered in a comprehensive sustainability assessment.

Key priorities identified:

- Coupling EV charging with solar generation through smart charging algorithms
- Green certificates and guarantees of origin for EV charging
- Lifecycle analysis of EV environmental benefits compared to internal combustion vehicles
- Battery recycling infrastructure and circular economy approaches

Regional and Contextual Issues

Nigeria identified regional topics: opportunities and challenges of e-mobility in Africa, rural versus urban EV adoption, and import policies with implications for local assembly and job creation. These issues reflect the specific context of developing markets where EV adoption patterns, infrastructure needs, and policy priorities may differ significantly from mature European markets.

Key priorities identified:

- Adaptation of EV policies to local climate, geography, and infrastructure conditions
- Balancing imported EVs with support for domestic assembly and manufacturing
- Strategies for extending charging infrastructure to rural and low-density areas
- Role of e-mobility in public transport decarbonization (electric buses, paratransit)

VI. CONCLUSIONS AND STRATEGIC RECOMMENDATIONS

E-mobility development across ERRA member countries is advancing, but at an uneven pace and with significant regulatory gaps. While some jurisdictions have established comprehensive frameworks and are actively deploying infrastructure, others remain at early stages with minimal legal provisions, limited support mechanisms, and unclear institutional responsibilities.

The transition to electric transportation requires coordinated action across multiple sectors and levels of government. National regulatory authorities have a critical role to play in ensuring fair market access, consumer protection, and efficient grid integration—but can only do so if equipped with clear legal mandates, adequate data, and effective coordination mechanisms.

As EV adoption accelerates in the coming years, the regulatory frameworks established today will shape market structure, investment flows, and the pace of decarbonization for decades to come. ERRA member countries have an opportunity to learn from international experience, avoid regulatory fragmentation, and build enabling frameworks that support competitive, consumer-centric, and sustainable e-mobility markets.

STRATEGIC RECOMMENDATIONS

Based on survey findings and international best practice, this report offers the following overarching recommendations for ERRA member countries:

FOR NATIONAL GOVERNMENTS AND POLICY MAKERS:

- **Establish comprehensive e-mobility legal frameworks** defining roles, responsibilities, and minimum operational standards for all actors, including charging operators, DSOs, energy suppliers, municipalities, and NRAs.
- **Develop national charging infrastructure development plans** with clear targets for 2030 and 2035, aligned with projected EV uptake and climate commitments.
- **Introduce targeted support mechanisms** such as reduced import duties, VAT exemptions, grants for public charging infrastructure, and preferential parking policies, with time-bound phase-out provisions as markets mature.
- **Clarify institutional responsibilities** across energy, transport, telecommunications, and planning authorities to reduce investor uncertainty and accelerate deployment.
- **Mandate interoperability, roaming, and open payment options** for all publicly accessible charging infrastructure to ensure consumer convenience and competitive markets.
- **Integrate e-mobility planning** with broader energy-system and urban-mobility strategies, including renewable energy targets and grid modernization plans.

FOR NATIONAL REGULATORY AUTHORITIES:

- **Define clear, enforceable fair-access obligations** for publicly accessible charging infrastructure, including brand-neutral service requirements and transparent access terms.
- **If under NRA mandate, adopt proportionate authorization or registration regimes** for EV charging operators to ensure oversight without creating unnecessary administrative barriers.

- **If smart metering is available, consider EV-tariff frameworks** to encourage smart charging including time-of-use rates, dynamic pricing options, and demand-response incentives to encourage off-peak charging and grid-friendly behavior.
- **If under NRA mandate, establish data collection and monitoring systems** for charging service prices, usage patterns, grid impacts, and market structure to support evidence-based regulation.
- **Strengthen inter-sectoral coordination** with transport, telecommunications, competition, and consumer-protection authorities to address the multi-dimensional nature of e-mobility.
- **Limit DSO involvement in charging infrastructure ownership** to temporary, justified circumstances with clear sunset clauses, prioritizing market-led deployment through competitive processes.
- **Promote pilot projects and regulatory sandboxes** on smart charging, V1G/V2G, grid support services, and innovative business models to accelerate learning and innovation.

FOR DISTRIBUTION SYSTEM OPERATORS:

- **Publish hosting-capacity maps and connection procedures** to support informed investment decisions by charging operators.
- **Ensure non-discriminatory grid access** and transparent, timely connection processes for all charging infrastructure projects.
- **Integrate EV charging demand into network development planning**, accounting for projected growth scenarios and peak-load impacts.
- **Facilitate interoperability** by providing standardized technical interfaces and non-discriminatory access to necessary grid data.

APPENDIX (1) – SUPPLEMENT TO THE SURVEY ANSWERS

2025 ERRA E-Mobility Survey: Supplement to the answers

1. A LEGAL FRAMEWORK REGULATING E-MOBILITY

Q.1.1. Is there legal framework regulating the e-mobility related issues in power in your country?

Supplement to Answers:	
AL	Currently is in progress the amendment of the Law on Power Sector, which will also include the framework for e-mobility.
AT	In general no regulations and a pure market approach
GE	The distribution network rules contain the requirements for connecting EVs to the grid.
GR	Greece has a comprehensive national framework for e-mobility, primarily defined by Laws 4710/2020 and 4936/2022, and by subsequent ministerial decisions and action plans for electrification and charging infrastructure. The legislation defines roles for users, service providers, and charging point operators, and covers grid connection, licensing, consumer protections, and integration with energy and climate targets.
LT	The Law on Alternative Fuel provides legal regulation on targets for electric vehicle, requirements for planning charging points and other. The Law on Electricity provides legal regulations on network development related to the deployment of electric vehicle charging points, requirements for distribution system operators regarding the charging points, rules for charging stations connection to the electricity network and the pricing of such connection.
LV	The Cabinet of Ministers of the Republic of Latvia Regulations "Requirements for electric vehicle charging, natural gas filling, hydrogen filling and shore-side electricity supply installations". Regulations in Latvian can be found here: LINK The Electricity Market Law from 24.04.2025. regulates charging points for electric vehicles in the distribution system (Article 20.4, Law in Latvian can be found here: LINK).
MD	The new Law on electricity, that was approved in the 2nd lectures in the Parliament (President approval pending) encourage the implementation of electromobility among consumers.
NG	The Commission is studying the market to determine whether regulation or guidelines are needed at this time. They are proposals from stakeholders for guidance of E-mobility, but the Commission is yet to determine concrete steps to development of the market
SA	SERA EV charging framework regulates EV charging activities in Saudi Arabia

1.B MARKET REGULATION OF EV CHARGING OPERATORS – Q1.2–Q1.4

Q.1.2. If yes, are the electric vehicle charging operators licensed?

20Supplement to Answers:

BA	Article 133 of the Law on Electricity of the Federation of Bosnia and Herzegovina Owners of public electric vehicle charging stations and persons operating public charging stations are not required to obtain a license for electricity supply. Electric vehicle charging service providers are required to register with the Regulatory Commission.
KG	In the fuel and energy sector, no license is required
MZ	Rules are under development.
UZ	At present, there is no dedicated legal framework in our country regulating issues related to electromobility. Regulatory documents concerning electric vehicle charging and the activities of charging station operators have not yet been adopted. No specific or detailed requirements have been established for charging station operators. Currently, they are subject to the general provisions of existing legislation, similar to those applied to other categories of electricity consumers. Thus, **regulation** is carried out within the framework of the existing general rules, without taking into account the specifics of electromobility and charging infrastructure operations.

Q.1.3. Are electric vehicle charging operators required to serve all vehicle brands?

Supplement to Answers:	
AL	There are no charging operators licensed in Albania.
AM	There is no legal background
CZ	The Czech law recognizes two types of charging stations: public and private. Operators of public charging stations are required to serve all vehicles and customers, whereas operators of private charging stations use these stations according to their needs (e.g. car salesmen, car manufacturers).
EG	No specific requirement
GE	There is no operator, but we have no restrictions on charging stations; they must serve everyone.
GR	Electric vehicle (EV) charging operators in Greece are not explicitly stated to be licensed to serve "all vehicle brands." Instead, the regulatory framework ensures that publicly accessible charging infrastructure is built to interoperability standards, which in turn facilitates compatibility with a wide range of EV models, regardless of brand.
MD	There are no such provisions in the new Law on electricity
PL	No legal requirements for servicing vehicle brands
SA	The regulation does not state that
UA	Operators can independently determine which types of electric vehicles or brands they support, depending on the technical characteristics of their charging stations.

Q.1.4. Are the charging prices regulated?

Supplement to Answers:	
AE	There is a base tariff
AL	There is no specific price for the EV chargers yet in place
EG	Prices are not yet regulated, but future tariff mechanisms are under study
GE	The charging price is not regulated.
GR	The EV Charging Infrastructure Operator (Φ.Ε.Υ.Φ.Η.Ο.) is responsible for selecting the pricing for charging services. This implies that operators have the autonomy to set their own rates.

KG	Issuing licenses, setting tariffs, etc.
LT	The Law on Alternative Fuel sets that the prices set by operators of publicly accessible charging points and mobility service providers must comply with the requirements laid down in Article 5(3) and (5) of Regulation (EU) 2023/1804.
OM	only the electric tariff is regulated. Service charge is not regulated
SA	The framework left the price for the competition, but the regulator may put a price cap
TR	In case of any need, the regulatory authority is authorized to determine floor and/or ceiling prices and to take necessary measures. These measures may be implemented on a regional or national level, and for periods not exceeding three months at a time. Based on the assessment of such effects, minimum and maximum price limits may be imposed on prices applied within the scope of charging services.
UZ	For electric vehicle charging stations, the tariffs applied are those established for wholesale consumers.

1.C DSO Ownership of Charging Infrastructure

Q.1.5. Does the market model (set by the legal/regulatory framework) allow or disallow utility (DSO) ownership of charging stations/infrastructure?

Supplement to Answers:	
AL	Not set yet.
AT	In general DSOs can not operate charging stations which are available for the public. But they can operate charging stations for their own fleets.
BA	Article 135 of the Law on Electricity of the Federation of Bosnia and Herzegovina (Restrictions for the Distribution System Operator) The distribution system operator may not own, develop, operate, or manage a charging station, except for ownership of private charging stations intended exclusively for its own use.
EG	Currently under discussion.
GE	We do not have a regulation.
GR	In general the regulatory framework allocates the responsibility for public charging point deployment and operation to private market players (Φ.Ε.Υ.Φ.Η.Ο.), while the DSO maintains its core function of managing and developing the electricity distribution network to accommodate the increasing demand from EV charging. The legal and regulatory framework in Greece generally disallows or does not envision direct ownership and operation of electric vehicle (EV) charging stations by the Distribution System Operator (DSO). By exception, the DSO may own private (not publicly available) charging stations to cover its own needs and the needs of its employees.
LT	There is only one exception when charging stations are used for their own needs.
LV	Electric vehicle charging points may be owned, held or used by the distribution system operator if the distribution system operator uses them for its own purposes (the Electricity Market Law, Article 20.4, Paragraph 1).
MD	According to art. 66, paragraph 2 of new Law on electricity that the distribution system operator shall not own, develop, manage or operate recharging points for electric vehicles, unless the distribution system operator owns private recharging points exclusively for its own use.
SA	According to the regulatory framework set by the Authority, the Electricity Company and its affiliates are prohibited from engaging in the electric vehicle charging business and ownership. However, such rule may be revised

TR	DSO can not own/operate charging stations/infrastructure. However, another legal entity owned by DSO can.
UZ	Currently, there are no restrictions for distribution network operators on installing charging stations. However, according to the legislation, distribution system operators are required to keep separate accounts for such activities, and the revenues generated from them are classified as their additional income.

1.D Fair and Non-Discriminatory Access to Charging Infrastructure

Q.1.6. Are there regulatory measures in place to ensure fair and non-discriminatory access to charging infrastructure?

Supplement to Answers:	
CZ	There is no specific regulation pertaining to the fair and non-discriminatory access to charging infrastructure except for the distinction mentioned above. Public charging stations must be open to all customers without any prejudice, while operators of private charging stations may limit the access to their infrastructure.
EG	Such measures are under development or consideration
GE	There are no specific regulations.
GR	Operators of EV Charging Infrastructure (Φ.Ε.Υ.Φ.Η.Ο.) are obliged to provide "ad hoc" charging services to non-contracted EV users with direct billing. This ensures that users are not forced to subscribe to a specific provider to access charging services. Interoperability is crucial. It is achieved through Transaction Facilitation Bodies (Φ.Δ.Σ.) or bilateral agreements between electromobility market players to allow users contracted with one electromobility service provider (Π.Υ.Η.) to charge at points operated by another Φ.Ε.Υ.Φ.Η.Ο.. The framework explicitly promotes solutions focused on the user, ensuring interoperability and barrier-free access to charging stations. Public tenders for charging infrastructure are required to incorporate physical and digital accessibility and interoperability criteria to ensure user-centric infrastructure, including for persons with disabilities.
LV	The Cabinet of Ministers of the Republic of Latvia Regulations "Requirements for electric vehicle charging, natural gas filling, hydrogen filling and shore-side electricity supply installations", point 2.7. - Non-discriminatory access may include different authentication, usage and payment conditions.
MD	According to art. 66, paragraph 1 of new Law on electricity provides that the distribution system operator shall cooperate in a non-discriminatory manner with any undertaking that owns, develops, operates or manages recharging points for electric vehicles, including with regard to granting access to the electricity distribution networks. There are no specific regulations regarding to access to charging infrastructure.

Q.2.1. Number of EVs (BEV= Battery Electric Vehicle; PHEV= Plug-in Hybrid Electric Vehicle) at the end of 2024 or last available year (please indicate the year if not 2024)?

Supplement to Answers:	
AZ	Azerbaijan has shown significant improvement in the number of electric vehicles in recent years. This data is for 2024, are detailed structure as followed: 5941 - Battery Electric Vehicle, 9749 - Plug-in hybrid vehicles.
UA	The Regulator doesn't possess such data. There is a limited public availability of such information due to the martial law restrictions

LT	Information is provided only about M1 and N1 categories vehicles. For additional information: https://sumin.lrv.lt/lt/veiklos-sritys/darnus-judumas/elektromobilumas/elektromobiliu-skaicius-lietuvoje/
GR	Approx. 52,207 EVs (22,710 BEV & 29,497 PHEV) in circulation in July 2025. More than 460,000 EVs (passenger cars and LCVs) in circulation by 2030 under the main scenario of the updated National Energy and Climate Plan (NECP).
MD	Between 2018 and June 2025, over 72,600 electric and hybrid vehicles were registered, of which: - 7,666 units electric vehicles - 64,939 units hybrid vehicle segment (including plug-in hybrid) During the first semester of 2025, 13,100 electric and hybrid vehicles were registered, of which: - 1,555 units electric vehicles - 11,545 units hybrid vehicle segment (including plug-in hybrid) Thus, at the end of 2024 - 61,055 electric and hybrid vehicles were registered, of which 6,111 electric vehicles 53,394 and hybrids vehicles
OM	Numbers are not accurate as there was a technical issue with vehicle registration
AT	Figure by the end of 2024 E-Vehicles only. Plug-in not included.

Q.2.2. Number of electric charging points in publicly accessible charging stations, at the end of 2024 or last available year (please indicate the year if not 2024)?

Supplement to Answers:	
MK	Usually, public charging points are DC but home charging points are AC.
AL	There is not defined if they are publicly accessible or not
UA	The Regulator doesn't possess such data. There is a limited public availability of such information due to the martial law restrictions
LT	The information is provided about public and partly public charging points. For more information: https://ev.lakd.lt/
GE	In July 2025, there were 322 grid-connected charging stations across the country
GR	9,062 of which 1,121 are listed at RAAEY public price comparison tool (https://chargingcost.gr/)
LV	The number of charging points was 1,373 in 2023

Q.2.3. Responsibilities for development of charging infrastructures?

Supplement to Answers:	
AM	There is no legal background
AL	As the legislation framework is missing, there is no defined role
KG	No data available
UA	In Ukraine, responsibility for developing electric vehicle (EV) charging infrastructure is shared among several parties, as the market is still emerging. According to Law No. 2956-IX (24.02.2023), local authorities can support infrastructure development, including planning and allocating land for charging stations. Residential communities, including developers, are encouraged to install chargers in new housing complexes, though it is not mandatory. Retailers and shopping centers may be required to provide charging stations in parking areas according to local regulations or initiatives (for example, some cities recommend a certain number of chargers per parking spaces). Local electricity distribution companies (DSOs) are responsible for the technical connection of charging stations to the grid but are not responsible for installing or owning them. Private charging station operators and investors also play a key role,

	developing infrastructure commercially based on market demand. Currently, there are no nationwide requirements for the ratio of chargers to parking spaces, but such rules may be set by local authorities.
LT	Also, Ministry of Transport and Communications
GE	It is not determined.
GR	Energy service companies and private operators. See https://www.raaey.gr/energeia/wp-content/uploads/2024/06/National-Report-2021.pdf (page 65.) for more information.
SA	No dedicated entity responsible for infrastructure development of e-mobility.
CZ	The Ministry of Industry and Trade, and the Ministry of Transportation are responsible for establishing of legal framework necessary for development of charging infrastructure. Otherwise, the law does not explicitly state which entity is responsible for the development of the charging infrastructure.
LV	At the beginning of 2018, the Road Traffic Safety Directorate had an obligation to develop the charging infrastructure on the TEN-T road network for public usage. In 2022, the distribution system operator - Sadales tīkls launched a project for the construction or reconstruction of infrastructure, i.e. the power grid (including replacement or modernization of existing system elements) to connect the charging points.
MD	No such provisions in national law are described.
OM	Ministry of Transport, Communications and Information Technology is coordinating the development with market operators
AT	In general, completely open.
TR	Essentially, Charging Network Operators (CNO) are responsible for development of charging infrastructure. At minimum they need to establish a charging network consisting of charging stations in at least five different districts with at least 50 charging within 6 months from the date they get a license.

Q.2.3.2. What is the role of the energy supplier?

Supplement to Answers:	
OM	Only suppling the charging points as any other metering point

Q.2.3.3. Who is responsible for the roll-out of charging stations?

Supplement to Answers:	
BA	Not stipulated by law.
GE	It is not determined.
GR	The overarching approach is market-based for the broad public roll-out, relying on private companies (Φ.Ε.Υ.Φ.Η.Ο.) to invest in and operate charging infrastructure. Municipalities (Ο.Τ.Α. α' βαθμού) are tasked with developing Electric Vehicle Charging Plans (Σ.Φ.Η.Ο.), which involve the spatial planning of publicly accessible charging points within their administrative boundaries. These plans identify locations in public parking areas, roadside spaces, and new sites, and also include charging points for municipal transport (e.g., buses), tourist buses, and supply vehicles. They are obligated to initiate tenders for installing publicly accessible charging points in their areas based on the approved Σ.Φ.Η.Ο.. DSOs are responsible for cooperating in a non-discriminatory manner with all charging point owners and operators, particularly regarding connection to the distribution network. The Ministry of

	Environment and Energy (ΥΠΕΝ) and the Ministry of Infrastructure and Transport (ΥΜΕ) are central to setting the national strategy, developing the legislative and regulatory framework, and providing incentives for electromobility. The Regulatory Authority for Energy (ΡΑΑΕΥ) also has access to certain operational data from charging points and contributes to defining cost recovery procedures related to network connections.
TR	Charging Network Operators (CNO) are responsible for the roll-out of charging stations. In this sense, it market-based. However, all CNO's are licensed by EPDK and they need to comply with rules and regulations including reaching some minimum charging infrastructure requirements in a specific time period.

Q.2.4. Projected number of EVs (SEPARATELY BEV, PHEV, HDEV cars, busses, lorries) in 2030 and 2035?

Supplement to Answers:	
UZ	According to BSG, the electric vehicle market in Uzbekistan is projected to grow by 6 percent annually until 2030, and by that year, every third car is expected to be electric.
UA	The Regulator doesn't possess such data.
LT	The main objectives and measures for e-mobility development have been established: https://e-seimas.lrs.lt/portal/legalAct/lt/TAD/e80e6750fb7b11ecbfe9c72e552dd5bd?jfwid=1t1okey1u Also, the Law on Alternative Fuels sets targets for EVs that have been registered in Lithuania for the first time: by 31 December 2030, the number of M1 category electric vehicles must account for no less than 40 percent of annual purchase transactions, while the number of N1 category electric vehicles must account for 80 percent.
HU	No official target (following EU regulation)
GR	2035- Growth expected to accelerate further, but no exact target set
MD	The share of electric and hybrid cars in total cars - 15 % according to draft GD on the approval of the 2030 Mobility Strategy
AE	10% Dubai's total fleet

Q.2.5. Is there any national action plan on the roll-out of charging infrastructure?

Supplement to Answers:	
MZ	The Energy Transition Strategy 2024-2050 sets a target of 5% of all transportation to be multimodal electric mobility by 2035.
LT	Also, every municipality has its own action plan: https://sumin.lrv.lt/lt/veiklos-sritys/darnus-judumas/elektromobilumas/savivaldybese-iki-2030-m-numatomos-irengti-viesosios-elektromobiliu-ikrovimo-infrastrukturos-planai/
GR	Greece's National Energy and Climate Plan (ΕΣΕΚ/NECP) sets some charging infrastructure targets, while specific sectoral action plans, which are developed by local authorities, include detailed charging infrastructure targets and possible support mechanisms.
LV	The National Energy and Climate Plan and The Latvian Alternative Fuels Infrastructure Development Strategy.

Q.2.6. Is there any support (purchase subsidy, tax advantage, free parking, etc.) for EVs and charging infrastructure?

Supplement to Answers:	
MZ	There is a discussion about tax exemption, ongoing.
AM	There is no support
UA	As of 2025, Ukraine offers a number of tax incentives for electric vehicle (EV) owners, including preferential customs clearance: exemption from VAT and import duty, with only an excise tax of 1 euro per 1 kWh of battery capacity. For charging infrastructure, there are tax benefits on imported equipment as well as the option for accelerated depreciation of new charging stations as fixed assets.
GE	There is a 50% discount for connecting the EV charger to the grid (comparing to customer).
GR	Subsidies for scrappage of polluting vehicles, incentives for installation of home chargers and points at businesses and hotels
SA	No, there is currently no direct support.
CZ	Subsidy for installation of a charging station at applicant's house/apartment block.
LV	Construction or reconstruction of the infrastructure of the electricity distribution system operator, i.e. the electrical grid (including replacement or modernization of existing system elements) with EU funding support for charging infrastructure.
PL	Driving in bus lanes.
MD	According to art. 103 paragraph (1) point 24 of the Fiscal Code of the Republic of Moldova, electric vehicles/cars (100% electric) are currently exempt from VAT without the right to deduct, but starting with 01.01.2026 this provision will be excluded.
OM	Customs tax and Vat exemption on EVs waiver of car registration fees
TR	There is a support programme for essential AC & DC charging infrastructure.
AE	None. There used to be free charging and parking until 2022.

Q.2.7. What types of charging infrastructure are prioritized in your country's strategy?

Supplement to Answers:	
LT	The Ministry of Transport and Communications is responsible for public infrastructure and focuses on publicly accessible fast-charging stations along highways. The Ministry of Energy is responsible for private (household) infrastructure and focuses on home charging solutions.
GE	In the strategy, charging infrastructure is not mentioned specifically; however, preference is given to electric vehicles and the development of electric vehicle infrastructure.
TR	Publicly accessible fast-charging stations along highways + publicly accessible charging stations in urban areas.

Q.2.9. Are there requirements for new residential or commercial buildings to have EV charging points?

Supplement to Answers:	
CZ	There is an obligation to build at least one charging point for non residential buildings (e.g. restaurants, administrative buildings, shopping malls etc.) if the residential building has more than 20 parking spots.

LV	Starting from September 24, 2022, the regulations in force stipulate that the construction, renovation or reconstruction of a non-residential building with more than ten parking spaces must include at least one electric vehicle charging point and the necessary electrical pre-wiring infrastructure for at least every fifth parking space. In the case of constructing, renovating, or reconstructing a residential building with more than ten parking spaces, the construction project shall include the necessary electrical pre-wiring infrastructure for each parking space.
OM	New code to be finalized: Energy Efficiency and Sustainability code as part of Oman's new building code. Buildings must include infrastructure for EV charging

Q.3.1. Are the V1G and V2G possibilities and the conditions of these additional grid services analysed and discovered in your national electricity system?

Supplement to Answers:	
GR	National discussions, pilot projects and studies on V1G and V2G are ongoing but not widely implemented yet.
LV	Latvian system operators do not have bidirectional charging points at their disposal. It is planned to implement into the Electricity Market Law an obligation for the DSO, upon request of the operator of the EV charging point, to equip an EV charging point connected to the distribution system with a smart charging function and a bidirectional charging function.
PL	A study was conducted on the implementation of V2G services -currently, such services are not implemented in Poland.

Q.3.2. Are there any elements of the V2G possibilities in operation?

Supplement to Answers:	
PL	A study was conducted on the implementation of Vehicle to Grid services - currently, such services are not implemented in Poland.

Q.3.3. Are there separate meters for the EV home charging?

Supplement to Answers:	
UA	Separate meters for home EV charging are not installed. However, for EV charging stations in apartment buildings, it is possible to install a separate commercial electricity meter at the initiative of the building owner or developer.

Q.3.4. Are there any incentives or mechanisms in place to encourage off-peak EV charging?

Other answers:	
KG	There is a possibility of switching to a differentiated tariff for the entire volume of consumption.
LT	There are no specific incentives or mechanisms to encourage off peak EV charging, but there are transmission service charges for all consumers, with a four time zone tariff.
MD	There are incentives or mechanisms in place to encourage off-peak EV charging, there are differentiated electricity tariffs depending on the time of day. Thus, there are two consumption intervals: one with a reduced price (between 23:00 and 7:00) and another with an increased price (between 7:00 and 23:00). This system aims to encourage consumers to use electricity outside peak hours, contributing to a more balanced distribution of the network load.

Q.3.5. Are there existing regulatory measures to integrate renewable energy with EV charging infrastructure?

Other answers:	
LV	National Energy and Climate Plan (NECP) sets ambitious goals for the growth of renewable energy and the expansion of the use of electric vehicles (EVs). The plan includes: - using green energy in electric vehicle charging stations, in particular integrating solar power (PV) systems; - expanding the network of electric vehicle charging points to promote the use of renewable energy resources in charging stations, similar to what has been done in several European countries. Transport Energy Law is in the development process and includes principles that promote the use of renewable energy at all sector levels, including transport.
MD	No regulatory measures to integrate renewable energy with EV charging infrastructure, but national legislation encourages the use of renewable energy sources, including among prosumers.
TR	Yes, EV charging is linked with renewable energy sources (e.g., solar, wind) through a guarantee of origin (YEK-G) system.

Q.3.6. What measures are in place to prevent grid congestion due to EV charging?

Other answers:	
UA	Business entities connected to the electricity network have an allocated capacity according to their connection agreement. The DSO is obliged to ensure the possibility of using this capacity at any time for each consumer facility in accordance with the terms of the agreement. In turn, the DSO must ensure sufficient throughput of the distribution system for all consumers, including through the reconstruction and technical upgrading of the electrical networks.
UZ	This issue is currently under discussion.

Q.4.1. What are the present regulatory roles regarding e-mobility?

Other answers:	
AE	No role for the RSB
AL	As the legislation framework is missing, there is no defined role of the regulator in EV related issues.
AM	There is no legal background
AT	E-Control is operating and offering an online-tool for availablity and comparison of charging stations. The main motivation is to provide more transparency.
AZ	The regulator has the authority to issue commissioning certificates for electric charging stations connected to the grid above 200 kW.
CZ	There are no responsibilites of NRA pertaining to e-mobility.
GE	As the independent energy regulator, GNERC plays a central role in the technical and regulatory aspects of EV charging infrastructure. Under the Law on Energy and Water Supply, GNERC is responsible for setting the connection conditions for EV chargers, including the approval of differentiated, incentivized connection fees
GR	Supervision of E-mobility Market Players

LT	The Council do not have specific roles regarding e-mobility. The Council assesses the potential contribution of bidirectional charging to cost reduction and the increased integration of electricity from renewable energy sources in the power system, and publishes the results of this assessment on its website.
LV	In Latvia, electric vehicle charging point operators are not authorized in the same way as electricity suppliers or other regulated services. However, charging operators must comply with specific laws and regulations related to the use of electricity and electric vehicle charging infrastructure.
MD	At the moment there are no such obligations for NRA related to electromobility
SA	Light regulation for the activity; the SEC is responsible for technical specs to connect to the grid, EV charging operators does not required to have license to operate EV charging, but according to the framework they must obtain approval from the distributer (pe-approval from SEC) for grid connection
TR	Licensing charging network operators which can own and operate several charging stations or submit certificate to third party charging point operators. The regulator have the mandate to set price floor or price cap up to three months in case of market failures.
UA	Not in place

Supplement to Answers:	
EG	Under discussion.
MZ	The rules are under development, but the principles are the market ones.
OM	Additional regulation for charging point operators and licensing requirements- under development by Ministry of Transport, Communications and Information Technology.

Q.4.2. Which EV-specific rate/tariff design elements and/or smart charging are under consideration (or implementation) in your country?

Other answers:	
KG	Tariffs for charging stations have been set.

Supplement to Answers:	
CZ	A special TOU rate for owners of EVs exists in the Czech Republic, the so called "D27d" rate. It operates in off-peak hours between 6 PM and 8 AM.
OM	All public chargers under cost reflective tariff. All private chargers based on cutomer category.
PL	EV charging services are a free market service and are not a regulated activity.
SA	SERA framework stated that the distribution and retail service provider is committed to applying the approved tariff for supplying charging stations or equipment, in accordance with the provisions of the Electric Service Delivery Guide.
UA	It is applicable not only for EV owners.

Q.4.3. Does your regulatory authority co-operate with other sectoral regulatory authorities with regard to e-mobility?

Supplement to Answers:	
AE	No role for the RSB

AZ	Subgroup on Stimulating the Circulation of Ecologically Clean and Safe Vehicles and Improving Their Infrastructure within the Working Groups of the Business Environment and International Ratings Commission of the Republic of Azerbaijan.
GR	RAAEY, along with the Directorate of Technical Control and Vehicle Service Facilities of the Ministry of Infrastructure and Transport, and the Independent E-mobility Department of the Ministry of Environment and Energy, has access to aggregated or operational data from charging points. This data includes the number of EVs served, charging operations per charging point type, average charging time, average energy consumption per charge, and energy consumed specifically for individual charges and charges via e-mobility service providers. These data are commercial data of Electric Vehicle Charging Infrastructure Operators (FEYFIOs) and are collected and sent to the Electronic Register of E-mobility Market Infrastructure and Players (MYFAH) annually. The Independent E-mobility Department of the Ministry of Environment and Energy is responsible for the supervision of e-mobility market players (FEYFIO) in cooperation with RAE, for matters related to the energy market, primarily through the MYFAH. This indicates a collaborative oversight role.
KG	With all interested authorities
LT	Yes, our regulatory authority cooperates with other sectoral regulatory authorities regarding e-mobility, primarily in matters related to legislation and regulatory frameworks.
LV	Cooperation for development of legal drafts within the competence of the regulator.
TR	According to Electricity Market Law, EPDK has to prepare a projection on 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 mission 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.

Q.4.4. Does the regulatory authority monitor and enforce pricing transparency in EV charging services?

Supplement to Answers:	
AE	No role for the RSB
MZ	Discussion ongoing.
OM	Setting upper service charge limits is under discussion

Q.4.5. Is there a mechanism for customer protection regarding EV charging services (e.g., price caps, service quality standards)?

Supplement to Answers:	
AL	They are currently being treated as any other category.
EG	Not yet established
GR	There are no price caps but there are service quality standards.

Q.4.6. Data collection on pricing: is your Authority charged to monitor and/or collect data on charging service prices in your country?

Supplement to Answers:	
GR	There are no explicit by law competences in monitoring the charging service prices but it falls under the general competences of energy market monitoring of the authority.
SA	No as per the current framework but is now underway regarding the prices.

Q.5. Barriers to the development of EV infrastructure

Supplement to Answers:	
AL	Lack of legislative framework in place yet.
AM	There is no legal background
AT	From my point of view is the main barrier the uncertainty regarding the future developments and future policies. European as well as national policies change from time to time - roll-out-plans, protectionism of European manufactures, supporting schemes, focus on other alternative fuels, etc.
AZ	No barriers
CZ	The development of EV infrastructure is actually ahead the sales of EV vehicles in the Czech Republic - the input power of the EV infrastructure is ahead of the EV sales by 4 times. This leads to under-utilization of the EV infrastructure. The only issue related to the EV infrastructure is a complicated regulatory framework which could be further streamlined.
GE	The limited availability of public charging infrastructure, particularly fast chargers, which are critical for enabling longer-distance travel and reducing range anxiety.
GR	High initial costs for infrastructure, especially in remote/island/low-traffic areas
LV	Latvia has a comprehensive network of EV charging stations, which allows EV to drive all over the country. Additional EV infrastructure is developed based on business needs.
OM	network connection charges especially when new connection or upgrades are required
PL	This is not a regulated activity; the Office does not have full knowledge
SA	No clear barriers
TR	Lack of capacity to connect to distribution network is an essential barrier and we try to alleviate its effect through regulatory measures.

Q.6. Is there any special sub-topic within e-mobility that would be of interest to you?

Supplement to Answers:	
AL	As for the moment there is no regulation in place for e-mobility, any sub-topic would be more than welcome for us.
EG	• Regulatory framework for V2G • Urban planning • Interoperability • Investment models
GR	Case studies on EV Market models and Charging Tariffs models (both regulated tariffs for the grid but also not regulated tariff structures (ToU, Dynamic etc) used by suppliers for EV charging).
KG	V1G (smart charging)
LT	• The role of regulators and experiences in other countries; • The impact of regulatory measures on market development and consumer choices; • E-mobility synergy with the electricity balancing market and its benefits
MD	More technical information related to the V2G concept. Qualification by the transmission system operator of V1G and V2G charging points for the provision of system services.
NG	1. Charging Infrastructure & Grid Integration 1.1. Deployment of fast-charging networks 1.2. Smart charging and Vehicle-to-Grid (V2G) solutions

	1.3. Grid impact of mass EV adoption 2. Regulation & Policy 2.1. Standards for charging stations and interoperability 2.2. Tariff design for EV charging 2.3. Incentives and subsidy frameworks 3. Business Models & Financing 3.1. Public-private partnerships for charging networks 3.2. Financing models for EV adoption (leasing, pay-as-you-go) 3.3. E-mobility as a service (e.g., electric ride-hailing, buses) 4. Sustainability & Social Impact 4.1. Linkages with renewable energy 4.2. Environmental benefits vs. lifecycle emissions of Evs 4.3. Accessibility and affordability of e-mobility 5. Regional/Contextual Issues 5.1. Opportunities and challenges of e-mobility in Africa/Nigeria 5.2. Rural vs. urban EV adoption 5.3. Import policies, local assembly, and job creation
OM	Business models & markets, Vehicle-to-Grid (V2G), renewable energy integration
SA	EV in general
TR	Comparison of EV charging tariffs among member states
UA	Regulation and Development of Vehicle-to-Grid (V2G) and Vehicle-to-Everything (V2X). In Ukraine, where the power grid requires modernization and the share of renewable energy is increasing, V2G could become a key tool for ensuring the stability of the energy system.

APPENDIX (2) – QUESTIONNAIRE

2025 ERRA Survey: E-mobility status and the related regulatory issues

1. Legal/ regulatory framework of e-mobility

The European Union has already regulated several E-mobility related issues, but still there is possibility to introduce different national market models. The national legislation should describe the role of EV users, service providers and charging point operators. The national legal framework can also describe the e-mobility related role of regulators (e.g. licensing [if any], EV rate design [including electricity network charge for EV charging infrastructure], etc.).

1.1. Is there legal framework regulating the e-mobility related issues in power in your country?

- Yes, it is in power
- No, it does not exist
- It is under preparation
- It is planned to be prepared in the near future
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

1.2. If yes, are the electric vehicle charging operators licensed?

- No
- Yes, by the Energy Market Regulatory Authority
- Yes, by another authority
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

1.3. Are electric vehicle charging operators required to serve all vehicle brands?

- Yes, they are required to serve all vehicle brands
- No, they may serve only specific brands
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

1.4. Are the charging prices regulated?

- No
- Yes, by the energy regulatory authority (please specify which powers has the regulator)
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

1.5. Does the market model (set by the legal/regulatory framework) allow or disallow utility (DSO) ownership of charging stations/infrastructure?

- Yes, the DSO can own charging stations/ infrastructure
- Yes, the DSO can own charging stations/ infrastructure, but there are rules on phase-out of DSO activity as soon as the market takes over this role
- Yes, the DSO can own charging stations/ infrastructure, but only after that Regulator has verified there is no market player interested to do it on a competitive basis

- No, the DSO cannot own charging stations/infrastructure
- The DSO can install/construct charging stations/infrastructure, but cannot own it
- It is planned to prepare such rules in the near future
- This is not a critical question today
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

1.6. Are there regulatory measures in place to ensure fair and non-discriminatory access to charging infrastructure?

- Yes, regulations ensure fair access to charging stations for all market participants
- No, there are no specific regulations; charging operators may limit the access to their infrastructures
- Such measures are under development or consideration
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

2. Current and planned future roll-out of EV charging infrastructure

Sufficient accessible charging infrastructure is essential to enable an accelerated uptake of electric cars. Whilst the early EV market is likely to be dominated by buyers with off-street parking that can charge at home; electric car drivers want to be reassured they can recharge their car at other times at publicly accessible locations. This includes fast charging alongside highways for trips beyond the range of their car and publicly available charging in other locations largely in urban areas. The development and strategies of EV and the charging infrastructure are different in all countries – in the EU as well as in all other countries. The aim of the survey is to summarize the facts and figures in the participating countries.

2.1. Number of EVs (BEV= Battery Electric Vehicle; PHEV= Plug-in Hybrid Electric Vehicle) at the end of 2024 or last available year (please indicate the year if not 2024)?

Add additional comments/ explanation if useful and/ or necessary.

2.2. Number of electric charging points in publicly accessible charging stations, at the end of 2024 or last available year (please indicate the year if not 2024)?

Add additional comments/ explanation if useful and/ or necessary.

Add additional comments/ explanation if useful and/ or necessary; in particular, if you have an estimate of private charging points, please use this box to provide it separately:

2.3. Responsibilities for development of charging infrastructures? (more than one possible answer can be selected) *(Multiple answers are allowed)*

- Local authorities
- Residential Communities (constructor, operator)
- Retailers/shopping malls obliged to equip parking lots (e.g.: x charging points/100 parking space)
- Local electricity distribution companies
- Other, please specify below

2.3.1. What is the role of the DSO? *(Multiple answers are allowed)*

- Connecting charging infrastructure to the grid (as any other metering point)
- Roll-out of charging stations
- Roll-out of charging stations only if market fails
- Other, please specify below

2.3.2. What is the role of the energy supplier?

- There is a mandatory role for suppliers (a part providing supply to public charging infrastructure, as any other metering point)
- No specific role, everything is left to the market

2.3.3. Who is responsible for the roll-out of charging stations? *(Multiple answers are allowed)*

- DSOs
- Energy suppliers
- Specific service companies
- Communities and/or municipalities
- Other authorities
- It is completely markets-based
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

2.4. Projected number of EVs (SEPARATELY BEV, PHEV, HDEV cars, busses, lorries) in 2030 and 2035?

- 2030*
- 2035*

Add additional comments/ explanation if useful and/ or necessary.

2.5. Is there any national action plan on the roll-out of charging infrastructure?

- There is no approved national action plan on the roll-out of charging infrastructure
- There is a plan preparing national action plan on the roll-out of charging infrastructure in near future
- National action plan on the roll-out of charging infrastructure exists

Add additional comments/ explanation if useful and/ or necessary.

2.6. Is there any support (purchase subsidy, tax advantage, free parking, etc.) for EVs and charging infrastructure? *(Multiple answers are allowed)*

- Purchase subsidy for EV buyers
- Tax advantage of EV owners
- Free public parking for EV owners (local issue – difficult to assess!)
- Toll discounts
- Euro vignette discounts
- State financing of essential AC & DC charging infrastructure
- Tax advantage related to cost of infrastructure installation
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

2.7. What types of charging infrastructure are prioritized in your country's strategy?

- Publicly accessible fast-charging stations along highways
- Publicly accessible charging stations in urban areas

- Workplace charging solutions
- Home charging solutions
- Strategy is to have several modes contemporarily developed
- There is no clear strategy/priority
- Other, please specify below

2.8. What is the main funding source for publicly accessible charging infrastructure deployment? *(Multiple answers are allowed)*

- Government subsidies and grants
- Private investments
- Public-private partnerships
- Utility-driven investments
- Other, please specify below

2.9. Are there requirements for new residential or commercial buildings to have EV charging points?

- Yes, mandatory installation in new buildings
- Yes, mandatory pre-wiring for future EV charging installation
- No, but incentives exist for voluntary installation
- No specific requirements exist
- Other, please specify below

2.10. Are there multiple EV charging station market players in your country? If yes, are they operating by themselves or under a roaming system?

- Yes, but no roaming
- Yes, with roaming
- Yes, and roaming system being developed
- No

3. Electricity System effects of e-mobility

According to several studies, EVs will likely reshape the load curve, with an increase in evening peak loads being the most prominent, a direct result of EV drivers charging their cars when returning home from work. If unaddressed (not incentivized other way), EV charging could strain local distribution networks. However, EVs also represent an opportunity for grid management; because EV load is flexible, if charging can be moved to times of low demand or abundant renewable generation, EVs represent a significant opportunity for increased grid flexibility (V1G or "smart charging"). EVs could also provide additional grid services through Vehicle to Grid (V2G) services, which would leverage the onboard battery to discharge electricity back to the grid when needed or provide ancillary services like voltage regulation.

3.1. Are the V1G and V2G possibilities and the conditions of these additional grid services analysed and discovered in your national electricity system?

- Yes, it is already analysed and the conditions and potential effects discovered
- No, it is not yet a current question at this point of time
- Pilot Projects underway to discover the conditions, possibilities and possible effects
- It is under analysis
- It is planned to be analysed in the near future

Add additional comments/ explanation if useful and/ or necessary.

3.2. Are there any elements of the V2G possibilities in operation?

- Yes, the following elements of the V2G possibilities is/ are in operation. Please describe below
- No, it is not in practice
- The following elements of the V2G possibilities is/are in Pilot project phase. Please describe below
- It is planned to be put into practice in the near future

Add additional comments/ explanation if useful and/ or necessary.

3.3. Are there separate meters for the EV home charging?

- Yes, the separate meters are necessary by legal rules
- No, it is not required and not in practice
- Separate meter is necessary enjoying the benefit of Time of Use (TOU) Rates, or Real-Time Pricing (RTP)
- Submetering possibilities are in place (e.g. by energy serving providers)
- It is planned to regulate this question in the near future
- Other, please specify below

3.4. Are there any incentives or mechanisms in place to encourage off-peak EV charging?

- Yes, lower electricity rates during off-peak hours
- Yes, higher capacity limits during off-peak hours (at the same tariff)
- Yes, financial incentives for using smart charging systems
- No, but discussions are ongoing
- No, there are no incentives in place
- Other, please specify below

3.5. Are there existing regulatory measures to integrate renewable energy with EV charging infrastructure?

- Yes, EV charging is linked with renewable energy sources (e.g., solar, wind)
- No, but discussions are ongoing
- No, EV charging is treated separately from renewable energy integration
- Other, please specify below

3.6. What measures are in place to prevent grid congestion due to EV charging?

- Load management policies (e.g., dynamic pricing)
- Mandatory smart charging infrastructure (i.e. wallbox with remote connectivity requirements)
- Grid reinforcement projects specifically driven by e-mobility developments in DSO plans
- No specific measures in place
- Other, please specify below

4. Role of the National Regulatory Authority regarding e-mobility

Rate design is one way to minimize any unintentional impacts to the grid and instead maximize benefits associated with this flexible new load, including through implementing time of use (TOU) rates and dynamic real time pricing (RTP). Through managed charging, sometimes called smart charging, negative impacts could be further minimized, and EVs could act as grid assets by serving as a demand response resource. A common approach to avoid negative grid impacts

and equitably allocate costs for supporting EVs is through rate design. The two main principles of EV-specific rate design are typically that: - Rate design should be utilized to increase efficient usage of existing assets rather than undergoing expensive distribution system upgrades to serve EVs. - Bill increases due to EV infrastructure upgrades should be kept to a minimum for customers who do not own EVs. The E-mobility is mostly transportation issue. Through the installation, the connection to the grid and the operation of the charging infrastructure, this infrastructure will be part of the electricity system; this is why some elements of the E-mobility is connected to the energy regulators' responsibility. The co-ordination of EV charging strategies through digital technologies (so-called "smart charging") will be required to take full advantage of the opportunity of V1G and V2G services. This interdisciplinary attitude of E-mobility could necessitate regulatory cooperation on different issues (e.g.: transportation, telecommunication, data security).

4.1. What are the present regulatory roles regarding e-mobility? *(Multiple answers are allowed)*

- Licensing charging point operators
- Licensing mobility service providers
- Registering charging point operators
- Registering mobility service providers
- Setting special final prices for EV users charging their cars at publicly available recharge stations
- Setting special network tariff for EV users charging their cars at home
- Setting special network tariff for EV charging stations
- It is planned to have new e-mobility related regulatory roles. Please describe below
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

4.2. Which EV-specific rate/tariff design elements and/or smart charging are under consideration (or implementation) in your country?

- Time of Use (TOU) Rates
- Real-Time Pricing (RTP)
- Managed/ Smart charging (control when charging occurs, similar to traditional demand response programs)
- Time of Use (TOU) Network Tariff
- No specific rates
- It is planned to have new EV-specific rate/ tariff design. Please describe below
- Other, please specify below

Add additional comments/ explanation if useful and/ or necessary.

4.3. Does your regulatory authority co-operate with other sectoral regulatory authorities with regard to e-mobility?

- Yes, with regulatory authority of transportation
- Yes, with regulatory authority of telecommunication
- Yes, with the authority for competition
- Yes, with other authority responsible for, please specify below
- No, there is no co-operation (even informal)
- Please, briefly describe the format/ topics of cooperation if any (joint working groups, cooperation for development of legal drafts on regulatory issues, etc.)

4.4. Does the regulatory authority monitor and enforce pricing transparency in EV charging services?

- Yes, pricing transparency is mandated and enforced
- Yes, but enforcement mechanisms are weak
- No, pricing is entirely market-driven
- Other, please specify below

4.5. Is there a mechanism for customer protection regarding EV charging services (e.g., price caps, service quality standards)?

- Yes, customer protection measures exist
- No, EV charging is treated as a market-based service
- Other, please specify below

4.6 Data collection on pricing: is your Authority charged to monitor and/or collect data on charging service prices in your country?

- Yes, the Regulators has the duty to monitor the prices of EV charging services and collects data
- Yes, the Regulators has the duty to monitor the prices of EV charging services but data collection is managed by another body (for instance price observatory)
- No, the Regulators has no mandate about monitoring the prices of EV charging services and does not collect data
- Other, please specify below

5. Barriers to the development of EV infrastructure *(Multiple answers are allowed)*

- Lack of capacity to connect to distribution network
- Lack of regulatory incentives to connect by DSOs
- Lack of incentives for developers
- Lack of special tariffs
- Lack of special provision in spatial planning (or similar) law
- Administrative burdens
- Any other

6. Are there any studies on the environmental impact of EV battery production and/or disposal in your country?

- Yes, research is ongoing (specify: on battery production; on battery disposal; on both)
- No, but it is planned for the future
- No studies have been conducted
- Other, please specify below