



---

**Economic Commission for Europe****Inland Transport Committee****Working Party on Transport Statistics****Seventy-fifth session**

Geneva, 24–26 April 2024

Item 4 of the provisional agenda

**Electric vehicle charging infrastructure data collection****Electric vehicle charging infrastructure data collection****Note by the secretariat***Summary*

This document outlines the progress and challenges in electric vehicle charging infrastructure data collection across member States of the Economic Commission for Europe. It highlights the need for standardized data collection methods and summarizes insights from the recent Roundtable on Electric Vehicle Charging Infrastructure Data Collection.

**I. Background**

1. Transport is responsible for 22 per cent of all energy-related greenhouse gas emissions. Consequently, decarbonizing this sector is vital for meeting the Paris Agreement's objectives and limit global temperature rises to 1.5°C. Electrifying vehicle fleets and shifting to less polluting modes of transport are key strategies for aligning the sector with a climate-neutral future and achieving the Sustainable Development Goals.

2. Data collected from the Common Questionnaire shows encouraging trends. In 2022, new registrations of electric passenger cars accounted for eight per cent of total new passenger car registrations in 34 UNECE countries with available data, up from six per cent in 2021. Countries across the ECE region are expected to make even stronger progress towards vehicle electrification in the coming years. Most member States have made pledges and commitments to transitioning to zero tailpipe emissions. However, range anxiety, due to the scarcity of publicly accessible chargers and the speed of these chargers, remains a potential obstacle, particularly for ad-hoc or occasional journeys.

3. This concern stems from the perceived scarcity of publicly accessible and fast-charging facilities. Understanding how countries are progressing in the provision of public charging infrastructure is of public policy interest. High-quality official statistics in this area can significantly enhance this understanding, and standardized definitions and metrics are imperative for meaningful international comparisons.

4. The main international data collection is conducted by the European Alternative Fuels Observatory (EAFO), under the European Commission Directorate-General for Mobility (DG-MOVE). Some private sector data are also available in many countries. It is believed that better coordination in definitions and methodology would benefit all statistics producers and users.

5. In December 2022, the UNECE, in collaboration with Eurostat and the International Transport Forum, initiated a survey among its member States to gather information on existing statistics related to electric vehicle (EV) charging infrastructure, including methodologies and definitions (ECE/TRANS/WP.6/2023/5). An encouraging 66 per cent of surveyed countries indicated that they either produce such data or plan to do so. Building on this positive response, a more comprehensive questionnaire was distributed in June 2023 (see annex). This pilot questionnaire, as determined during the previous session (ECE/TRANS/WP.6/185), requested countries to provide specific data on their charging infrastructure, categorised according to the European Union Alternative Fuel Infrastructure Regulation (AFIR).<sup>1</sup> It is important to note that the AFIR regulation uses the term “recharging” instead of “charging”. Since this regulation’s categorisation has been used as the basis for charging infrastructure data categorisation, the term “recharging” will be used in the Common Questionnaire.

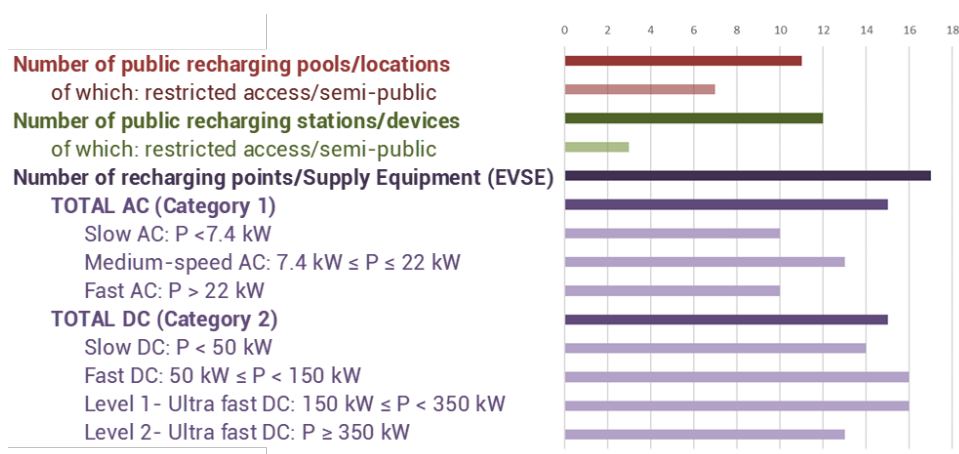
6. Preliminary findings from the pilot questionnaire were presented by the secretariat at the Roundtable on Electric Vehicle Charging Infrastructure Data Collection, conducted virtually on 9 November 2023. The subsequent sections of this document present the questionnaire findings and summarise key points from the roundtable.

## II. Key findings from the questionnaire

7. As of November 2023, the secretariat received responses from 31 countries, with 21 providing the requested data. The remaining countries either do not currently collect such data or have indicated that the responsibility lies outside their jurisdiction.

8. Although the questionnaire requested data for 2018–2022, the majority of responses feature data from 2022, indicating that many countries have either initiated or intensified their data collection efforts as the EV market matures. However, data availability varies significantly across countries, with figure I illustrating this variability. “Number of public recharging pools/locations” is the least available metric, while “Number of recharging points/Supply Equipment (EVSE)” is the most frequently reported.

Figure I  
Number of countries reporting data, 2022



Source: UNECE – ITF – Eurostat.

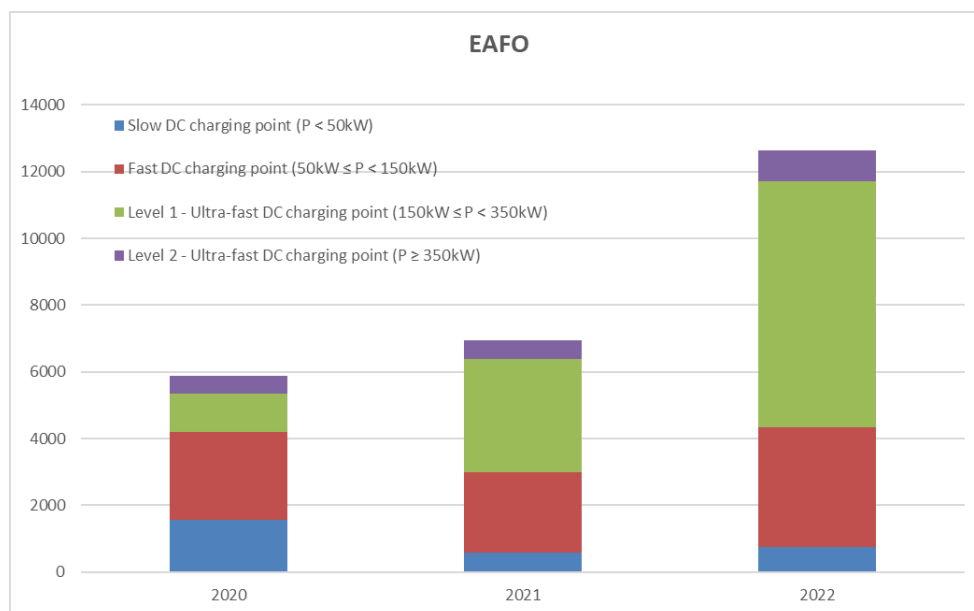
<sup>1</sup> <https://eur-lex.europa.eu/legal-content/EN/TXT/?uri=CELEX%3A52021PC0559>.

9. The questionnaire results reveal that not all responding countries track the number of semi-public chargers. Additionally, data on power categories (such as slow AC, fast AC, and fast DC) are incomplete or missing for some countries or years. Some countries also employ alternative power categorizations for their DC chargers. The Netherlands, for instance, defines level 1 – ultra fast DC as 50 – 150 kW and level 2 – ultra fast DC as > 250 kW, although it has indicated its intention to eventually adopt the AFIR categorization. Additionally, some countries provided data with different reference dates. Standardizing the reference date would enhance data integrity and comparability.

10. Considering that EAFO has been generating data in this domain, even though the Working Party does not classify it as official statistics (ECE/TRANS/WP.6/185), it would be interesting to compare the data collected by the EAFO with that gathered by the secretariat through the questionnaire. Figures II (a) and (b) illustrate discrepancies in the data originating from Germany, selected for presentation due to the completeness of its data, allowing for a fair comparison. In 2020, for instance, our data indicates a slightly lower count of slow DC chargers, while in 2021 and 2022, we report higher figures. Additionally, there is a variation in the total number of DC chargers reported by both sources. These discrepancies may be attributed to several factors, including variations in data collection methodologies, reporting criteria, or the timing of data acquisition.

Figure II (a)

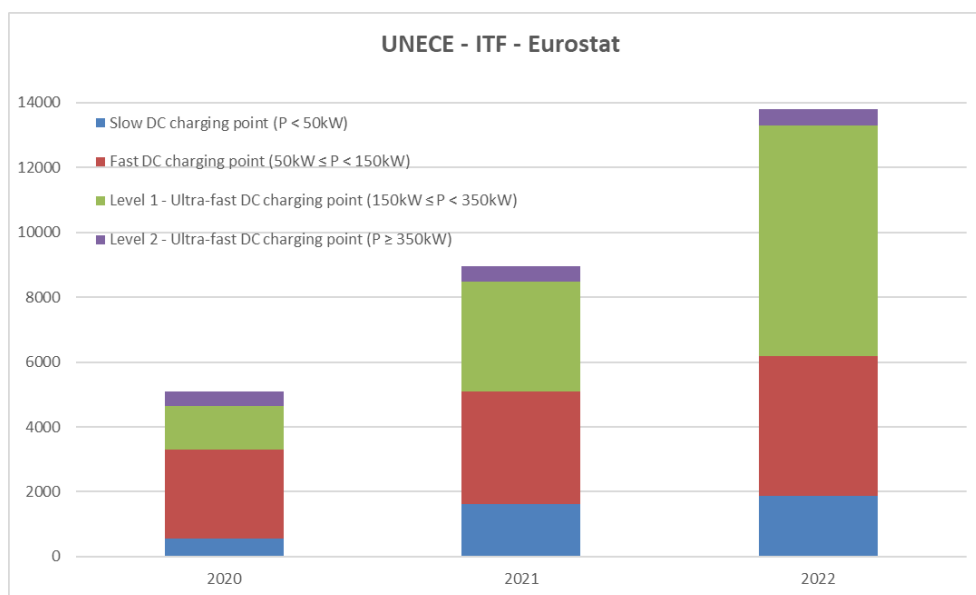
**Number of DC recharging points in Germany, 2020–2022, by EAFO**



Source: EAFO.<sup>2</sup>

<sup>2</sup> <https://alternative-fuels-observatory.ec.europa.eu/>.

Figure II (b)  
Number of DC recharging points in Germany, 2020–2022, by UNECE – ITF - Eurostat



Source: UNECE – ITF – Eurostat.

11. In addition to data, feedback was received from the participating countries. Some of the suggestions include the inclusion of an unclassified category to ensure consistency in the total number of recharging points. Several countries have expressed their willingness to modify their data collection methods if the Secretary plans to consistently collect this data. Another suggestion is to explore the utilization of a Big Data approach as an alternative to manual data collection methods.

12. As data on the road vehicle fleet by fuel type (including the EV fleet) is regularly collected through the Common Questionnaire, having reliable data on recharging infrastructure can aid policymakers in making informed strategic decisions and formulating policies. This encompasses the use of data on EV to recharging point ratios to promote EV adoption and to contribute valuable insights for electric grid management, among other relevant considerations.

### III. Roundtable on EV Charging Infrastructure Data Collection

13. On 9 November 2023, the Working Party conducted a virtual Roundtable on EV Charging Infrastructure Data Collection to stimulate a dialogue aimed at improving the understanding of the current state of national-level EV charging infrastructure. Attended by 50 participants from 23 member States, the webinar provided a platform for participants to share their experiences and the challenges they encountered when collecting EV charging infrastructure data. The valuable insights gathered from these discussions will be used to refine international definitions, identify suitable indicators for consistent measurement, and assess the feasibility of incorporating this data into the Common Questionnaire. The program of the roundtable can be found in the Annex, while the presentations given can be found on the UNECE website.<sup>3</sup>

14. The secretariat highlighted the main findings from the pilot questionnaire (as discussed in section II), and Eurostat elaborated on the potential and challenges of integrating EV charging infrastructure data into the Common Questionnaire, focusing on streamlining processes and methodologies.

<sup>3</sup> <https://unece.org/info/Transport/Transport-Statistics/events/384746>.

## A. Eurostat’s presentation on incorporating EV recharging infrastructure data into Common Questionnaire

15. Determining the appropriate commencement of data collection is a critical consideration. The streamlining could take place in 2025 for the reference year 2024. However, the feasibility of extending the data collection retrospectively should be explored. For example, starting from 2019 encompassing the usual five-year timeframe for “static data”. It is worth considering that the pilot questionnaire shows that most available data from countries begin in 2022, as highlighted in paragraph 8. The AFIR for EU member States to provide the required minimum coverage of publicly accessible recharging points is set for 31 December 2025, making 2025 a potential starting point for data collection.

16. The AFIR mandates recharging infrastructure deployment targets for light-duty vehicles (LDVs) in Article 3 and heavy-duty vehicles (HDVs) in Article 4. For LDVs, the regulation specifies power output targets for publicly accessible recharging stations: a total power output of at least 1 Kw for each battery electric LDV and at least 0.66 Kw for each plug-in hybrid LDV. This requires measuring not only the number of public recharging points but also their power output.

17. Adherence to the UNECE Consolidated Resolution on the Construction of Vehicles (R.E.3) (ECE/TRANS/WP.29/78/Rev.7)<sup>4</sup> is preferable for defining LDVs and HDVs. Consequently, the Road Transport Equipment chapter in the Common Questionnaire should be revised accordingly. Eurostat has proposed discontinuing the category of “special purpose vehicles”.

18. AFIR designates EAFO to gather and frequently update vehicle uptake and infrastructure deployment in all member States, which concerns the European Union, European Economic Area except Switzerland, and candidate countries on a voluntary basis. After the streamlining of the Common Questionnaire takes place, the Working Party may consider monitoring the discrepancy rate between the EAFO’s data and the data from Common Questionnaire. If the discrepancies are low, pre-filling the Common Questionnaire data for these countries could be considered.

19. EV recharging infrastructure indicators in the Common Questionnaire could be incorporated under the ROAD theme, chapter Infrastructure. Additionally, Eurostat has suggested adding definitions of these indicators to the Glossary for Transport Statistics.

## B. Countries’ experience in collecting EV charging infrastructure data

20. The Czech Republic reported rapid development in its public charging infrastructure, with a focus on constructing ultra-fast charging stations with a power of 150 kW and more on the highway network. As of 2023, the ratio is 6.7 EVs per charging point. Charging point operators (CPOs) are required to provide data to the Ministry of Trade and Industry, which is responsible to collect and update data biannually. The data is published by CDV, a transport research center. Collected data includes charging station locations (visualized on an official webpage), owner/operator identification, and station status (in operation or closed).

<sup>4</sup> <https://unece.org/transport/documents/2023/05/standards/consolidated-resolution-construction-vehicles-re3-revision-7>.

21. Denmark is currently in the process of collecting data in this sector. The national statistics office plans to gather data from CPOs through industry associations. An agreement has been made with two major industry associations and their members to share static information on charging infrastructure. It covers over 95 per cent of charging stations in Denmark. Data requirements will align with the AFIR and include operator ID (through the use of a smart meter that also measures electricity consumption), charging station geocoordinates, number of charging points at charging stations, types of plugs/connectors, power output in kW, and public/semi public classification.

22. The Central Statistics Office (CSO) of Ireland highlighted challenges in collecting data for the pilot questionnaire. It also emphasized the importance of collecting this data due to the increasing proportion of electric cars and the lagging installation of charging points. Challenges include determining the responsible data collection authority (CSO, Department of Transport, or Zero Emission Vehicles Ireland), defining public and private chargers, and overcoming CPOs' reluctance to share data due to market competition. Data collection is anticipated to commence in 2025, in line with AFIR mandates. The CSO is collaborating with the Department of Transport to develop an Application Programming Interface for direct data acquisition from local authorities.

23. The Netherlands shared its method of determining the number of electric passenger cars per province and municipality and the number of freight vehicles per neighborhood and industrial estate, focusing on the location of the users rather than vehicle registration addresses. This is essential for robust charging infrastructure planning. The majority of electric passenger cars in the Netherlands are leased or company-owned, and electric freight vehicles are sometimes parked at an unknown customer location, posing challenges in data collection. The Netherlands employs data merging from various sources to ascertain user locations and estimates freight vehicles' parking locations when the location is unknown.

24. Statistics Norway shared its approach to disseminating EV charging infrastructure data, which includes the number of public charging points, the number of EVs (including municipal zero-emission vehicles), and the ratio of EVs per charging point. Data has been available since 2015, sourced from the Norwegian Electric Vehicle Association. Norway uses a different power categorization compared to the pilot questionnaire: normal (3.6 – 43 kW), fast (50 – 250 kW), and lightning charging (> 350 kW). There is ongoing discussion about aligning Norway's categorization with AFIR's standards and the upcoming streamlined Common Questionnaire.

25. In the United Kingdom, the focus is on "charging devices", referred to as "charging station" in the pilot questionnaire. Data is primarily acquired from Zapmap, covering 95 per cent of publicly accessible devices. The Department for Transport publishes data on the number of public and semi-public devices, their geographical distribution and power categorization. Currently, the United Kingdom is in the process of transitioning from the previous categorizations of slow (3 – 6 kW), fast (7 – 22 kW), rapid (25 – 1400 kW), and ultra rapid (> 100 kW) to new categorizations based on specific power ratings: 3 kW up to 8 kW, 8 kW to 49 kW, 50 kW to 149 kW, and 150 kW and above. The Department is also exploring different data measurement methods and has passed new laws requiring CPOs to publicly share data on their charging devices at no cost, which will change data collection process.

26. Switzerland, lacking a legal mandate for EV charging infrastructure data collection, relies on voluntary cooperation with CPOs who provide real-time data to a centralized official database hosted by the federal government. This database, including APIs to access it, is publicly available, for example, to developers creating related applications. The data covers about 95 per cent of all charging points in the country. The reliance on voluntary CPO contributions could potentially be problematic if they would decide to withdraw their cooperation, but so far, the interest in participating is high.

#### **IV. Concluding remarks from the secretariat**

27. The secretariat values the diverse experiences and approaches shared by countries during the roundtable. These contributions shed light on the practical aspects of data collection and the unique challenges faced by different member States. The insights gained from the roundtable discussion are invaluable for refining international definitions and identifying suitable indicators for consistent measurement. These are reflected in the proposal for the streamlined Common Questionnaire incorporating EV recharging points indicators as presented in ECE/TRANS/WP.6/2024/6.

28. The secretariat highlights the need for a strategic approach to commence data collection, potentially starting in 2025 for the reference year 2024. It also acknowledges the importance of aligning with AFIR's mandates for power output and the vehicle definitions outlined in the UNECE Consolidated Resolution on the Construction of Vehicles (R.E.3).

29. The Working Party may consider revising the questionnaire distributed in June 2023 to integrate the new definitions discussed during the roundtable. A follow-up questionnaire could be planned in the second half of 2024 to serve as a practical test for these updated definitions and refinements. This subsequent round will also provide an opportunity to gather additional feedback from member States on the applicability and relevance of these new definitions, in anticipation of the potential start of data collection in 2025.

30. The secretariat remains committed to supporting member States in their efforts to collect and standardize data on EV charging infrastructure. It recognizes the importance of this data in monitoring transport-related Sustainable Development Goal indicators and in shaping policies for a sustainable and climate-neutral future.

31. The secretariat will also keep the Working Party informed about the activities of the UNECE informal task force on electric mobility (ECE/TRANS/2024/21), in which the secretariat and the Chair/Vice-Chairs will be actively involved.

## Annex

### EV Charging Infrastructure Questionnaire (June 2023)

	2018	2019	2020	2021	2022
<b>Number of public recharging pools/locations</b>					
of which: restricted access/semi-public					
<b>Number of public recharging stations/devices</b>					
of which: restricted access/semi-public					
<b>Number of recharging points/Supply Equipment (EVSE)</b>					
<b>TOTAL AC (Category 1)</b>					
<i>Slow AC: <math>P &lt; 7.4 \text{ kW}</math></i>					
<i>Medium-speed AC: <math>7.4 \text{ kW} \leq P \leq 22 \text{ kW}</math></i>					
<i>Fast AC: <math>P &gt; 22 \text{ kW}</math></i>					
<b>TOTAL DC (Category 2)</b>					
<i>Slow DC: <math>P &lt; 50 \text{ kW}</math></i>					
<i>Fast DC: <math>50 \text{ kW} \leq P &lt; 150 \text{ kW}</math></i>					
<i>Level 1- Ultra fast DC: <math>150 \text{ kW} \leq P &lt; 350 \text{ kW}</math></i>					
<i>Level 2- Ultra fast DC: <math>P \geq 350 \text{ kW}</math></i>					

#### Definition of terminologies

##### A recharging pool

A recharging pool consists of one or multiple recharging stations and the accommodating parking lots. The recharging pool is operated by one charge point operator (CPO) at one location/address and GPS coordinates. The recharging pool is an object relevant for “cartographic” view.

##### A recharging station

A recharging station means a single physical installation at a specific location, consisting of one or more recharging points.

##### A recharging point

A recharging point means a fixed or mobile interface that allows for the transfer of electricity to an electric vehicle. It may have one or several connectors (outlets or plugs) to accommodate different connector types. However, it is capable of recharging only one electric vehicle at a time. In other words at a single recharging station, the number of recharging points is equal to the number of dedicated parking spots.



---

*Definition of terminologies*

---

---

**Publicly accessible**

---

Publicly accessible recharging points include all that are located in areas that are open to the general public, including on-street, in publicly accessible parking lots, private retail or restaurant parking, irrespective if the parking is reserved for clients or if parking fees apply. In other words, it includes privately owned recharging points that are accessible to the public where access is restricted to certain groups of users (e.g. clients), and are located on public or private properties. Recharging points for car-sharing schemes should only be considered accessible to the public if they explicitly allow access for third party users. Recharging points located on private properties, access to which is restricted to a limited, determinate circle of persons (e.g. parking lots in office buildings) should not be considered as public.

---

## **Program of Roundtable on Electric Vehicle Charging Infrastructure Data Collection**

9 November 2023, 14:00 – 16:00 Geneva time | Online

---

- |               |  |
|---------------|--|
| 14:00 – 14:05 | Opening by Secretary   |
| 14:05 – 14:10 | <i>Welcome address</i> , <b>Mr. Francesco Dionori</b> , Chief of Transport Networks and Logistics Section, UNECE   |
| 14:10 – 14:20 | <i>Setting the scene</i> , <b>Mr. John Wilkins</b> , Chair of the Working Party on Transport Statistics  |
| 14:20 – 14:35 | <i>Preliminary findings of 2023 EV Charging Infrastructure Questionnaire</i> , <b>Ms. Fadiyah Achmadi</b> , Secretary to the Working Party on Transport Statistics   |
| 14:35 – 14:50 | <i>Incorporating EV charging infrastructure data into Common Questionnaire: opportunities and challenges</i> , <b>Mr. Alain Gallais</b> , Manager of Eurostat/ITF/UNECE Common Questionnaire for Inland Transport Statistics, European Commission  |
| 14:50 – 15:40 | <i>Countries' experience in collecting EV charging infrastructure data</i><br><b>Ms. Renáta Slabá</b> , Czech Republic<br><b>Mr. Peter Ottosen</b> , Denmark<br><b>Ms. Nele van der Wielen</b> , Ireland<br><b>Ms. Judith Nijenhuis, Ms. Jacqueline van Beuningen</b> , the Netherlands<br><b>Mr. Geir Martin Pilskog</b> , Norway<br><b>Ms. Claire Baxter, Ms. Sydney Worm, Mr. Lewis Jerrom</b> , United Kingdom of Great Britain and Northern Ireland |
| 15:40 – 15:55 | Q&A  |
| 15:55 – 16:00 | <i>Closing remarks</i> , <b>Mr. John Wilkins</b>   |
-