
Working Party on Transport Statistics

Seventy-third session (held in a hybrid format)

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Item 7(c) of the provisional agenda

Data collection, methodological development and harmonization of transport statistics: Vehicle statistics

Official statistics on electric vehicle charging infrastructure

Summary

This document explores available data sets on electric vehicles charging infrastructure in ECE member States, specifically with regards to official statistics. Relevant data is available for European Union countries (as a whole), as well as the United Kingdom, the United States, Canada, Norway, Switzerland, the Netherlands and France. The document summarises the definitions used for statistics production (what to count, how to define public etc) which could be considered for a future update of the Glossary for Transport Statistics.

I. Introduction

1. Member States are quickly electrifying their vehicle fleets, in particular for passenger cars, in order to meet climate and pollution targets. These new vehicles require public charging infrastructure, and there is much policy interest over sufficient public chargers exist to satisfy users (both in terms of real use and potential use in the case of problems, relating to “range anxiety”.)
2. Countries and organisations are already producing data on this new infrastructure. This document gives a few examples of existing data production, to highlight definitions used and see if there is scope for agreement of common definitions, which could be included in a future update to the UNECE/Eurostat/ITF Glossary for Transport Statistics. Further, if there is a demonstrated strong need then a pilot international data collection could be considered. Section 2 of the document looks at what kind of statistical definitions are available, and the Annex shows examples of data, from a range of government sources as well as other sources.

II. What Countries Count

Charging infrastructure

Data Item	Countries/organisations producing data	Definitions used
Charging Station	United States, Norway, Switzerland	<p>United States: a charging station location is a site with one or more Electric Vehicle Supply Equipment (EVSE) ports at the same address. Examples include a parking garage or a small parking lot.</p> <p>Norway: a charging station is a place/location where there is one or more charging points.</p> <p>Switzerland: a charging station is a charging device that can have one or multiple plugs.</p>
Charging Location/ Site	Switzerland	Switzerland: a charging location/ site is where there is one or more charging stations. Several charging stations can be located at one site.
Charging Device	United Kingdom	United Kingdom: a charging device is a unit capable of charging the batteries of plug-in electric vehicles. Devices are classified by their power output, and each device may offer one or more connecting points.
Charging Point	United Kingdom, Norway, Netherlands	<p>United Kingdom: a charging point is either a single device or a number of connectors on a device which can be used simultaneously.</p> <p>Norway: a charging point is a reserved parking space with charging facilities for chargeable vehicles. At one charging point, there can be more than one connector, but only space for one vehicle at a time.</p> <p>Netherlands: the number of charging points reported are in fact the number of charging station outlets (sockets/connectors). In practice the number of charging points and the number of outlets (sockets/connectors) are equal, except in the case of fast charging stations with 3 connectors, because not more than two can be active at the same time.</p>

Electric Vehicle Supply Equipment (EVSE) Port	United States	United States: EVSE provides power to charge only one vehicle at a time even though it may have multiple connectors. The unit that houses EVSE port is sometimes called a charging post, which can have one or more EVSE ports.
Connector	United States	United States: connector is what is plugged into a vehicle to charge it. Multiple connectors and connector types can be available on one EVSE port, but only one vehicle will charge at a time. Connectors are sometimes called plugs.

Speed of devices

Data Item	Countries/organisations producing data	Definitions used
Rapid Devices	United Kingdom	United Kingdom: those whose fastest connector is rated at 25kW or above.
Fast Charging	United Kingdom, Switzerland, Netherlands	United Kingdom: those whose connector is rated between 7kW and 22kW. Switzerland: those whose connector is rated above 50kW. Netherlands: those whose connector is rated above 22kW.
Regular Charging	Netherlands	Netherlands: those whose connector is rated at 22kW or lower.
Slow Charging	United Kingdom	United Kingdom: those whose connector is rated between 3kW and 6kW.
Charging type Level 1	United States	United States: It is a 120V standard wall plug using a J1772 connector. Provides 2 to 5 miles of range per 1 hour of charging.
Charging type Level 2	United States	United States: It uses 240V/ 208V for residential or commercial charging using a J1772 connector. Provides 10 to 20 miles of range per 1 hour of charging.
Charging type DC fast	United States	United States: There are three types (SAE CCS, CHAdeMO, Tesla) of DC fast charging systems depending on the type of charge port on the vehicle. Provides 60 to 80 miles of range per 20 minutes charging.

Accessibility

Data Item	Countries/organisations producing data	Definitions used
Public	Norway	Norway: Charging point public is the number of charging points available to everyone or visitors at charging stations. For the latter, it is assumed that you have an errand on site (e.g. shopping centre, office buildings, schools and other institutions).
Semi-public	Netherlands	Netherlands: a semi-public charging point is interoperable and have been reported as accessible by their owners. These charging points can for example be found in shopping malls, office buildings, parking garages and at private persons who have made their charging point accessible to others. The values for regular, work-specific, and visitor-specific semi-public locations have been added up.
Private- Fleet customers only	United States	United States: a private- fleet customers only station may allow other entities to fuel through a business-to-business arrangement.

III. Annex: Examples of Country Sources

EU countries

Electric vehicle charging points, 2020 (from EAFO/ACEA)

Country	Charging points	Country	Charging points	Country	Charging points	Country	Charging points	Country	Charging points
Austria	8,071	Denmark	3,254	Hungary	1,291	Malta	96	Slovenia	610
Belgium	8,481	Estonia	399	Ireland	990	Netherlands	66,665	Spain	7,407
Bulgaria	194	Finland	3,728	Italy	13,073	Poland	1,691	Sweden	10,370
Croatia	670	France	45,751	Latvia	291	Portugal	2,470		
Cyprus	70	Germany	44,538	Lithuania	174	Romania	493		
Czech Republic	1,200	Greece	275	Luxembourg	1,061	Slovakia	924		

Source: ACEA progress report 2021 (Data from EAFO)

https://www.acea.auto/files/ACEA_progress_report_2021.pdf#page=16

United Kingdom

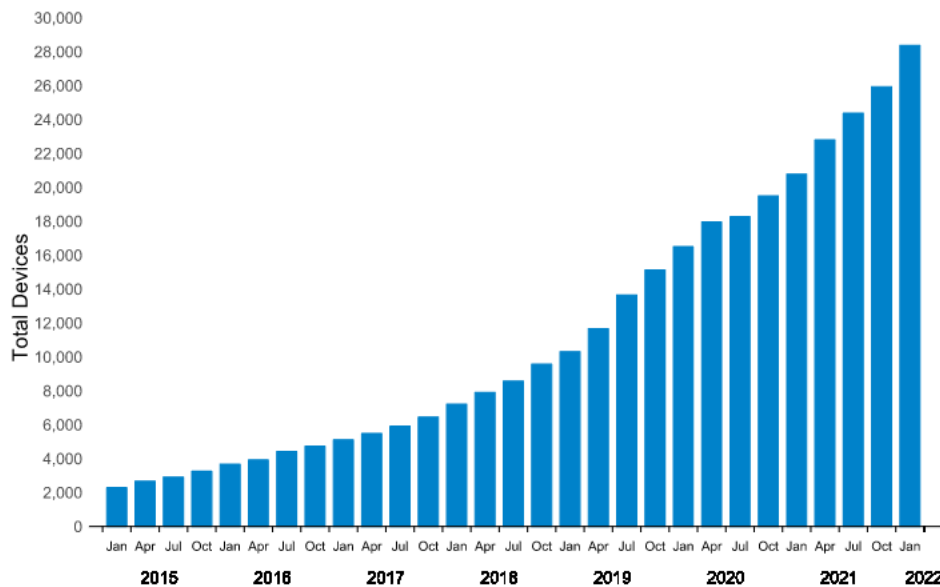
The following text is taken directly from <https://www.gov.uk/government/statistics/electric-vehicle-charging-device-statistics-january-2022/electric-vehicle-charging-device-statistics-january-2022>

Since 1 January 2021, the number of public devices has increased by 37%, corresponding to 7,600 devices. The number of rapid devices increased by 33%, with an additional 1,276 public devices. As of January 2022, there are total 28,375 public charging devices among which 5,156 are rapid charging devices.

There is an uneven geographical distribution of charging devices within the UK, depending on available government budgets. Most of the provision of this infrastructure has been market-led, with individual charging networks and other businesses (such as hotels) choosing where to install devices.

- A charging device: A unit capable of charging the batteries of plug-in electric vehicles. Devices are classified by their power output, and each device may offer one or more connecting points. The term ‘charge point’ is also sometimes used, including in previous statistical publications from the Department for Transport (DfT). This may refer to either a single device or a number of connectors on a device which can be used simultaneously.

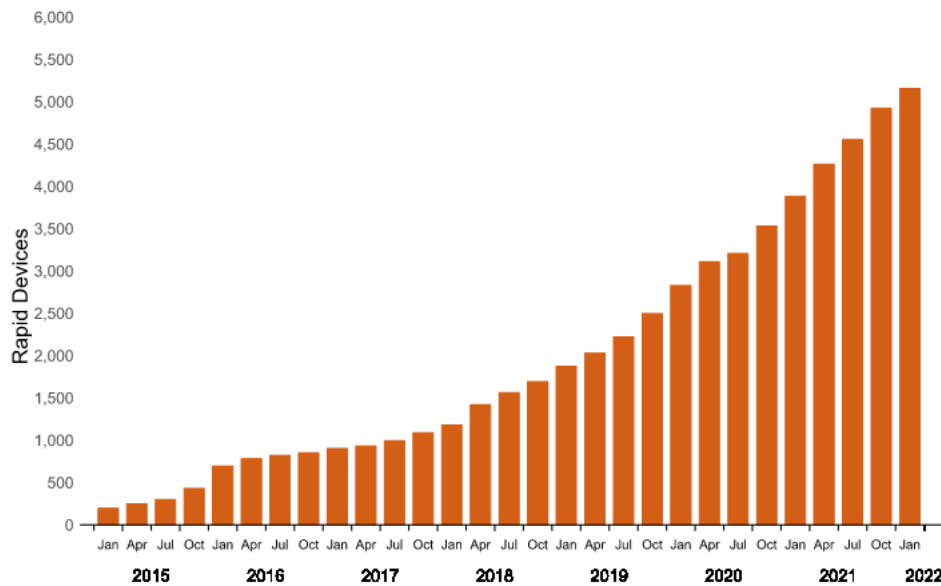
1. Public charging devices



Note: Total devices represent publicly available charging devices at all speeds (slow, fast, rapid, ultra-rapid). Rapid devices are those whose fastest connector is rated at 25kW or above. A device can have a number of connectors of varying speeds. Charging device location data is sources from the electric vehicle charging platform Zap-map.

Source: Electric Vehicle Charging Device Statistics.
<https://www.gov.uk/government/statistics/electric-vehicle-charging-device-statistics-january-2022/electric-vehicle-charging-device-statistics-january-2022>

2. Public rapid charging devices



Note: Rapid devices are those whose fastest connector is rated at 25kW or above. Charging device location data is sources from the electric vehicle charging platform Zap-map.

Source: Electric Vehicle Charging Device Statistics.
<https://www.gov.uk/government/statistics/electric-vehicle-charging-device-statistics-january-2022/electric-vehicle-charging-device-statistics-january-2022>

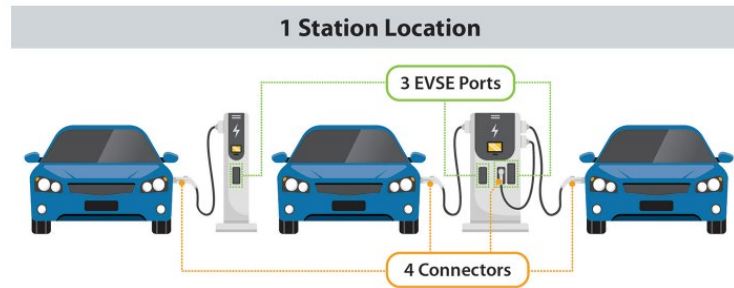
United States and Canada

The following text is taken directly from

https://afdc.energy.gov/stations/#/find/nearest?fuel=ELEC&ev_levels=2&ev_levels=dc_fast&ev_levels=1

- Station location: A site with one or more EVSE ports at the same address. Example include a parking garage or a small parking lot.
- Electric Vehicle Supply Equipment (EVSE) port: It provides power to charge only one vehicle at a time even though it may have multiple connectors. The unit that houses EVSE port is sometimes called a charging post, which can have one or more EVSE ports.

- Connector: What is plugged into a vehicle to charge it. Multiple connectors and connector types can be available on one EVSE port, but only one vehicle will charge at a time. Connectors are sometimes called plugs.



- Charging type Level 1: It is a 120V standard wall plug using a J1772 connector. Provides 2 to 5 miles of range per 1 hour of charging
- Charging type Level 2: It uses 240V/ 208V for residential or commercial charging using a J1772 connector. Provides 10 to 20 miles of range per 1 hour of charging
- Charging type DC fast: There are three types (SAE CCS, CHAdeMO, Tesla) of DC fast charging systems depending on the type of charge port on the vehicle. Provides 60 to 80 miles of range per 20 minutes charging.

1. Public Electric vehicle charging station

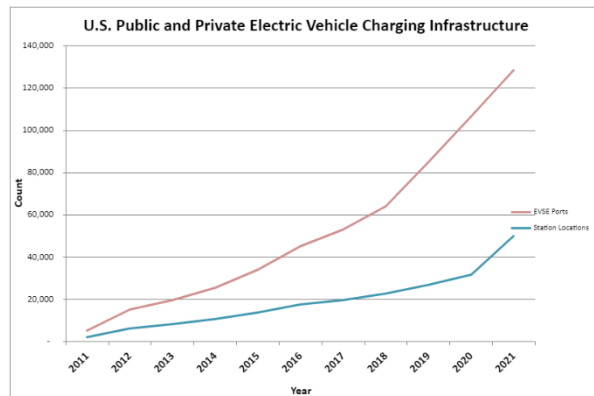
The United States: 48,254
 Canada: 6,988



Note: Each point on the map is counted as one station in the station count. A station appears as one point on the map, regardless of the number of fuel dispensers or electric vehicle supply equipment (EVSE) ports at that location. Residential EV charging locations and "wall outlets" not designated for vehicle charging are not included in the Station Locator, but workplace charging locations are.
 Source: U.S. Department of Energy, Energy Efficiency & Renewable Energy. (Accessed June 3, 2022) https://afdc.energy.gov/stations/#/find/nearest?fuel=ELEC&ev_levels=2&ev_levels=dc_fast&ev_levels=1

2. Public and Private Electric Vehicle charging infrastructure

The chart shows the growth of U.S. public and private electric vehicle charging infrastructure since 2011. The number of electric vehicle supply equipment (EVSE) ports has grown consistently, and the number of EV charging station locations has also increased steadily. Between 2015 and 2020, the number of charging stations more than doubled. In 2021 alone, the number of charging stations grew by over 55%.



Note: Between 2011 and 2013, the electric vehicle charging station counts are an estimate of the number of geographic locations (i.e., station locations) based on the number of EVSE ports because data was not captured in these years about the number of stations. Data snapshots were taken each year in December as close to the end of the year as possible.

Source: U.S. Department of Energy, Energy Efficiency & Renewable Energy. Alternative Fuels Data Center (Last updated January 2022)

<https://afdc.energy.gov/data/10964>

Norway

Charging infrastructure terminology from NOBIL (managed by Norwegian Electric Vehicle Association) website, link below.

- Charging station: A place/ location where there is one or more charging points.
- Charging point: A reserved parking space with charging facilities for chargeable vehicles. At one charging point, there can be more than one connector, but only space for one vehicle at a time.
- Charging point public: This is the number of charging points available to everyone or visitors at charging stations. For the latter, it is assumed that you have an errand on site (e.g. shopping centre, office buildings, schools and other off.institutions).
- Charging stations semi/fast: This is the number of locations where there are charging outlets with a capacity of at least 22 kW.

1. **Total charging stations:** 3,349
2. **Charging stations semi/ fast:** 1,499
3. **Total charging points:** 21,619

4. Total charging points public: 20,267

Ladestasjoner i Norge 03.06.2022	
Ladestasjoner totalt:	3349
Ladepunkt totalt:	21619
Ladepunkt offentlige:	20267
Schuko:	4050
AC:	14457
Ladestasjoner semi/hurtig:	1499
CHAdEMO hurtigladere:	2454
CHAdEMO semihurtigladere:	4
CCS hurtigladere:	4228
CCS semihurtigladere:	6
AC Type 2 hurtigladere:	49
AC Type 2 semihurtigladere:	5056
AC Type 2 11kW:	590
Tesla superladepunkt:	442
Ladepunkt sanntidsstatus:	122
Mer info	

Source: NOBIL website. <https://info.nobil.no/index.php/nyheter/89> (translated automatically)

Switzerland

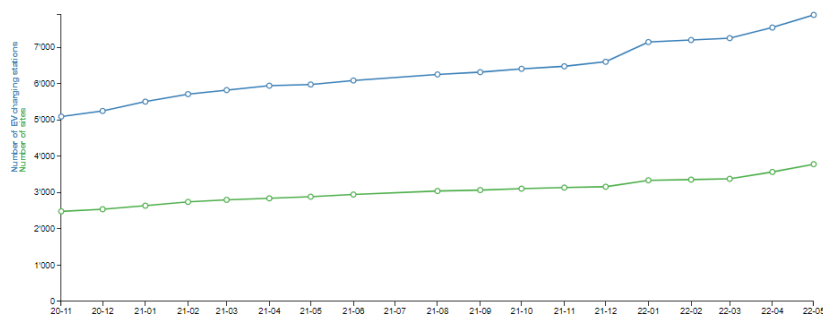
Text taken directly from https://www.uvegis.admin.ch/BFE/storymaps/MO_Kennzahlen_Fahrzeuge/Ladeinfrastruktur_Elektromobilitaet/?lang=en

The publicly accessible charging infrastructure for electric vehicles in Switzerland is constantly being developed. We use real-time data from recharge-my-car.ch to regularly evaluate the ever-increasing number of charging stations, charging points, and types of plug in Switzerland. Since November 2020, this data has been and will continue to be collected on a daily basis for the whole of Switzerland and for the individual cantons, and then averaged each month. This gives an overview of how the charging infrastructure is expanding.

1. Electric cars charging stations and sites (Évolution dans le temps du nombre de bornes de recharge accessibles au public en Suisse. Une station de recharge peut avoir plusieurs prises. Il peut y avoir plusieurs stations de recharge à un même endroit.)

Development over time in number of publicly accessible charging stations in Switzerland

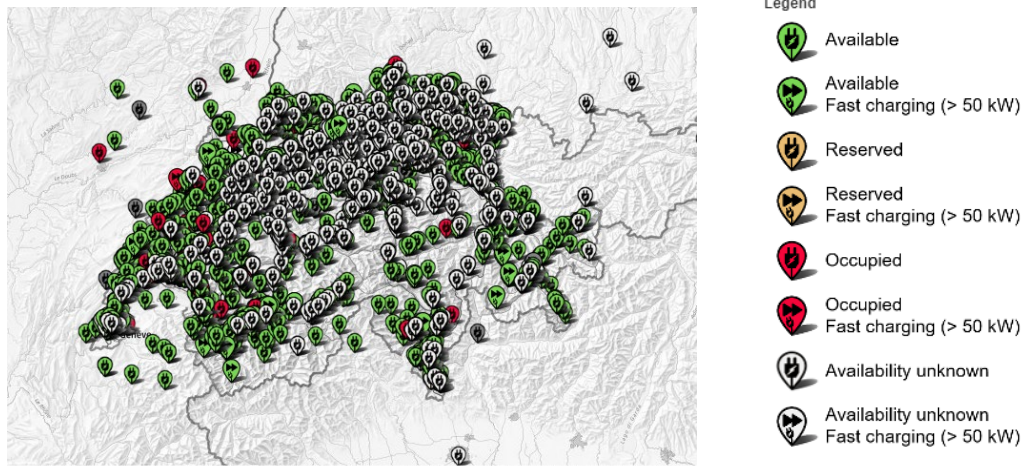
One charging station can have multiple plugs. Several charging stations can be located at one site.



Note: One charging station can have multiple plugs. Several charging stations can be located at one site.

Source: Swiss Federal Office of Energy SFOE. https://www.uveg-gis.admin.ch/BFE/storymaps/MO_Kennzahlen_Fahrzeuge/Ladeinfrastruktur_Elektromobilitaet/?lang=en

2. Electric vehicle charging points



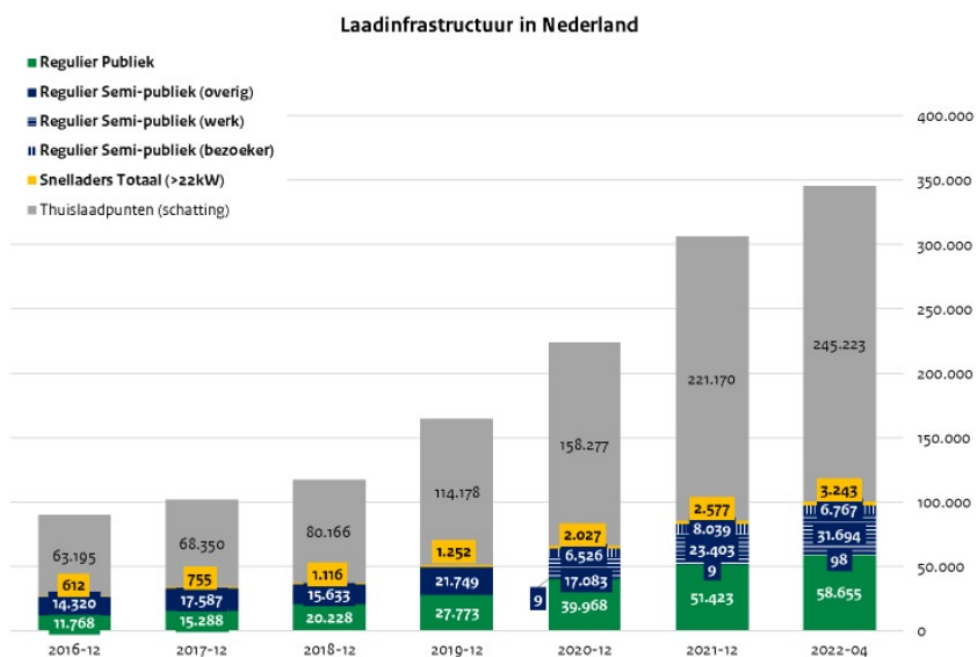
Source: Swiss Federal Office of Energy SFOE. <https://map.geo.admin.ch/?lang=en&topic=energie&bgLayer=ch.swisstopo.pixelkarte-grau&zoom=0&layers=ch.bfe.ladestellen-elektromobilitaet&catalogNodes=2419,2420,2427,2480,2429,2431,2434,2436,2767,2441,3206>

Netherlands

Text taken directly from <https://agendalaadinfrastructuur.nl/monitoring+2021/monitoring+landelijk/default.aspx>

The National Agenda for Charging Infrastructure (NAL) in Netherlands is a multi-year policy agenda with ambitions and actions that will ensure that we will soon be able to charge anywhere, easily and smartly at any time. A large number of the agreements and actions are implemented locally and regionally, in cooperation between market, government and grid management. It has the highest density of electric vehicles and chargers per 100km.

1. Number of charging points (EVSEs) in NL



Note: Regular charging points are <= 22kW capacity, while fast charging points are > 22kW.
 Legend from the top: [Green] Regular Public/ [Blue] Regular Semi-public (undefined)/ Regular Semi-public (destination)/ Regular semi-public (visitor), [Yellow] Fast Charger Total (22>kW)
 Source: Nationale Agenda Laadinfrastructuur (NAL).
<https://agendalaadinfrastructuur.nl/monitoring+2021/monitoring+landelijk/default.aspx>

Number of charging points at the end of	2016	2017	2018	2019	2020	October 2021
Regular public + semi-public	26,088	32,875	35,861	49,520	63,586	80,233
Regular public (24/7 publicly accessible)	11,768	15,288	20,228	27,773	39,968	49,541
Regular semi-public (limited publicly accessible)	14,320	17,587	15,633	21,747	23,618	30,692
- of which Destination chargers (eg located near supermarkets)					6,528	7,805
- of which Work chargers (eg located near offices)					17,081	22,880
Fast charging points, public + semi-public	612	755	1,116	1,262	2,027	2,595
- of which >100 kW				433	897	1,250
Fast charging locations	148	178	197	339	467	614
All regular + fast charging points	26,700	33,630	36,977	50,772	65,613	82,826
Number of plug-in passenger car (BEV + PHEV) per charging point	4,1	3,5	3,7	3,9	4,2	4,2
Private charging points ¹	-63,000	-68,000	-80,000	-114,000	-158,000	-202,000

Note: Regular charging points are <= 22kW capacity, while fast charging points are > 22kW.
 Legend from the top: [Green] Regular Public/ [Blue] Regular Semi-public (undefined)/ Regular Semi-public (destination)/ Regular semi-public (visitor), [Yellow] Fast Charger Total (22>kW)
 Source: Nationale Agenda Laadinfrastructuur (NAL).
<https://agendalaadinfrastructuur.nl/monitoring+2021/monitoring+landelijk/default.aspx>

France

1. Electric vehicles and charging stations



Source: French Government data website. <https://www.data.gouv.fr/fr/reuses/les-bornes-de-recharges-pour-vehicules-electriques-en-france/>