Berlin

Local context

City size and context

Berlin is the capital and one of the 16 federal states of Germany. With an area of 891.1 km² the city is divided into 12 districts. Berlin is the largest German city and ranked as the 7th most populous city in the European Union.[1]

> **KEY FIGURES**
>
> **Population:** 3,700,000 (6,000,000 in the Berlin-Brandenburg Metropolitan Area)
>
> **Area:** 891.1 km²
>
> **Density:** 4,206 people/km²
>
> **NUTS level**: NUTS -1 and NUTS-2
>
> **TEN-T corridor(s):** Berlin is an urban node of the North Sea - Baltic corridor connecting the capital with various cities via railway and highways

[1] https://worldpopulationreview.com/world-cities/berlin-population/

Geography

Located in the north-eastern region, Berlin is one of three cities states in Germany and is surrounded by the Federal State of Brandenburg. Both Berlin and Brandenburg are referred to as the Berlin-Brandenburg metropolitan region. Though, Berlin's agglomeration is not equal to the Berlin-Brandenburg metropolitan area and needs to be distinguished, accordingly. The agglomeration of Berlin consists of 18 additional city centres, that are part of the Federal State of Brandenburg.

Modal split

BERLIN MODAL SPLIT 2018 - TOTAL TRAFFIC OF INHABITANTS

■ Individual traffic ■ Public Transport
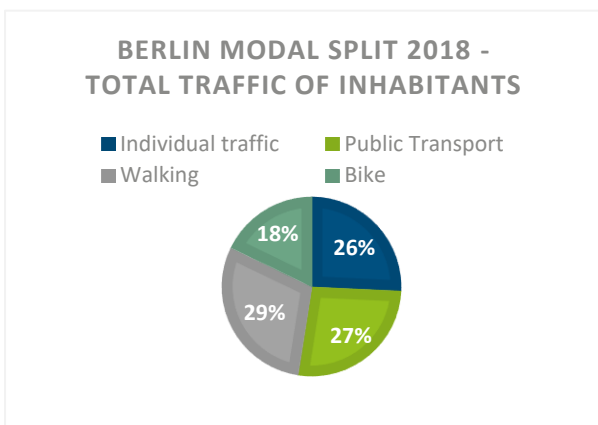■ Walking ■ Bike

18% 26%
29% 27%

FIGURE 2: BERLIN MODAL SPLIT 2018 – TOTAL TRAFFIC OF INHABITANTS. SOURCE: SRV 2018

The given diagram visualises the modal split of 2018 for the total traffic of inhabitants. According to the SrV 2018[2], the system of representative traffic surveys, 29% of the traffic is by foot, 27% by public transport, 26% is individual traffic and 18% by bike.

The modal split of the domestic traffic of inhabitants shows very similar results, the

share of pedestrians being slightly higher - 31%-, and the number of individual traffic lower -with 24%. The percentages of residents using public transport and biking
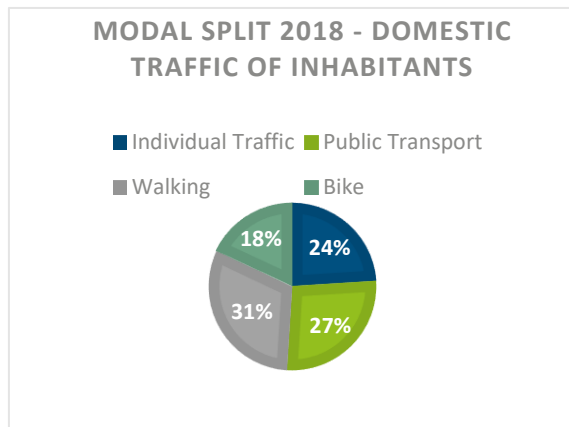
MODAL SPLIT 2018 - DOMESTIC TRAFFIC OF INHABITANTS

■ Individual Traffic ■ Public Transport
■ Walking ■ Bike

18% 24%
31% 27%

FIGURE 1: BERLIN MODAL SPLIT 2018 – DOMESTIC TRAFFIC OF INHABITANTS. SOURCE: SRV 2018

remain the same in both diagrams.

Electric vehicles

According to statistics of the Federal Department of Motor Vehicles (KBA) from 1st January 2020, the total number of registered passenger vehicles in Berlin is 1,221,433.[3] The total number of registered BEVs in Berlin is 4,868 (December 2019). Furthermore, there are 3,474 registered PHEVs.

TABLE 1: REGISTERED [ASSENGER EV IN BERLIN. SOURCE: KBA

2019	TOTAL
BEVs	4,868
PHEVs	3,474

2https://www.berlin.de/senuvk/verkehr/politik_planung/zahlen_fakten/mobilitaet_2018/index.shtml

3https://www.kba.de/DE/Presse/Pressemitteilungen/2020/Fahrzeugbestand/pm06_fz_bestand_pm_komplett.html?nn=2562744

Charge point characteristics

The city of Berlin was the first city in Germany to implement a harmonized public, non-discriminatory charging infrastructure network in the urban streets to foster electric mobility.

The first charging stations in Berlin in semi-public space were installed back in 2009. However, the citywide expansion of publicly funded charging infrastructure started only in April 2015, after a Europe-wide tender was conducted by the city government, which foresaw the installation of around 1,000 publicly funded charging points by the end of 2020.

Currently (January 2020), Berlin has in total 287 publicly funded charging stations (with 539 charging points) on public ground. In addition, there are 104 privately funded charging stations (with 208 charging points) from Vattenfall and Innogy, and all of them are publicly available. There are also lots of privately-owned charging stations around the city.

With the implementation of the so-called "Berlin model", the city of Berlin follows a unique approach. It obliges every private charging infrastructure operator, wanting to install charging stations on public ground, to close a contract with the city of Berlin. This contract determines strict rules for installation and operation of charging infrastructure. This approach safeguards that every mobility provider can offer its services at every public charging station.

Payment options

The main payment method available at the Berlin charging stations is through a contract with a MSP. MSPs offer mobility products and services, like a charging subscription, which is operated with a charging card and/or app. The charging processes are billed via the provider.

Another way of payment is the direct payment with debit or credit card, which is possible at some charging stations, but needs an authentication or log in at the station. Ad hoc payment without prior registration at a CPO/EMSP, for example at a parking machine, are rarely possible.

Total RES supplied

Regarding the use of electric energy from renewable resources, it can be noted that the publicly funded charging stations from the city of Berlin "be emobil" purely use energy from renewable sources. The total RES supplied per year for those charging points amounts to approximately 470 and 550 MWh (cf. years 2017 and 2018)[4].

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4 cf. ANS Project – Analyse der Nachfragereaktionen und der Stellplatzbelegung bei Variation des

Preismodells für die Nutzung von Ladeinfrastruktur (ANS) im Berliner Modell

Electromobility strategies and initiatives

State of play

The overall approach of the "Berlin model" towards electromobility intended to give easy and non-discriminatory access to charging infrastructure on public streets to every EV driver. To achieve this, the city started the project "be emobil" in 2012, launching a European tender, for the installation of 250 charging stations in the public street network. Since the beginning of the project, a multitude of charging possibilities were created (e.g. electric vehicle charging stations, fast charging points and streetlight chargers). Now Berlin is raising e-mobility to the next level by bringing more standardised and easy-to-use charging points to its streets.

From charging with AC at 3.7 kW, 7 kW, 11 kW, to DC at up to 43 kW, or co-current flow up to 50 kW, all current standards and all connector types will be served. This will ensure that in the future all electric vehicles will be able to charge.

The Berlin Senate department for the environment, transport, and climate protection (SenUVK) currently works on the further development of the public charging infrastructure. This includes for instance the revision of the current "Berlin model" by including existing developments in the field of electromobility and charging infrastructure. The approach consists of several revision rounds, internally, with other municipalities, and within the city with other Senate Departments and city districts.

Supporting policies for zero emission vehicles

Regional level policies (Berlin)

Welmo – Program for commercial users[5]:

The Federal State of Berlin has introduced the support program "Welmo" in July 2018, which stands for "economy friendly electric-mobility". The goal of the initiative is to support the transformation of commercial fleets into e-fleets. The program includes both, an advisory service, as well as financial support. In 2020, the subsidies (6 million euros) available for the whole year have been exhausted by March already, which shows the success of the program.

Self-employed workers, as well as small and medium-sized enterprises which require motorised vehicles for their daily business are entitled to receive the program's support. Amongst others, this includes taxi businesses, craft enterprises, carsharing businesses, care and social services, as well as delivery services.

To be eligible to receive support, the company's branch must be located in Berlin and 50% of the electric car journeys must happen within the city area.

"be emobil" – approach to create a multitude of charging possibilities[6]

As mentioned above, the project's goal is that all electric vehicles in Berlin can be charged without problems. Therefore, "be emobil" introduces standardised and easy to use charging points to the streets of Berlin.

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5 https://www.welmo.de

6 http://www.be-emobil.de/en/background/

The "be emobil" approach is rolled out in three installation periods: the first phase from 15.01.2015 – 30.09.2016, the second phase from 01.01.2016 – 30.06.2020, and the third phase from 01.05.2019 – 30.09.2020. The city of Berlin is working with several partners within "be emobil" to promote its success. The Senate department for the environment, transport, and climate protection has established an office for charging infrastructure as an interface with the appropriate district government departments for the coordination and management of the project's development.

Financial support for electric cargo bikes for enterprises and private users[7]:

In 2018, this funding program was first introduced with a budget of 200,000 euros and was exhausted within hours. The funding programme will be extended in 2020 for the second time with a bigger budget of 500,000 euros. For cargo bikes, a financial support for up to 33% of the purchase price, with a maximum of 1,000 euro is applicable.

Urban development plan 2025 – Transport (Stadtentwicklungsplan Verkehr)[8]:

The urban transport development plan also includes a strategy on traffic, which fosters the goal of sustainability on the road. It also comprises the expansion of electric mobility within an overall concept stating that the current results from science and research need to be implemented and that individual electromobility traffic needs to be linked with other transport modes.

InfraLab – Challenge 6: smart eFleets[9]:

"Smart eFleets" is a project run by the Berlin state-owned companies BVG, BSR and Berliner Wasserbetriebe, as well as DLR, Carano GmbH and In GmbH. The project is supported by the federal ministry of transport and digital infrastructure.

The InfraLab develops solutions for cross-company car and infrastructure sharing. Important aspects of use and scaling of the electric vehicles are addressed. Through the cross-company approach the use of the cars increases, which brings economic and ecologic advantages. Moreover, the development of an app and the implementation of an energy-management-system guarantee that the carsharing runs smoothly and peak demands are not increased.

Federal level policies (Germany)

A measure to promote electric cars has been implemented by the German law with the so-called *Umweltbonus*. *Umweltbonus*, which translates to environmental bonus, applies retrospectively to all vehicles that were registered from November 5, 2019 and until December 31, 2025. The environmental bonus is a joint contribution by the federal government and the industry to support and strengthen the sales of new and used electric vehicles. The eligible categories are battery electric vehicles, plug-in hybrids and fuel cell vehicles, as well as vehicles that have no local CO_2 emissions and cause a maximum of 50 g CO_2 emissions per kilometre. Private persons, as well as enterprises, corporate bodies,

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7https://www.lastenfahrrad-zentrum.de/förderung-kaufprämie/berlin/

8https://www.berlin.de/senuvk/verkehr/politik_planung/step_verkehr/

9https://infralab.berlin/challenges/challenge-6-smart-efleets/

foundations, and associations can apply for the *Umweltbonus*.

Tax reductions[10]:

Since October 2012, new EVs have been exempted from the motor vehicle tax (*Verkehrssteueränderungsgesetzt*). This exemption was originally introduced for the period between 2012 and 2015 but has been extended by the federal parliament until the end of 2020. Moreover, the exemption is now applicable to conversions of cars into merely electric vehicles.

In addition, tax incentives have been introduced in 2017 for employees who can charge their e-car at their workplace. The benefit offered by the employer is exempt of income taxes. However, the incentive is phasing out by the end of 2020.

Förderrichtlinie Elektromobilität – BMVI[11]:

The *Förderrichtlinie Elektromobilität*, or funding guidelines for electromobility, were introduced in 2017 and support municipalities and enterprises in a municipal context. In February 2020, cheques with a total amount of more than 90 million euros have been issued to 168 beneficiaries. The goal of the financial support is to electrify municipal fleets in Germany. The cheques will be used for the purchase of more than 3,800 electric vehicles (with more than 3,000 electric cars) and 2,000 charging points.

Deployment strategy

All charging point operators who want to become active in the city must sign an

agreement with the city of Berlin to comply with the regulatory framework of the city.

To deploy the charging infrastructure in Berlin, the city worked on an overall location concept for charging infrastructure in public space since 2011.

Based on this location concept, the city started the project "be emobil" -as explained above- in 2012 launching a European-wide tender for the setup and operation of 250 charging points in the public street network. Based on the solutions collected through the tender, several partners are helping to guarantee the success of "be emobil".

- Allego GmbH is installing and operating the charging points.
- The mobility service providers NewMotion, Plugsurfing and ladenetz.de are offering a RFID card.
- The Berlin Senate department for the environment, transport, and climate protection has established the office for charging infrastructure (LIB), which manages and coordinates the process of charging infrastructure deployment with the appropriate district government departments.
- VMZ is the operator of the Berlin authentication platform, that provides easy and non-discriminatory (provider specific contract independent) access to public charging infrastructure for all EV-drivers.

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[10]https://www.bmu.de/themen/luft-laerm-verkehr/verkehr/elektromobilitaet/bmu-foerderprogramm/massnahmenpaket-der-bundesregierung/

[11]https://www.bmvi.de/SharedDocs/DE/Artikel/G/168-zukunftschecks-elektromobilitaet.html

Challenges and barriers

Jointly coordinating the implementation of future e-mobility strategies is a big challenge the city of Berlin and its districts face. Although it is not a Berlin specific problem, the lack of standardisation at national and European level constitutes a barrier, which has led to a situation in which different charging technologies, access media and vehicle standards that are not interoperable exist. Thus, one of the main goals of the Berlin city administration is to connect and harmonise the current patchwork of technologies by regulatory measures.

Another limiting factor in Berlin is the strained situation regarding the use of public space. Especially in the dense inner-city areas, which are also focus areas for the implementation of e-mobility concepts and infrastructure, there are high-demands on public space from various stakeholders. This leads to a situation of competition between different modes of transport that cannot always be solved. Thus, the processes to implement the necessary infrastructure for e-mobility, such as dedicated spaces for electric vehicles or charging infrastructure, sometimes take longer than desired for this innovative technology.

Learning needs

Berlin has not identified at this stage specific learning needs. Those will be further defined based on the complete overview of the USER-CHI solutions. This paragraph will be updated accordingly.

USER-CHI solutions

In Berlin, six USER-CHI products will be demonstrated. The USER-CHI products that will be demonstrated in Berlin are the following:

- **CLICK- Charging location and holistic planning kit**: An online tool for the location planning of new charging infrastructure in cities and TEN-T corridors.

- **Stations of the future handbook**: Guidelines and recommendations to design the perfect user-centric charging station of the future.

- **eMoBest – e-Mobility replication and best practice cluster**: A collaboration platform to facilitate the transfer of best practices among the demonstration and replication cities.

- **INFRA – Interoperability framework**: A package of rules, guidelines and recommendations that will support highly interoperable processes among the electromobility stakeholders.

- **INCAR – Interoperability, charging and parking platform**: A platform providing roaming and barrier-free access to EV charging points and offering related innovative integrated services for the EV drivers.

- **SMAC – Smart Charging tool:** A tool providing smart grid integration and demand management services for slow, medium, fast and ultrafast charging.

At this stage, 2 main areas of intervention have been identified in Berlin as USER-CHI demonstration city:

Demo site solution 1: CLICK

CLICK will be an easy to use question-and-answer online tool for the top-down location planning of charging infrastructure, whose purpose is to optimise the location and planning of new charging infrastructure in cities and TEN-T corridors, matching the users' needs, preferences and habits, with the existing charging technologies and typologies available in the market.

The development of CLICK is based on the support of all project partners of the USER-CHI project, bringing together a variety of knowledge and experience in the field of charging infrastructure. The five USER-CHI cities Barcelona, Berlin, Budapest, Rome and Turku will take advantage of the tool during demonstration and testing phase.

Objectives

As output, CLICK will estimate the optimum charging infrastructure to be deployed in the city and along TEN-T corridors: number of charging points, proposed locations, preferred technologies and connectors, power of the points, etc.

Furthermore, CLICK will offer interfaces to be fed with actual utilisation data of charging infrastructure within the cities and planning areas. This will enable a post-planning process of monitoring utilisation and enable the demand-oriented expansion of the charging infrastructure network taking actual usage into account.

Stakeholders involved

The development of CLICK is based on the support of all project partners of the USER-CHI project, bringing together a variety of knowledge and experience in the field of charging infrastructure. The five USER-CHI cities Barcelona, Berlin, Budapest, Rome and Turku will take advantage of the tool during demonstration and testing phase.

Timing

CLICK will be specified and developed taking advantage of the knowledge and expertise of all project partners until mid-2022. Testing and demonstration in the pilots will take place in Berlin and the other demonstration cities until mid-2023.

Demo site solution 2: E-charge-parking

Providing an optimal user-centric charging infrastructure in densely populated urban areas has to face the challenge of

- High and predictable availability of charging stations in public and semi-public space
- Charging infrastructure technologies that meet user group specific requirements
- Easy access to charging and parking infrastructure

The Berlin pilot e-charge-parking targets to solve the above-mentioned challenges by providing user group centric e-charge parking solutions in urban neighborhoods.

Objectives

Based on the analysis of the use of existing charging infrastructure (AC, DC) as well as user group specific demand for e-mobility charging and parking, an overall location concept for charging technologies and e-charge-parking solutions in neighborhoods will be worked out.

For piloting the e-charge-parking solution the required charging technologies will be installed and the corresponding e-charge-parking platforms and services will be implemented. Access to the services will be provided via Web-GUIs and smartphone apps to private and commercial end users.

Stakeholders involved

The e-charge-parking solution(s) will be demonstrated in pilot locations that are managed by Gewobag AG. The municipal housing company manages 60.000 apartments with more than 100.000 people in different districts of Berlin. Gewobag provides energy supply services, parking facilities and charging infrastructure as well as multimodal mobility hubs to foster sustainable mobility.

Timing

According to the overall project timeline, the testing of the solution e-charge-parking is planned to start in July 2022 and will be executed until Nov. 2023.