

# Turku



## Local context

### City size and context

Turku is Finland's oldest city and was founded in 1229. Turku has a compact size, perfect for exploring the exciting mixture of old and new. With its reasonable living costs, multiple housing options, active student community, vivid cultural life and a variety of outdoor recreation possibilities, Turku ensures a good quality of life to its inhabitants and becomes a lucrative location also for skilled professionals.

Turku has always had a special role among Finnish cities. European art, science, religious and political movements have found their way to Finland through Turku

### KEY FIGURES

**Population:** 193,000 inhabitants, (310,000 inhabitants in the entire region)

**Area:** 245 km<sup>2</sup>

**Density:** 178 people/km<sup>2</sup>

**NUTS level:** NUT-3

**TEN-T corridor(s):** Turku is an urban node of the Scandinavian Mediterranean TEN-T corridor

**USER-CHI role:** demonstrator city

since the 13th century. This history has given the city a distinctively civilized and cultural atmosphere. Turku is also multicultural, as evidenced by the myriad nationalities, languages and customs. The city is home to people of over 130 nationalities, who speak over one hundred different languages. The archipelago outside the city has always been a crossroads for new cultures, ideas, doctrines and commodities, and its tides have swept far into the inland areas of Finland.

## Geography

Located in the region of Southwest Finland, Turku is one of Finland's biggest cities. Turku archipelago is the largest in the world in terms of the number of islands. About 40,000 islands and islets form this natural wonder starting at the edge of Turku and continuing all the way out to Åland. The city also has a peculiar topography as it counts seven hills. Turku is easily accessible, both domestically and internationally by plane and by the sea. In the city itself, everything is close, which makes it perfect city for cycling. In fact, 90% of the inhabitants live less than ten kilometres from the city centre. In addition, getting around is easy thanks to a comprehensive local transport system.

## Modal split

The National travel survey from 2016 shows the modal split for the city of Turku where the total share of sustainable travel modes in the region was 48%. The complete modal split is summarised in Figure 1 below.

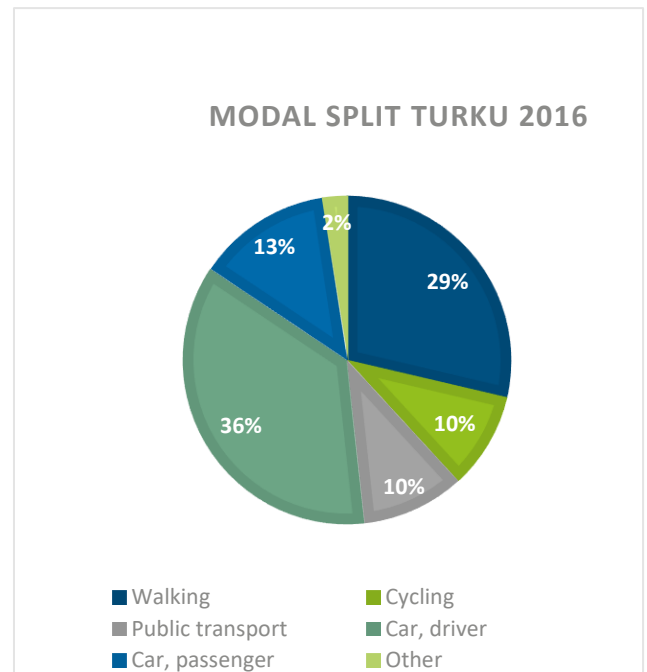


FIGURE 1: TURKU'S MODAL SPLIT (2016). SOURCE: NATIONAL TRAVEL SURVEY

## Electric vehicles

Table 1 below shows the different vehicles categories registered in Turku in 2019. LEVs are not registered in Finland and thus do not appear in the table.

TABLE 1: CATEGORIES OF VEHICLES IN TURKU (2019). SOURCE: CITY OF TURKU

2019	Passenger car (M1)	Van (N1+N1G)	Truck (N2+N2G)	Bus (M2+M3)
Petrol	59,946	235	28	0
Petrol/hybrid	2,227	3	0	0
Petrol/plug-in hybrid	562	0	0	0
Diesel	15,237	5,653	1,971	522
Diesel/hybrid	49	0	0	4
Diesel/plug-in hybrid	38	1	0	0
Full electric	139	15	0	6

## Charge point characteristics

### Payment options

In the city of Turku different EMSPs are operating the payments of the public charging points. Each CPO chooses which EMSP to use. Each of the EMSPs provide a different set of payment options. The following EMSPs are active in Turku: Virta, K-lataus, Fortum. This list is however not exhaustive.

Virta, for example, provides the following payment options: through mobile application, RFID card, RFID key fob, all of them with registered user account. One-

time payment options are also possible with credit card, having mobile application or website as user interface.

### Total RES supplied

The public charging points are owned by different parties, i.e. not by the city. The public charging points which are operated by Turku Energia, USER-CHI partner, are supplying RES electricity about 35 000 kWh/year.

## Electromobility strategies and initiatives

### State of play

The city of Turku has set the objective to be climate neutral by 2029. The climate plan which was released in June 2018 also foresees to cut by half the travel-related emissions taking the current state of emissions as baseline. To achieve these

objectives the city aims at improving the cycling and walking conditions and to further develop a sustainable mobility culture. The public transport system will also

be turned into a 100% carbon neutral service.<sup>1</sup>

Turku also wants to increase the e-vehicles fleet in services bought by the municipality (taxi services for disabled people, for instance). In addition, Turku currently develops innovative solutions for sustainable mobility of people and emission free freight logistics through a Horizon 2020 funded project: CIVITAS ECCENTRIC. Turku's e-mobility measures encompass different domains.

### **E-cars and parking**

Downtown Turku counts 7 EVs charging stations in street parking zones where the parking is free of charge during the charging of the EVs for a maximum of 4 hours. These charging stations are operated by the national company Liikennevirta Oy under the brand name Virta, that has over 300 charging stations all over Finland and an app for the easy use and navigation to the charging stations.

Additionally, private actors such as gas stations, hypermarkets, and shopping centres, and restaurants have installed EVs charging points in their parking areas. At some of these stations (for example at IKEA) the charging is free of charge.

The city of Turku allowed to switch several street parking spaces into EVs charging stations.

### **Light Electric Vehicles**

In 2019 following the trend of other European cities, light rentable E-scooters (or E-scoots) were introduced to major cities in

Finland by several commercial operators. Many persons started using this new and flexible transport mode. However, a significant increase of accidents and injuries by e-scooters have been reported by the city hospitals in Helsinki, Tampere, and Turku<sup>2</sup>.

### **CIVITAS ECCENTRIC**

Finally, to achieve its carbon neutrality by 2029, Turku is investing heavily in clean transport solutions. One concrete example of this process is the CIVITAS ECCENTRIC project<sup>3</sup> which will develop electric transport, shared use of cars and bicycles, and the Mobility as a Service (MaaS) model. The focus area is Kupittaa. The project will, for example, pilot different e-vehicles to be used by city employees and will support the electrification of public transports.

Currently there are no other projects than USER- CHI ongoing in the city of Turku to develop the e-charging infrastructure.

### **Regional or national frameworks**

In Finland the main principle for public charging points, and electromobility in general, is to encourage private companies to offer EV services and the needed charging services. Finnish cities or other public authorities have not started to invest in public charging points on a large scale yet.

The traffic infrastructure subsidy is the main form of financial support to stimulate the construction of public charging point for EVs. The National Energy Authority is taking care of the subsidy administration and

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<sup>1</sup> See Reports from 2018 [https://www.bsr-electric.eu/content/7-materials/3-stakeholder-analysis/bsr-electric\\_stakeholder-analysis-on-e-mobility-in-the-bsr.pdf](https://www.bsr-electric.eu/content/7-materials/3-stakeholder-analysis/bsr-electric_stakeholder-analysis-on-e-mobility-in-the-bsr.pdf) and 2019

<https://www.bsr-electric.eu/news/finnish-update-to-bsr-electric-stakeholder-report>

<sup>2</sup><https://www.is.fi/kotimaa/art-2000006153079.html>

<sup>3</sup> <https://www.turku.fi/en/civitas-eccentric>

processing the applications. The four categories that are competing for the same subsidy include: natural gas distribution stations, local public traffic charging systems, high-power charging systems for EVs and low-power charging systems for EVs. High-power charging stations can get up to 35% subsidy and low-power charging stations a maximum of 30% subsidy. The charging stations must be public charging stations in order to be eligible for the subsidy.

Apartment buildings owners can apply for a different subsidy via the Housing finance and development centre in Finland (ARA). The subsidy covers 35% or 50% of the eligible costs.

The limited subsidy of EUR 2,000 for new electric car purchases is running for the period between 01.01.2018 and 31.12.2021.

In June 2019, a new Finnish governmental program was released. It states that the government support for electrical car charging infrastructure will be continued with a 15 million euros budgeted for the period 2020-2022. In addition, the program foresees e-mobility related income tax reduction for employees. It states that charging of e-cars at workplaces as a part of salary will be free of tax. Further regulations to increasing the charging infrastructures in housing companies and service stations in Finland are additionally programmed. This will allow to reach scale as housing companies are numerous, since apartment blocks and rowhouses in Finland are often administered by them.

In 2018 a subsidy scheme for e-bike purchases was under discussion in Finland, but finally was not implemented. At present

there is no financial support for e-bike purchases in Finland.

## Deployment approaches

Turku's deployment approach builds on an ecosystem of private companies, best placed to develop the city's network. The growing customer's demand for charging points makes it attractive for private companies to invest in infrastructure. Several public subsidies mentioned above further encourage this development.

## Challenges and barriers

Turku is facing several challenges in the implementation of e-mobility. First of all, the Nordic weather conditions must be taken into account in the technological development and installation of public charging facilities. Furthermore, investments in charging points are still not considered as economically profitable.

In addition, public procurement rules limit the possibilities of the city authority and its daughter companies to purchase and develop the services connected to the charging points. This means that capabilities of testing new things dynamically with others are very limited.

## Learning needs

Turku's learning needs regard exploring effectively working cooperation models with rental houses and the kind of interfaces chosen for the installed charging points. Finally, learning needs also encompass the specific equipment's used in other cities for LEV charging places.

## USER-CHI solutions

In Turku, seven USER-CHI products will be demonstrated. The USER-CHI products demonstrated in Turku 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.
- **INSOC – Integrated solar DC charging for Light Electric Vehicles (LEVs):** A solution combining charging, onsite production of renewable energy and theft-proof parking for Light Electric Vehicles.

At this stage, 4 main areas of intervention have been identified in Turku as USER-CHI demonstration city:

### Demo site solution 1: Master plan for the charging infrastructure

#### Description

The City of Turku will produce a master plan for EV charging infrastructure and a specific roadmap for building electric charging points for at least 10 city-owned facilities through public-private partnership. The city's active role, the communication with key stakeholders, as well as the cooperation with parking companies and the exploitation of diverse products will result in a user-friendly charging infrastructure in the future.

#### Objectives

The main objective is the approval and the implementation of the Master plan for EV charging infrastructure in Turku. The second objective is the creation of a development plan for electric charging in city-owned facilities as well as a stakeholder campaign for electric charging stations carried out in year 2022.

### Timing

The Master plan development will start in January 2021 and will be finalized in December 2022. The development plan for electric charging in city-owned facilities will be developed between September 2020 and December 2021.

The stakeholder campaign preparation will start in January 2021 and will run until summer 2023.

### Demo site solution 2: Charging boxes for LEVs

#### Description

The city of Turku will carry out a demonstration of innovative RES-integrated charging boxes for LEVs in identified locations in the city.

#### Objectives

Demonstrate new solutions that combine RES energy, charging and safe LEV parking. Create safe parking possibilities for e-bikes.

#### Timing

Planning of the boxes starts September 2020  
Demonstration starts in Spring 2022

### Demo site solution 3: Pääskyvuorenrinne demo

#### Description

On the site of a new residential housing area in Pääskyvuori, where 2 apartment houses with 80 apartment units will be built by VASO, slow-charging solution equipped with standard demand management and on-site RES production and battery storage will be tested.

#### Stakeholders involved

The charging equipment will be implemented and operated by Turku Energia, all the other equipment by VASO.

#### Objectives

Create a low-charging solution equipped with standard demand management and on-site RES production and battery storage. Demonstrate how the solutions are taken up by the residents and how those can be scaled up.

#### Timing

Demonstration will happen in 2022-2023



## Demo site solution 4: Mäntymäki demo

### Description

TVT Asunnot Oy will develop a demo charging system for light e-vehicles and a master plan for charging infrastructure in the Mäntymäki area. The demo site will be attached to a new building which is the first of its kind in the area.

The innovative low-power DC-charging solutions for LEVs will be adapted to the specificities of social housing and elderly people. The plan is to fit some senior mobility parking places with charging system inside the building that will be constructed. Additional charging station for LEVs with removable batteries, such as e-bikes, e-scooters, and other devices will be installed. These charging stations are firesafe. Electricity for these charging systems will be supplied by solar panels installed on the roof or on the side of the building.

### Stakeholders involved

The project requires a coordinated action between the construction company, which will construct the building, the electrical designer company, which will plan the building, a specialized electrical designer company which will design the solar powered charging and a company which will provide the ready-to-use battery charging rack.

### Objectives

The objective of this demo site is to identify how to integrate this charging infrastructure in a building which has already been planned and designed. This shall allow to gain knowledge about how to implement these kind of charging stations in buildings that are already constructed. Another objective is also to find out which kind of charging stations are usable in the harsh winter of Northern Europe.

### Timing

The public procurement procedure will start with the construction of the new housing units by TVT Asunnot Oy. The Housing Finance and Development Centre of Finland (ARA) is the governmental agency supervising the legal, financial and planning procedure. By late 2020 the planning phase (contractor planning, electrical planning, construction permit) will come to a term. The demo-site is planned to be ready for the infrastructural implementation by summer 2021. Some delays are to be expected due to the COVID-19 pandemic.

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