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HUPMOBILE

Joint Port Area Master and Mobility Plan

HUPMOBILE – Holistic Urban and Peri-urban Mobility
City of Turku, 2021

Imprint

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Authors: **City of Turku:**

Juha Jokela, Jyrki Lappi, Mervi Lehto, Satu Tiainen, Lauri Jorasmaa, Jenna Kaarela (english translation)

Port of Turku:

Markku Alahäme, Jouni Hilden

WSP Finland Oy:

Olli Haveri, Annika Rantala, Laura Poskiparta, Sauli Sarjamo, Ollipekka Pakkanen Matti Keränen, Mikko Jokinen, Riikka Kallio, Timo Birling, Perti Saarikoski, Pekka Pulkkinen, Kari Nikula

Layout: Laura Sarlin, Union of the Baltic Cities Sustainable Cities Commission

Cover picture: © Joni Pietiläinen

Project note

The EU co-funded project **HUPMOBILE – Holistic Urban and Peri-urban Mobility** (2019–2021) brings together municipalities, universities and other expert organisations in their efforts to develop a holistic approach to the planning, implementation, optimisation and management of integrated, sustainable mobility solutions in the Baltic Sea port cities.

The carried out activities enable major urban mobility stakeholders such as city authorities, as well as infrastructure providers and transport providers to assess and integrate innovative mobility options into their mobility management plans and policies. The developed HUPMOBILE framework allows the planning and implementation of well-functioning interfaces and links in urban- and peri-urban transport considering the different transportation flows in the local context.

Within HUPMOBILE, partner cities plan, test and implement innovative sustainable urban mobility for both people and goods (i.e. freight, cargo logistics and delivery), which are easily adaptable for follower cities. These include greener urban logistics and combinations of goods- and passenger traffic, intelligent traffic systems-based services, tools for stakeholder participation, and new tools for transportation mobility management and Mobility-as-a-Service (MaaS).

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1. Introduction

Over the coming decades, the surroundings of Turku Castle and the port area will be facing major changes. Guidelines are currently being prepared for what the area will look like in the future. Residential area Linnakaupunki is already being built and the results of the international idea competition for the Linnanniemi area has been announced. The prize-winning, purchased and honourable mentioned entries of the idea competition will be utilized in the zoning of the area. The aim is, that Linnanniemi will be a centre of year-round urban culture where history, sea and archipelago can be experienced simultaneously. The area is also envisioned to be accessible with all forms of transport. To serve these purposes, a traffic and mobility master plan for the Turku port area was prepared within HUPMOBILE project.

The preparation of the traffic and mobility master plan for Turku port area started in autumn 2019. The starting point of the work was to create a plan for the development of the traffic arrangements and mobility services in the area, taking all modes of transport into account. The purpose of the plan was to connect the planned ship passenger terminal smoothly and safely with its surroundings, improve the accessibility of the port area and promote forms of sustainable mobility. The master plan examines the area surrounding the new terminal as well as other traffic connections in the vicinity of the port area. During the work, interviews about passengers' travel modes were conducted by Häme University of Applied Sciences (HAMK) in both passenger terminals (arrivals and departures of evening ships) to supplement the initial data. Also, a vision workshop involving different stakeholders was organized.

The port is an important concentration of cultural sites and is considered the city's gateway for international shipping and archipelago traffic. The port is directly accessible e.g. by train and long-distance buses, which is yet a clear advantage when it comes to sustainable mobility options for passengers. However, the areas surrounding the current port terminals have been built in stages and are perceived as difficult to grasp. The street network is mainly dimensioned for the needs of heavy traffic or the solutions are outdated. Fragmented traffic areas dominate the valuable cultural landscape.

The master plan for 2029 guides the construction of Linnakaupunki and Linnanniemi towards centre-like area and the construction has progressed during the preparation of the Joint Port Area Master and Mobility Plan. This plan was included as a starting point and background information in the Linnanniemi international idea competition. In order to develop the port's public transport connections, the city has prepared e.g. tramway and trunk bus plans. The planned new joint terminal means that car traffic into ships will leave the Linnanniemi area completely, which will significantly free up space for the development of the area.

Apart from being linked to the HUPMOBILE project, the Traffic and Mobility Master Plan is also linked to the Ferry Terminal project, where shipping companies Tallink Silja Oy and Viking Line Abp, the Port of Turku and the City of Turku are working together for the development of the port area. The purpose of the Ferry Terminal project is to allow a new common ship terminal to be built and the port area's operations and traffic arrangements to be developed.

The material of this report has been compiled by WSP Finland Oy. The whole report is available in Finnish.

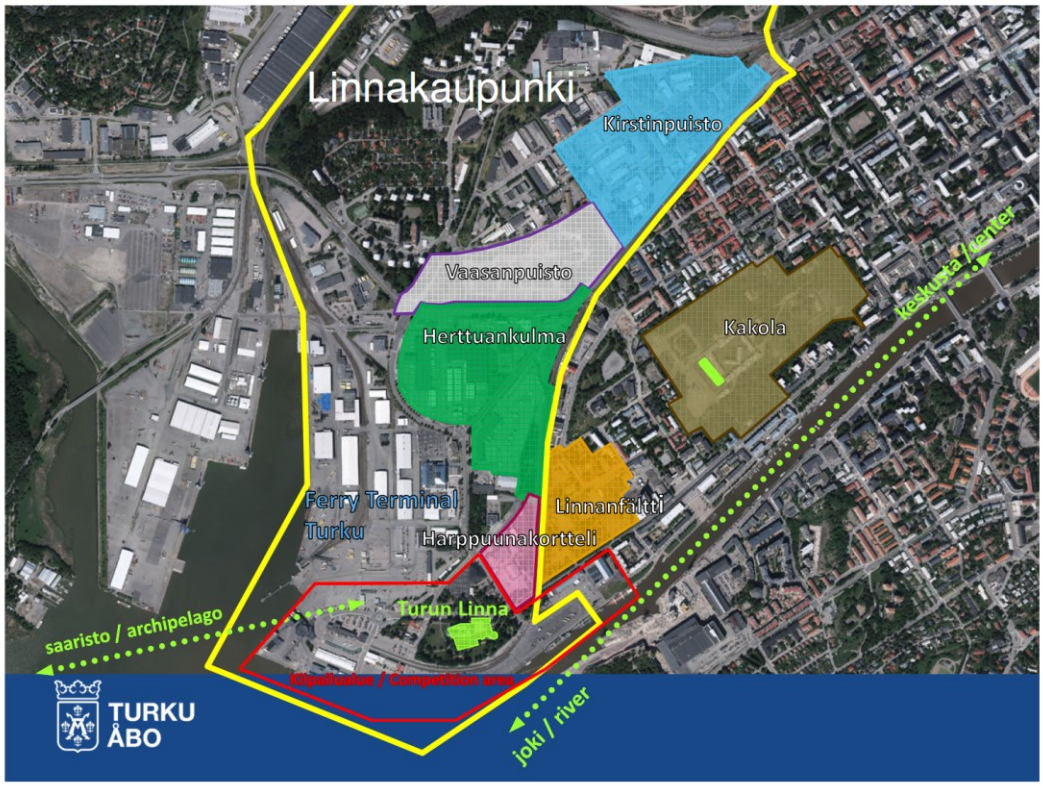


Figure 1. The surroundings of the Port of Turku

The current ship terminals are causing most of the traffic in the planning area. The traffic solutions in front of the terminals, especially for parking, have been built in stages expanding further and further away from the terminals. There is no central parking in the area, but several different parking areas subject to a charge. Free parking on the streets is limited in time. There is also a small private car parking facility near the Viking Line terminal.

Regional public transport stops are well connected to the terminals.

Areas for charter buses and taxis are basically divided by terminal and are located reasonably close to the terminals. At the time of writing, improvements to the charter and kiss and ride area were being made in front of the Viking Line terminal.

Train and long-distance bus platforms are located within a reasonable walking distance of the terminals, but in such a way that the road has to be crossed several times on the way to the terminals.

The city bike station is located next to the long-distance bus platforms and is far from the terminals.

Traffic on the streets of the area is not restricted except for the Ensimmäinen linja, which is a route reserved only for public transport and taxis. Linnankatu is the route for local buses to the city center.

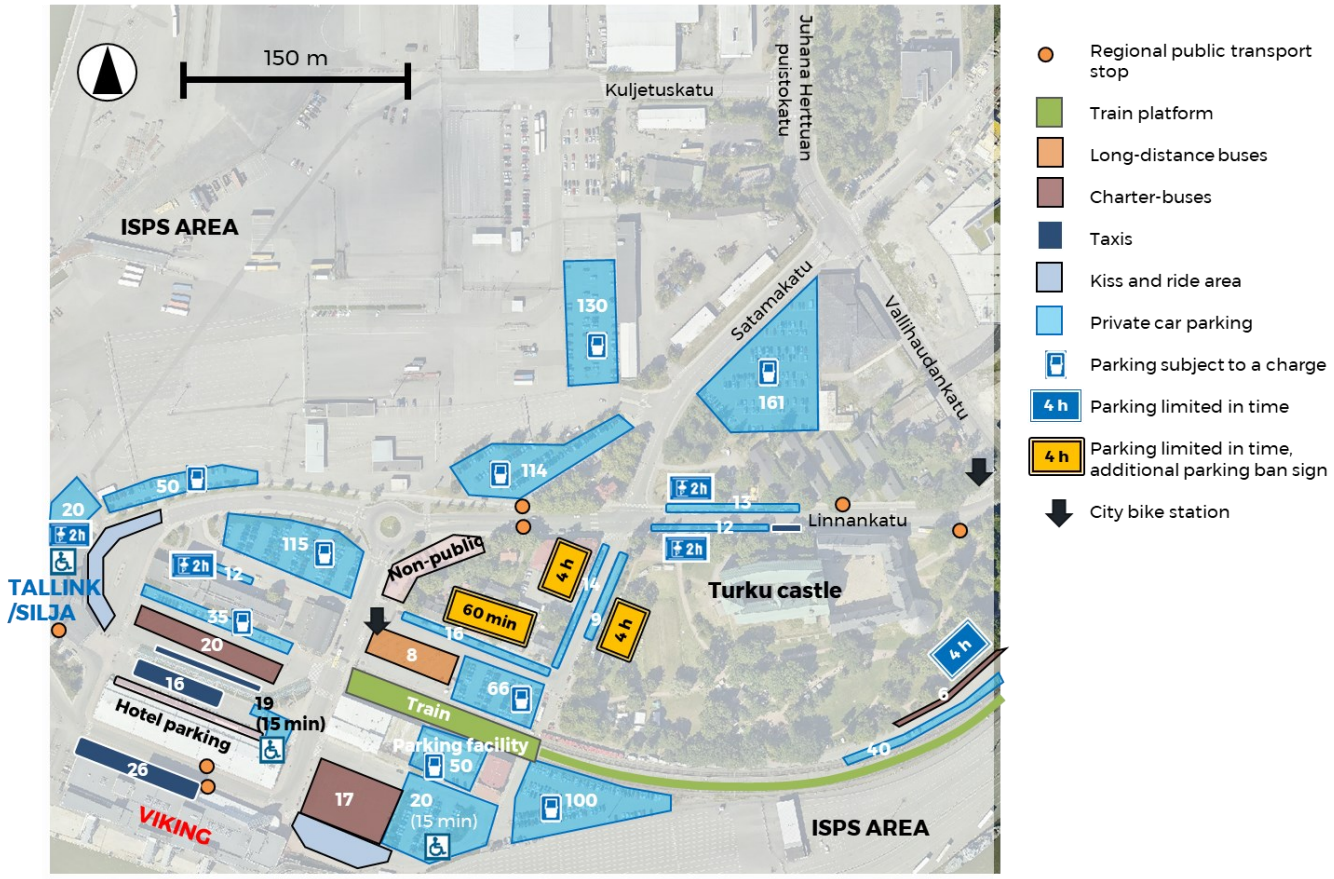


Figure 2. Current traffic arrangements in the terminal area

2. Background and Objectives

This chapter introduces best practise evaluations from similar destinations, evaluation of the present state and cooperation between different stakeholders during the planning process.

2.1. Best Practice evaluation

To find examples of solutions in traffic management, sustainable mobility and transport services in other similar destinations, a Best Practice evaluation was carried out (appx. 1 in the original report). The cases of the port cities examined were the case of the City of Gothenburg (Danmarksterminale) and the case of the City of Stockholm (Värtahamne). In the same way as in Turku, these two ports combine land use development and various port operations, especially passenger shipping. The ports of Danmarksterminale in Gothenburg and Värtahamne in Stockholm were selected on the following grounds:

- The port area of **Danmarksterminalen in Gothenburg** is located in a cramped place in the center of Gothenburg. Line passenger traffic runs from the port to e.g. Denmark and part of the port area is being developed for urban use. Of particular interest are the port's traffic arrangements, how sustainable mobility is taken into consideration and the growth of residential areas in the immediate vicinity of the port.
- Land use in the port of **Stockholm's Värtahamnen** is currently being developed and a residential area will be built next to the port. The port's vessels are of the same size as at the port of Turku, and the turning time of Silja Line's ships bound for Turku is short.

In both Stockholm and Gothenburg, compromises have been made on the use of space. It is not necessary to locate long-term parking for cars in the immediate vicinity of the terminal. In Stockholm, long-term parking is several hundred meters away in parking facilities. Regarding the long-term parking, it is worth considering (as part of the comprehensive parking policy for the port and the city as a whole) how much support it should achieve and to what extent it is affordable. For example, the future new parking facility in the Port of Turku does not necessarily have to remain used only by the Port – the policy can be changed later.

The planning of port areas and new urban development areas is a long-term, decades-long project. Visions, goals, modes of mobility, and management tools for planning are likely to change during the process. The planning is also influenced by external factors, such as climate change which is the driver for sustainable mobility goals and requirements.

The planning and restructuring of large areas must both look far into the future and be flexible: planned solutions must also work in changing circumstances and as goals change. It must be possible to demand changes in practices from all parties. It's easy to agree on great visions, but someone also has to pay the cost of the changes — both changes in the physical environment and changes in practices.

Stockholm Framkomlighetsstrategin - four design principles for the road and street network:

A) More people and goods can be moved from one place to another as more people use high-capacity modes of transport, such as public transport, walking and cycling, and high-capacity freight transport.
B) The accessibility of the road and street network will be improved by increasing the travel speed of high-capacity modes of transport and improving the reliability of the travel times of all road users.
C) The role of roads and streets as attractive places will be strengthened by improving the city's walkability.
D) The negative effects of road and street traffic are minimized by diverting car traffic to those journeys that are most beneficial to society.

Stockholm policies:

- Achieving bold visions requires determination and cooperation of all parties. The city must dare to demand a new kind of approach and vision from partners, designers , property owners and builders. To support this, the city should develop concrete tools to show what other parties need to do as a minimum, and also to encourage them to go beyond the minimum requirements. For example, town planning already has tools for other types of regulation - some things are already used to be demanded.
- Resources for the development of tools for cooperation and planning needs to be allocated.
- Plans drawn up must be assessed separately from the point of view of sustainable mobility, and there must be a commitment to solve the issues raised in the assessments. Once the construction of the area is complete, it will require much more effort to change and improve the solutions that have already been made. This applies to both the city's own planning and zoning as well as private property owners'.
- **Prioritization of modes of transport**: In practice, everything starts with the prioritization of modes of transport and the (re)allocation of limited space according to prioritization. Prioritization may be different in areas with special needs (e.g. port traffic).
- **New vs. old modes of transport**: New modes of transport and mobility services are a part of the Mobilitetsindex (a tool that helps property owners to improve the conditions for sustainable mobility of their property and area – described in more detail in appendix 1), which is

being tested in Stockholm. However, they are not the only decisive means of increasing sustainable mobility. Equally important, or even more important, is the promotion of traditional sustainable modes of mobility; walking, cycling and public transport by all possible means.

2.2. Evaluation of the Present State

Present state and future scenarios

The traffic distribution of the port terminal differs from the traffic distribution of Turku and Turku region. It is not common to walk or cycle to the terminal, especially during winter. People walk to the terminal for example from the car parking from several hundred meters away. However, the share of the public transport compensates for the lack of walking and cycling, which means that the share of sustainable mobility is at the level of Turku. Nonetheless, the goal in Turku is a 66% share in sustainable modes of transport, which can also be considered a good starting point in the terminal area.

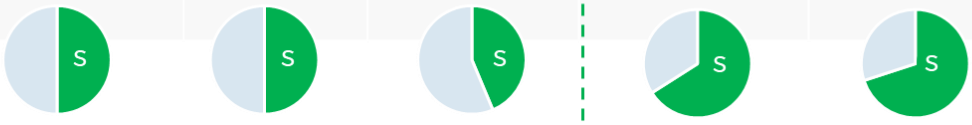
The Linnanniemi area and, more broadly, Linnakaupunki are to be connected as an integral part of the city center and to create services and jobs in the area. There are opportunities in the region to invest even more in the share of sustainable modes of transport than what is Turku's general goal, and therefore the target status is set higher than the general target of Turku.

Table 1. Comparison of present state and future scenarios.

	PRESENT STATE: Passenger traffic at the port terminals*	**PRESENT STATE:** Passenger traffic survey 2016, Turku	**PRESENT STATE:** Passenger traffic survey 2016, Turku region	**TERMINAL SCENARIO:** Targeted state of sustainable mobility in Turku	**LINNAKAUPUNKI SCENARIO:** Sustainable mobility in the main role
Walking	0 %	29 %	23 %	1 %	32 %
Cycling	0 %	10 %	8 %	2 %	14 %
Public transport - Train - Tram/Superbus - Local traffic - Charter traffic - Haulage	 10 % - 10 % 20 % 10 %	10 %	7 %	63 %	24 %
Total sustainable mobility	50 %	49 %	38 %	66 %	70 %
Taxi	5 %	-	-	5 %	-
Car, drop-off	25 %	13 % (passenger)	15 % (passenger)	15 %	12 %
Car	20 %	36 % (driver)	44 % (driver)	14 %	18 %

*estimate based on a research in 2018

S = THE SHARE OF SUSTAINABLE MOBILITY



The evaluation of the present state included analysis of

1) Urban environment
2) Traffic arrangements
3) Protected buildings
4) Soil conditions and contaminated land

5) Modal split
    a. Summary of the results of the 2018 research (interviews with port area actors)
    b. Passenger interviews and traffic observations conducted in the port terminals by HAMK
6) Assessment of the current routes of different modes of transport
7) Residents' mobility habits when traveling to the port (Survey by Aalto University)
8) Land use development
9) Transport system development

More about the evaluation of the present state in report (p. 8-25) available in Finnish.

2.3. Cooperation in planning

The plan was made in close cooperation with port area operators and other stakeholders. Joint cooperation and development model was put together to make sure open communication and transparency were included in the process. The model focuses on recognizing all the stakeholders and ways for internal and external interaction. It suggest different tools for fluent exchange of information and participatory planning.

Internal interaction during the port area development planning

- Leading team members
    - City of Turku
    - Port of Turku
- Working team members
    - City of Turku
    - Shipping Companies
    - Port of Turku
    - Port operators
    - Finnish Transport Infrastucture Agency
- Cooperation with teams of consultants and constructors
    - City of Turku
    - Port of Turku
    - Selected consultants
    - Selected constructors
- Interaction
    - Meetings
    - Emails
    - Shared workspaces for storing files

External interaction during the port area development planning

- External stakeholders
    - Residents

    - Societies
    - Companies
    - Regional authorities
    - Municipal organizations
- Tools for participation
    - Interviews
    - Workshops
    - Online surveys
    - Exhibitions
    - Webinars
    - Guided tours

The whole Joint cooperation and development model for Turku port area development also prepared within HUPMOBILE project is available in English.

3. Current Mobility Habits and Vision for the Future

This chapter introduces the results of interviews and a survey that examined current mobility habits in the Port of Turku as well as future vision for the traffic and mobility in the area that was created during a vision workshop.

3.1. Interviews by HAMK

Häme University of Applied Sciences conducted 192 interviews at Silja Line and Viking Line terminals in October 29th, 2019. The following observations are related to the respondents' modes of transport:

- The respondents arrived or planned to leave using many different modes of transport. However, an exact modal split is not obtained with this sample, and the modal split can vary e.g. on different days of the week and according to how many passenger uses charter buses.
- As expected, there was only little walking and cycling (turn of the month October/November may have reduced the number compared to full year on average).
- **In Turku**, own car, kiss and ride and regional public transport are strong modes of transport, but taxis are also emerging.
- Particularly **in the rest of the Turku region**, the main mode of transport is own car, but there is also a significant amount of kiss and ride.
- **For longer trips**, own car, long-distance buses and charter transport all play a significant role. The importance of trains is also emphasized, as expected.

Departure or destination of the trip:

- Around third of the respondents were going to or coming from Turku
- 16 percent were going to or coming from Turku region other than Turku
- Around half were going to or coming from outside Turku region
- From outside Turku, passengers come fairly evenly from directions of all main roads

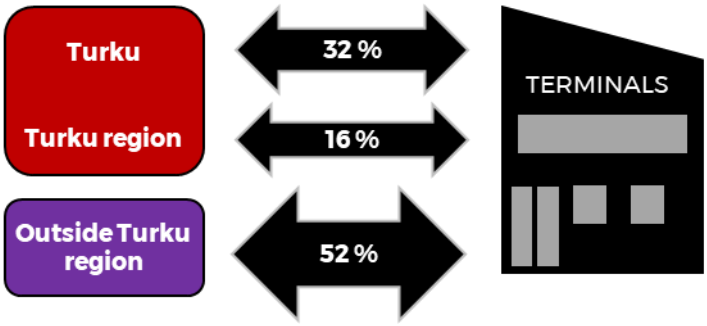


Figure 3. Departure / destination locations of the respondents.

Alternative mode of transport for all respondents:

- Around a third of the respondents answered that there was no alternative to the mode of transport they used; more than half of them had used a car. Correspondingly, around two-thirds would have had another option.
- Driving a car or kiss and ride would have been an option for around 20 percent of the respondents (especially those arriving by charter bus).
- Train would have been an option for around 10 percent of the respondents.
- A local bus would have been an option for just over 10 percent of the respondents (especially those arriving by car).
- A long-distance bus would also have been an option for around 10 percent of the respondents.
- Some of the respondents would have had several alternative modes of transport, or the journey would have required the use of more than one mode of transport (for example, they would have had to use both local and long-distance buses on the journey).
- In terms of sustainable mobility, the alternative mode of transport would not always be optimal, i.e. from public transport / a charter bus to a car / taxi. Around 30 percent of the respondents could have changed their mode of transport to a more sustainable alternative, i.e. from a car / a taxi to public transport.

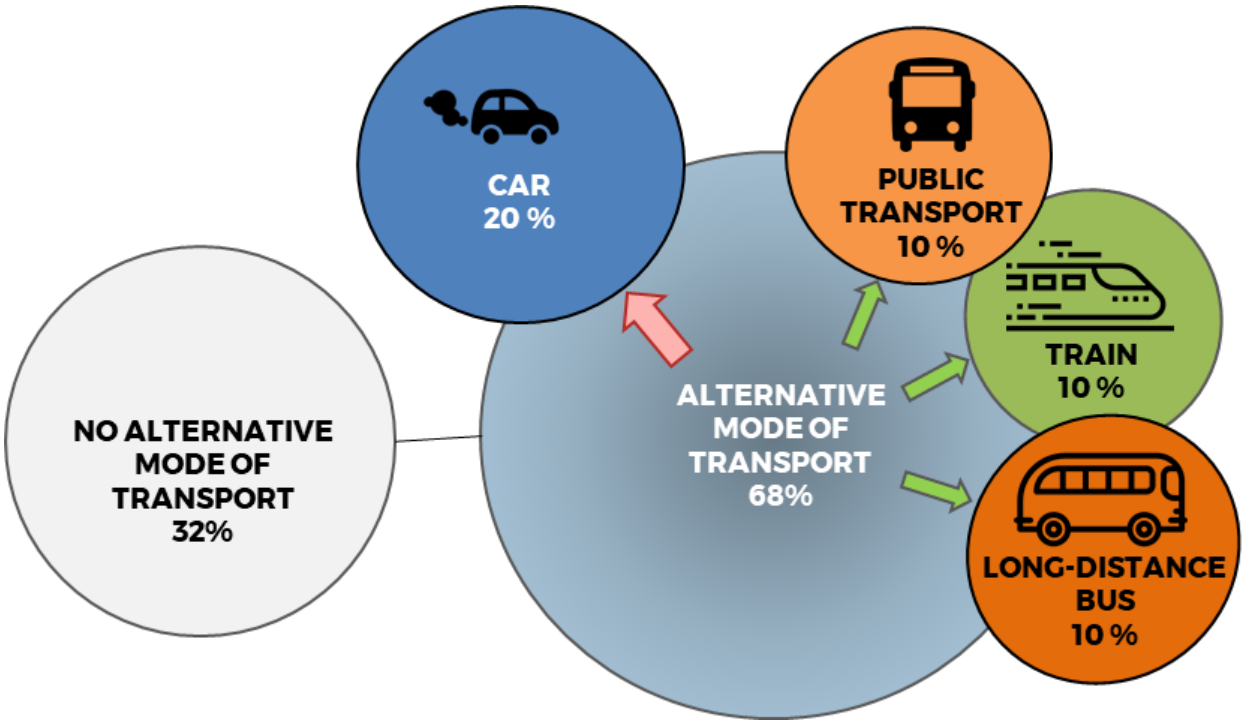


Figure 4. The main alternative modes of transport for all respondents.

Alternative mode of transport according to departure / destination:

- Due to the small number of respondents, the results are mainly indicative, but quite logical.
- Turku residents have the potential to switch to local transport, while those from further have the opportunity to switch to long-distance trains and buses.
- People living in the vicinity of Turku usually come by car and feel that they have the least opportunities to change their mode of transport (although a very small number of respondents).

- **Outside Turku region:** Around 36% of respondents would travel primarily by car (either as a driver or passenger), around 11% by train, around 22% by long-distance bus and around 25% by charter bus. The figure shows the main alternative modes of transport for the respondents.

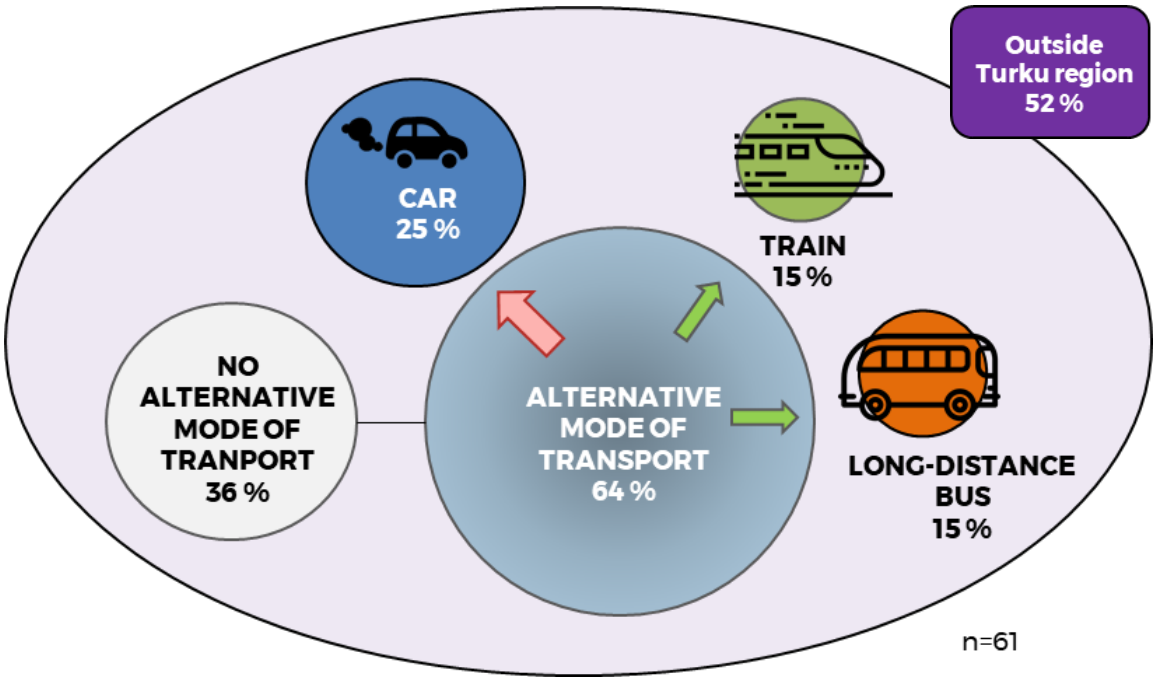


Figure 5. The main alternative modes of transport for the respondents going to / coming from outside Turku region.

- **Turku:** Around 60 percent of respondents would travel primarily by driving a car themselves or as a passenger, around 23 percent by local bus and around 10 percent by taxi. The figure shows the main alternative modes of transport for the respondents.

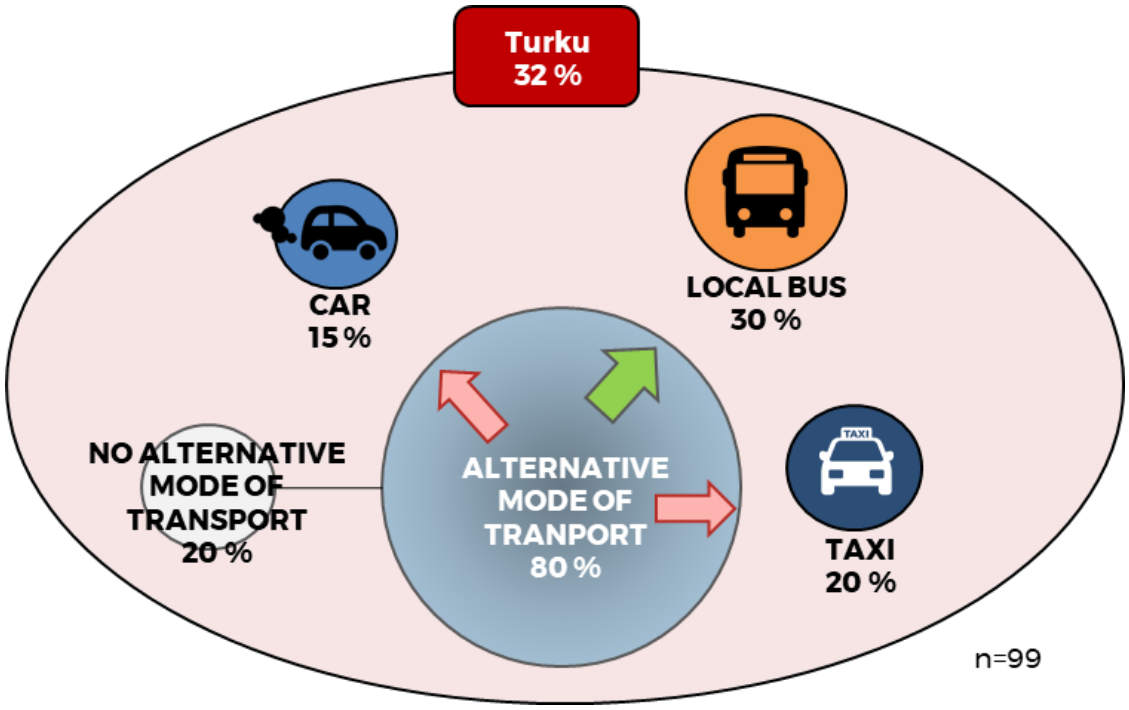


Figure 6. The main alternative modes of transport for the respondents going to / coming from Turku.

- **Turku region (other than Turku):** Around 97% of respondents would travel primarily by car (as a driver or passenger). The rest of the respondents (3%) would travel primarily by train. The figure shows the respondents' main alternative modes of transport.

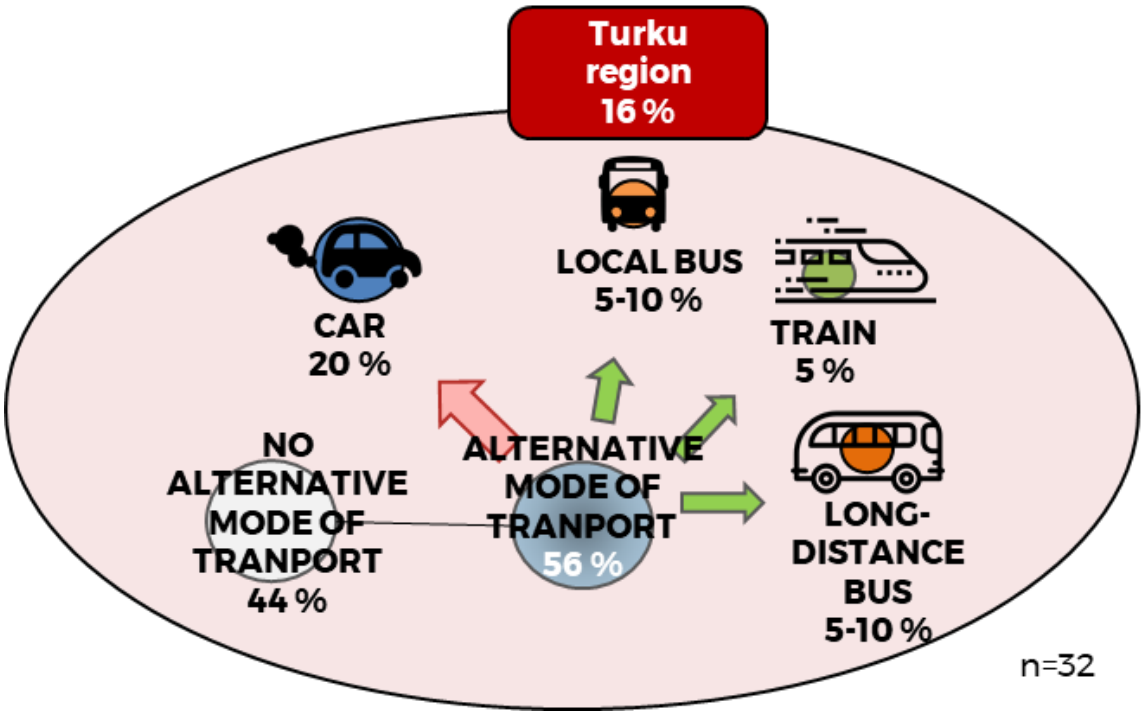


Figure 7. The main alternative modes of transport for the respondents going to / coming from Turku region.

3.2. Survey by Aalto University

To support the master planning of the Turku port area, a survey concerning the mobility habits of the residents of Turku region has been carried out by Aalto University as part of the HUPMOBILE project. The survey was conducted in early 2020 and received a total of 806 responses. The aim of the survey was to find out the mobility habits of the region's residents on trips to the Port of Turku and Turku archipelago, as well as their interest and willingness to change current mobility habits and try different mobility services.

Respondents background

Around 69% of the respondents lived in Turku, 10% in Kaarina, 7% in Raisio, 6% in Naantali and the rest in other smaller municipalities such as Lieto and Paimio. 47% of the respondents were women and 53% men. The largest group of respondents were aged 45-64 (36% of respondents) and over 64 (22% of respondents). 87% of the respondents had a driving license and around 81% of the respondents had the opportunity to use a car daily or several times a week. Around 45% of the respondents had a season ticket for public transport and 85% said they owned a bicycle.

Mobility habits when traveling to the port

Around 78% of the respondents said that they visit the port less than once a month and the main reasons for a visit were travel and leisure. The figure below shows the respondents' primary modes of transport when travelling to the port. Respondents were generally satisfied or very satisfied with the conditions related to the primary mode of transport.

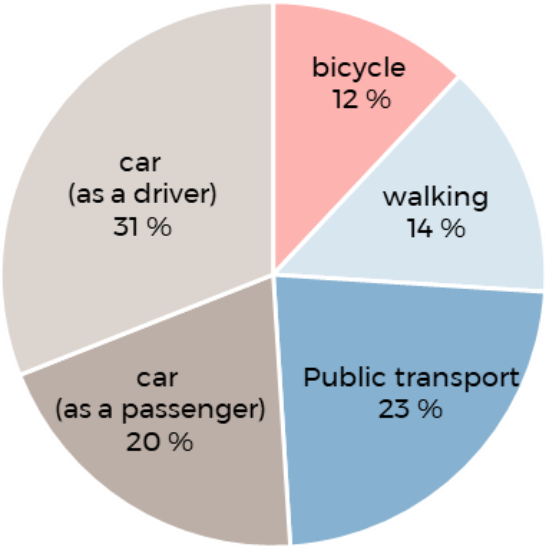


Figure 8. The respondents' primary mode of transport when transporting to the port.

Dissatisfaction is mainly caused by the difficult traffic arrangements in the area, as well as the congestions when ships arrive to or leave the port. According to the respondents, there is not enough parking space and it is difficult to find. In addition, parking in the area is considered expensive. Public transport travel chains to the port are not considered smooth. The area is not considered to be suitable for cycling and the cycle paths are intermittent. Bicycle parking is considered to be deficient and too unsafe to leave the bicycle there during a cruise. In addition, access to ship by bike is considered challenging.

Interest in mobility services

When asking how likely it would be to walk or cycle to the area if improvements were made to walking and cycle path arrangements, very positive responses were received. Around 45% of the respondents thought they would very likely or likely walk to the area and around 50% very likely or likely to cycle to the area with improvements.

When asking how likely it would be to travel to the port area using different mobility services, the majority answered very unlikely or unlikely. The alternatives given were:

- Car rental services
- Carpooling or other shared ride services
- Car sharing services
- Scooter sharing or electric bike services
- City bikes
- Public transport

Public transport was considered to be the most attractive of the alternatives and over 60% answered that they would very likely or likely use it. City bikes, shared electric scooters or electric bikes, and carpools or other shared rides would be very likely or likely to be used by less than 20% of the respondents. Car rental services or car-sharing services would not be used by almost any of the respondents.

3.3. Vision Workshop

In order to develop the land use of the port of Turku and its surroundings, a vision of traffic and mobility for the port and Linnakaupunki area was drawn up. The formation of the vision is based on the results of the analysis of the initial data studied at the beginning of the work and the City of Turku's goals for the future modal split and the development of the city center. The vision was created in extensive interaction within a workshop, in which representatives of the steering group, the consultant, operators and residents of the area, as well as other industries of the city took part (Appx. 2 in the original report).

The city aims for carbon neutrality by 2029. In terms of transport, the share of sustainable modes of transport in the Linnakaupunki area should be around 70% by 2029 and in terms of traffic to the terminal at least 66%. In the current situation, 49% of the domestic journeys of Turku residents and 38% of the domestic journeys in the entire region are made by sustainable modes of transport, e.g. walking, cycling or public transport. Achieving the goal of carbon neutrality requires strong investments in the transport system and in changing mobility habits.

The shared vision of traffic and mobility in the Port of Turku and Linnakaupunki area is:

A unique maritime center that connects the center of Turku sustainably and smoothly to the archipelago.

A thematic map was created based on the future vision of the area's traffic and mobility. It follows the prioritization of the modes of transport described below. Important planning principle is the separation of the routes of sustainable modes of transport from the routes of vehicle traffic.

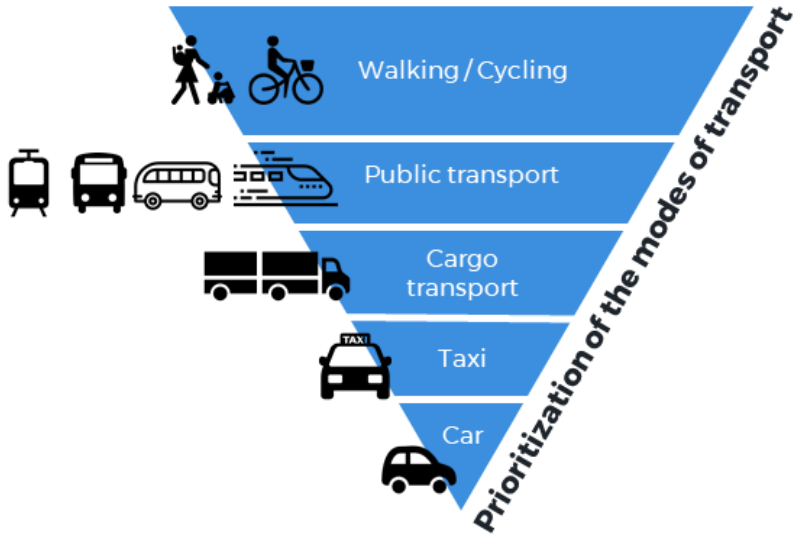


Figure 9. Prioritization of the modes of transport.

As learned from the Best Practice evaluation of the Case of Stockholm, the implementation of bold visions requires a determined approach and cooperation of all parties. The city must dare to demand a new kind of approach and vision from partners, designers and property owners and builders. To

support this, the city should develop concrete tools to show what other parties need to do at least, and also encourage them to go beyond the minimum requirements. The sustainable mobility toolkit is the first step towards the development of a concrete tool that should be further developed and included in the various planning stages.

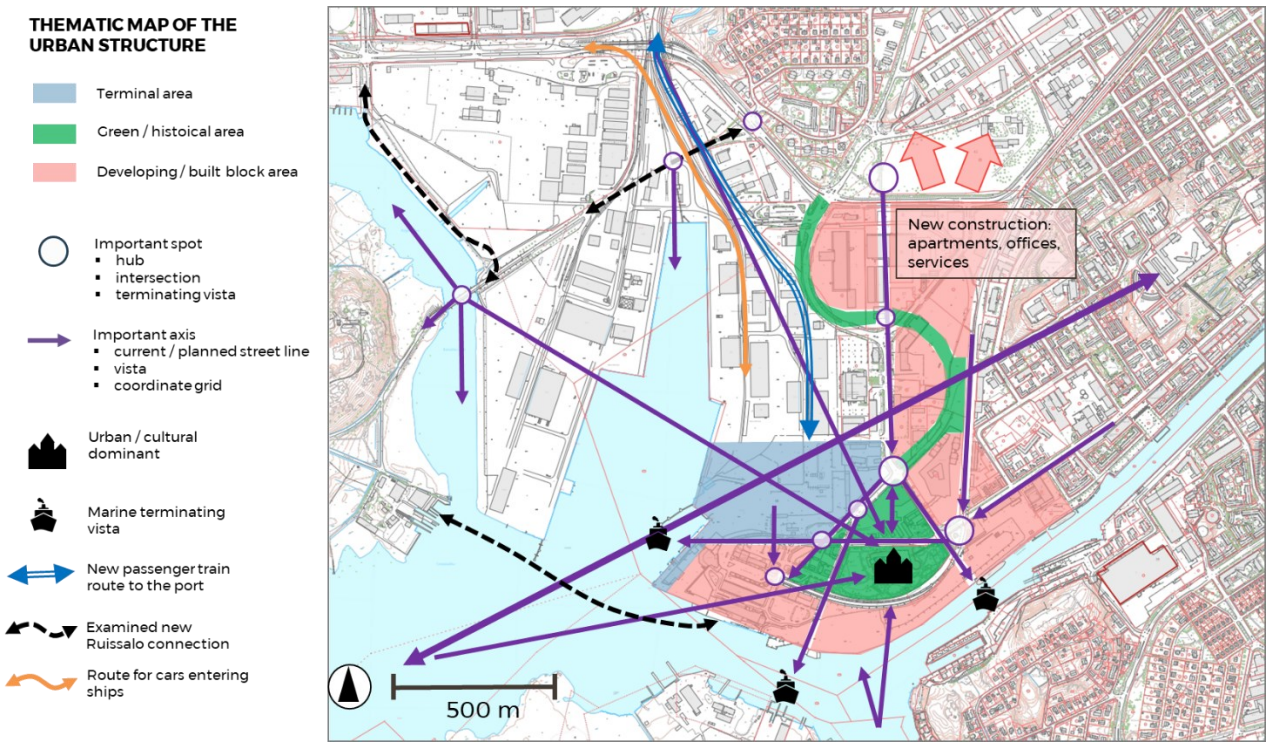


Figure 10. Thematic map of the urban structure

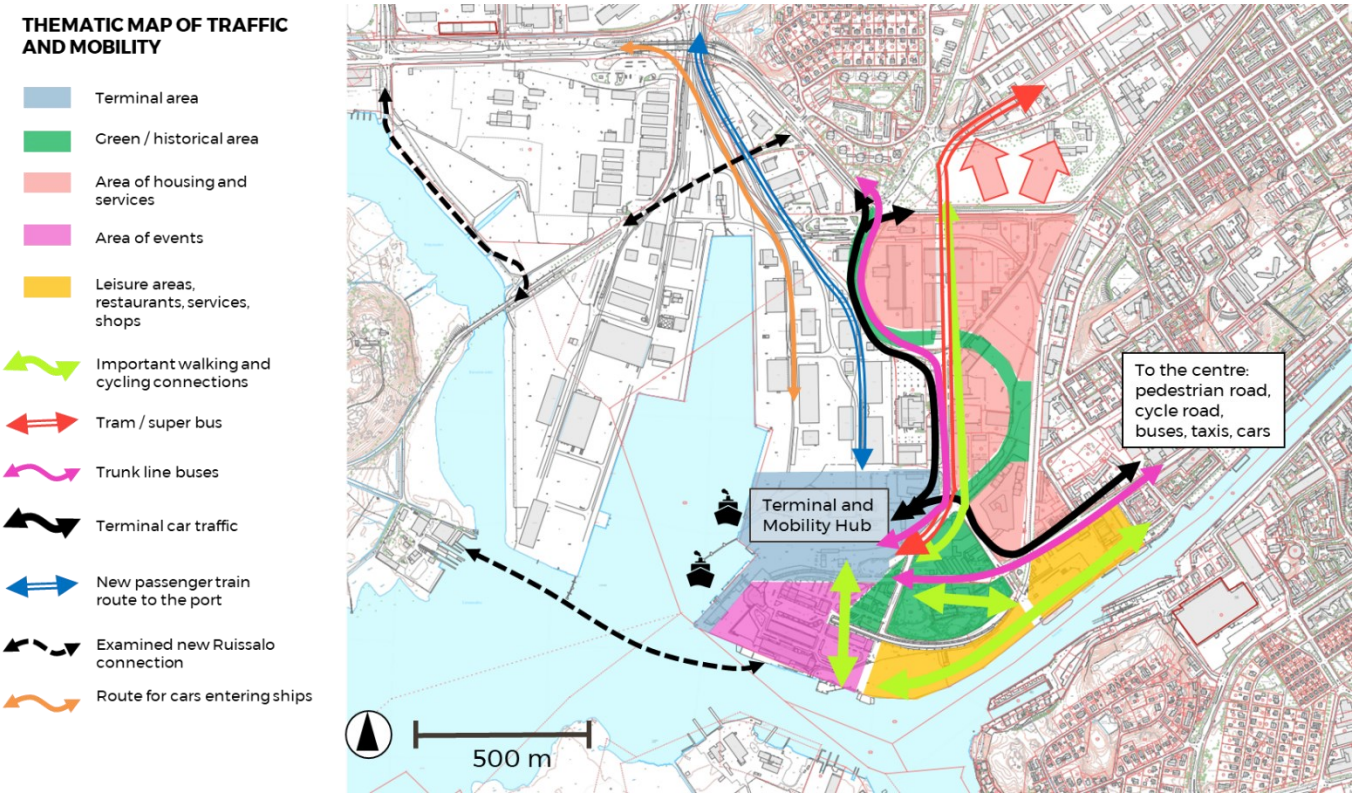


Figure 11. Thematic map of traffic and mobility

4. Sustainable Mobility Toolkit

The preparation of the traffic and mobility master plan for Turku's port area has included examining alternative solutions for supporting the use of sustainable modes of transport in the area. These examinations have taken into account the future residents of the area, other city residents and travelers as well as passengers arriving at and leaving the ship passenger terminal.

An important part of fostering sustainable mobility is the prioritization of modes of transport and adequate space allocations, which must be considered in the planning process from early stage. On the other hand, the impact of the pleasantness of the environment on the use of public transport has also recently begun to be studied. According to research, around 44% of the total travel time in public transport is walking and waiting. When people are asked what they remember about their public transportation trip, around 70% of the memories are related to walking. The majority of the walking experience is based on visuality and thus the comfort of the environment largely determines whether the information obtained during the walk is perceived as pleasant or unpleasant.

In a pleasant environment, the time spent walking is felt shorter. According to research, people are willing to walk up to around 70% longer in human-friendly environment. This means that there is a willingness to walk a longer distance to the public transport stop in a human-friendly and pleasant walking environment. In addition to smooth and uniform connections, in promoting sustainable mobility, it is also important to take into account the creation of a comfortable urban environment that attracts people to walk.

A so-called sustainable mobility toolkit has been compiled in order to take the use of sustainable modes of transport into account as part of the area's planning. This toolkit refines the vision for traffic and mobility and presents ways to implement sustainable mobility solutions. The Sustainable Mobility Toolkit consists of development measures divided into three categories: **1) Services 2) Information and 3) Operating models**. The development measures support each other: some of the measures can be implemented through different planning solutions, but most of the measures also require cooperation between different parties and the development of the available information.

The sustainable mobility toolkit is summarized in the following tables. First table covers the terminal area and the second more broadly the Linnakaupunki area. For each development measure, the mode of transport, the responsible actor for promoting the measure and the first planning stage in which the measure must be taken into account are described. The toolkit does not take into account the infrastructural needs of street connections but the other means of supporting sustainable mobility.

Sustainable mobility toolkit 1/2 Mobility in the terminal area.

Table 2. Sustainable mobility toolkit of the terminal area.

Mode symbols affected by the measures.

Pick-up services, kiss and ride, park and ride

Car

Public transport

Walking, cycling, micro-mobility

Service levels:

I basic level of service

II good level of service

Measures in accordance with the basic service level should be implemented as a matter of priority.

	DEVELOPMENT MEASURES	MODE OF TRANSPORT	RESPONSIBLE PARTIES	PLANNING STAGE	SERVICE LEVEL
SERVICES	Bicycle parking for employees and visitors, frame lockable		City of Turku, Port of Turku	Traffic master plan	I
	Charging station for e-bikes (charging cabinets for batteries)		City of Turku, Port of Turku	Planning / preparation	II
	City bike station and other shared mobility equipment		City of Turku	Traffic master plan	I
	Bicycle rental service for tourists		Port of Turku, Private operators	Space allocation	II
	New Föri: fixed ferry connection between Turku city center - harbor - Ruissalo / harbor - Hirvensalo - Telakkaranta		City of Turku	-	II
	Implementation of electric car charging infrastructure (parking, taxi station)		City of Turku, Port of Turku	Planning / preparation	II
	Parking for shared cars and carpools		City of Turku, Port of Turku	Traffic master plan	I
	Pick-up and drop-off points for demand responsive traffic in connection with bus stops		City of Turku, Service providers	Traffic master plan	I
	Kiss and ride arrangements (fees apply) and taxi areas		City of Turku, Taxi operators	Traffic master plan	I
INFORMATION	Information on mobility services compiled on a website (e.g. Föli)		City of Turku, Port of Turku, Service providers	-	I
	Informing cruise tourists about various mobility options (arriving and departing)		Shipowners, Port of Turku, City of Turku	-	I
	Information point (marketing, mobility, tourism of the area)		City of Turku, Port of Turku	-	II
	Real-time passenger information on screens (on board and at the terminal)		City of Turku, Port of Turku, Shipowners, Private operators	-	I
	Expanding Föli's brand in promoting sustainable mobility services		City of Turku, Service providers	-	II
	Föli ticket as part of a cruise ticket (for tourists and locals)		City of Turku, Shipowners	-	II
	Good guidance from the terminal to various mobility services		City of Turku, Port of Turku	Street layout	I
	Guide for getting on board by bike		City of Turku, Port of Turku	Street layout	I
OPERATING MODELS	Improving collaborative ticketing between all parties		City of Turku, Shipowners, Service providers	-	I
	One channel for all tickets		Service providers	-	II
	Luggage transport service at the departure and arrival times of ships		Port of Turku, Service providers	-	II

Sustainable mobility toolkit 2/2 Mobility in the Linnakaupunki area

Table 3. Sustainable mobility toolkit of the Linnakaupunki area.

	DEVELOPMENT MEASURES	MODE OF TRANSPORT	RESPONSIBLE PARTIES	PLANNING STAGE	SERVICE LEVEL
SERVICES	Prioritization of modes of transport, removing car traffic from the area		City of Turku	Master and city plan	I
	The urban environment encourages walking, cycling and leisure		City of Turku	City plan, traffic planning	I
	Bicycle parking of properties, easily accessible, also taking into account the space requirements of different freight bicycles		City of Turku, constructors	City plan, civil engineering	I
	Bicycle parking in the street area and marketplace areas		City of Turku	City plan, traffic planning / space allocation	I
	Electric bicycle charging points on buildings (charging cabinets for batteries)		City of Turku	Planning / preparation	II
	City bike station and other shared mobility equipment		City of Turku	Traffic master plan / space allocation	I
	Package collection points within apartment buildings				II
INFORMATION	New Föri: fixed ferry connection between Turku city center - harbor - Ruissalo / harbor - Hirvensalo - Telakkaranta		City of Turku	-	II
	Implementation of electric car charging infrastructure on premises		City of Turku	Planning / preparation	I
	Information on mobility services compiled on a website (e.g. Föli)		City of Turku, Port of Turku, service providers	-	I
	Information point (marketing, mobility, tourism of the area)		City of Turku, Port of Turku	-	II
	Real-time passenger information on screens (by stops, buildings and offices)		City of Turku, Port of Turku, housing associations	-	I
	Good guidance for cycling and walking		City of Turku, Port of Turku	Street layout	I
	Expanding Föli's brand in promoting sustainable mobility services		City of Turku, service providers	-	II
OPERATING MODELS	One channel for all tickets		Service providers	-	II
	Sustainable mobility audit as part of zoning		City of Turku	Master and city plan	I
	Properties' sustainable mobility plan included in the construction permit.		City of Turku	Construction permit	I

Mobility hub inspires to move and experiment boldly

Sustainable development solutions for the terminal area have been examined from the perspective of the mobility hub concept. The objective of the development of mobility hubs is to increase the popularity of public transport, cycling and walking. Mobility hubs provide access to a variety of transport modes, such as trains, trams and buses, as well as excellent pedestrian and bicycle connections and several city bike stations in different directions.

Mobility hubs also provide good conditions for kiss and ride, car sharing and various ride services by allocating sufficient space for them. Mobility hubs enable the development of mobility services by creating an operating environment that attracts developers of new services.

In the traffic planning of the Port of Turku terminal area, the preconditions of the mobility hub should be taken into account. The infrastructure solutions should support the accessibility of mobility services and, on the other hand, promote the emergence of services. Facilities for various services must be reserved close to the terminal. However, the limited space imposes restrictions, so the prioritization of modes of transport must be taken into account in the planning. Some mobility services, such as parking for shared cars and carpools, will be at a parking facility, which may be located a little further away, while public transport stops should be located as close as possible to the terminal entrance. Services should be easy to find, either clearly visible or well-guided. Getting to the terminal by other mode of transportation than a car requires a major change in mobility habits due to luggage. Thus, a luggage transport service is presented in the toolkit. Transport service could operate during the departure and arrival hours of ships and the booking of transport would take place as an additional service in connection with the booking of a cruise. In addition, kiss and ride parking should be chargeable, guiding passengers to use other, more sustainable modes of transport.

Smooth walking and cycling connections to the terminal area are important for the accessibility of the port, but they are also important for the daily mobility of the residents of the surrounding area. The services of the port's mobility hub would be available to residents, therefore creating a stronger user base for the services.

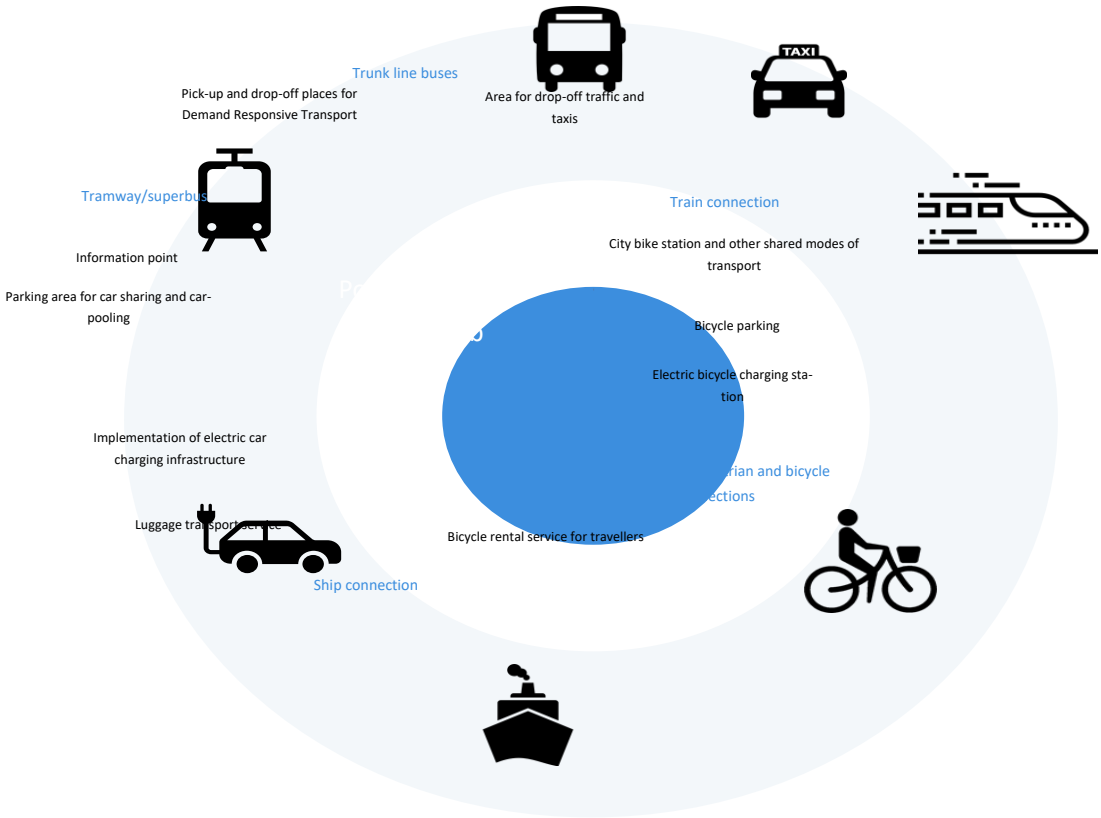


Figure 12. Possible activities of a mobility hub in the port of Turku.

Multi-channel information and development of operating models

An important part of a successful travel chain is getting enough information in the right place at the right time. The information should be multi-channel and available at all stages of the travel chain. The Sustainable Mobility Toolkit presents various information channels and tools that complement existing information and guidance in the terminal area and in the city.

The information should be easily accessible, for example compiled to an existing mobility service, e.g. Föli's website. In addition, passenger information should be displayed in real-time on screens located along the pedestrian routes in connection with apartments blocks and offices in the area as well as inside the terminal and when disembarking the ship. Mobility hub services should be actively marketed, for example, by informing cruise passengers about different mobility options, taking into account both arriving and departing passengers. This involves, for example, marketing the Föli ticket as an integral part of the cruise ticket, which encourages access to the port by public transport. Information should also be provided at a fixed information point located in vicinity or inside the terminal, which could combine information on marketing, mobility and tourism in the area.

Part of a functioning travel chain is functional walking and cycling guidance, which is seamlessly combined with terminal area guidance. In order to promote sustainable tourism, there should be guidance in the port area on boarding by bike in the same way as by vehicle traffic.

Sustainable mobility audit and plans

When designing an environment that encourages sustainable mobility, the system and network level alone are not enough. It is important that the whole journey from door to door all the way till destination is working well. The first and the last kilometers play an important role in the choice of a sustainable mode of transport, since the choice of mode of transport is often made there. This should be taken into account in the development of the entire Linnakaupunki area. The toolkit sets out two measures to ensure that the conditions for sustainable mobility are met in design:

- Sustainable mobility audit as part of zoning.
- Properties' sustainable mobility plan, which must be included as part of the construction permit.

Figures 13-17. Different bicycle parking solutions and a shared load bike service in Sweden, as well as an example of public transport information displayed on a real-time screen.

5. Tentative Traffic and Mobility Master Plan

The starting points for the master plan are described in this chapter. The plans are presented in the appendices 3-14 in the original report.

WIDER PLANNING AREA

- Incoming directions of motor vehicle traffic are being planned to be clearly separate for vehicles going to ships and traffic in Linnanniemi side of the terminal (kiss and ride, public transport, parking, taxis)
- Tramway / superbus reservations are taken into account
- The functionality of parallel intersection of Pahaniemi interchange is examined especially with regard to acceleration lanes and pedestrian and cycling crossings
- Space reservation examination for third lanes on Pansiontie between Suikkilantie – Pahaniemi interchange – justified by the increased volume of heavy traffic in the port
- Alternative plans for Ruissalo connections will be prepared:
    - Improving the street of Tuontikatu
    - Preliminary space reservation examination and cost estimate of Vapaavarastonkatu, taking into account the possible connection from the street also to the West Harbour
    - Bridge connection space reservation examination for pedestrian and cycling, and for pedestrian, cycling and car traffic also taking into account the possibility of electrification of port tracks.
- Separated pedestrian and cycling as a starting point in the planning of street cross-sections - justified by the growing number of pedestrians and cyclists due to the land use of Linnakaupunki. In principle, two-way cycle paths are planned for the street network, which as such are best connected to the current surrounding cycling network. In the vicinity of the terminal, cycle paths have been designed on both sides of the street, which also allows one-way cycle paths.
- Preparations for floods in street planning

PORT SURROUNDINGS

General principles include for example:

- Enabling high-quality and safe outdoor walking routes, i.e. avoiding or minimizing road crossings between the terminal and the mode of transport
- A clear and safe route to the center of Turku
- In the terminal area, mainly one-way car rotation principles
- Tramway / super bus reservation in front of the terminal
- Leaving space reservations for future modes of transport and mobility arrangements where possible

Sizing of the functions in south side of the terminal:

- Adequate facilities for bicycle parking and a city bike station as close as possible to the terminal

- The design principle for the tram stop is that maximum length of the tram is 47 m
- Local transport stops locating near the terminal, and taking into account the possibility to charge electric buses.
- The basis for the tram and bus traffic is its own stops e.g. timing point and charging possibility of electric buses
- Room for taxis for at least 270 m
- 10 platforms for haulage

Sizing of the functions in northeast side of the terminal:

- 20-30 Platforms for charter buses
- Parking facility for around 600 cars (functionality of the parking-walking connections)
- Ground-level kiss and ride lanes and parking areas (parking subject to a charge)

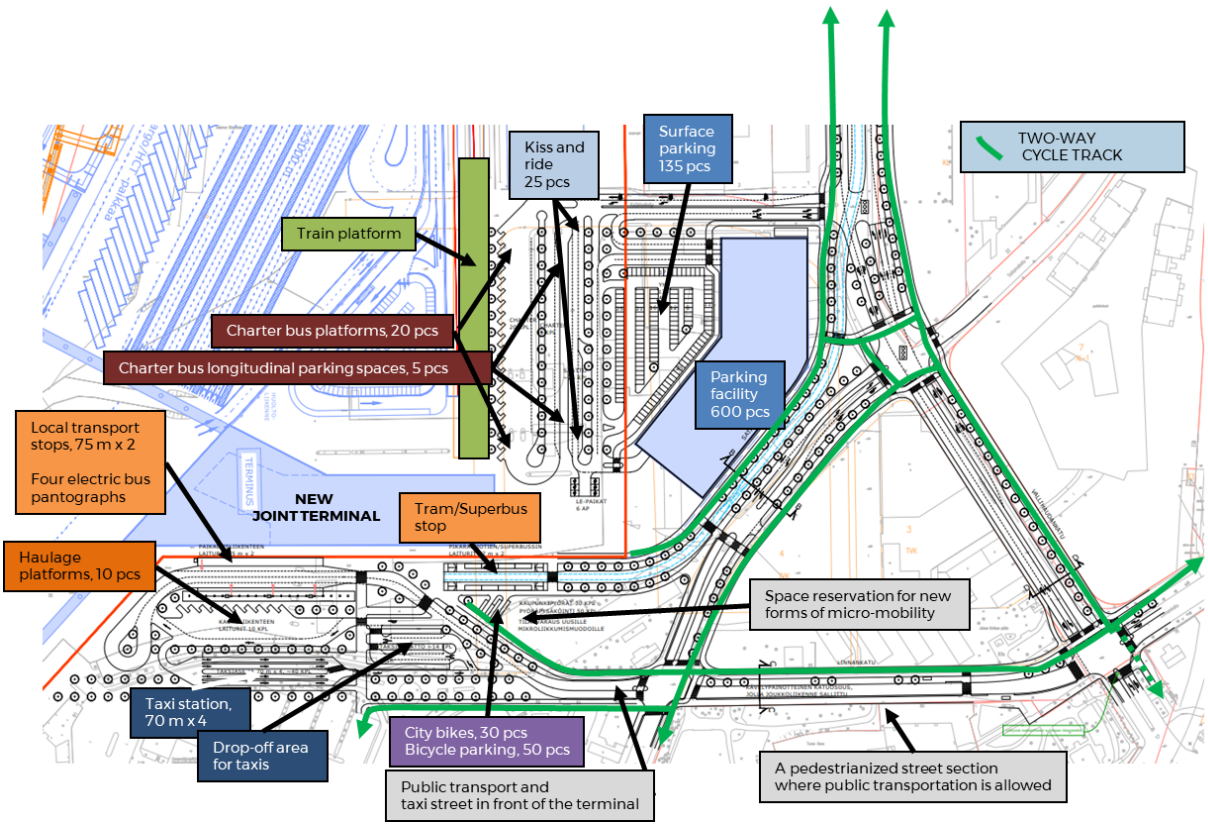


Figure 18. Traffic plan for the terminal area.

The main principle is to place passenger car traffic and charter bus traffic in their own area northeast of the terminal. In the plan, all the public transport platforms are placed nearest to the terminal. Space is reserved for a tramway or superbus on the eastern and southeastern side of the terminal, as well as both a drop-off area and a separate taxi station are designated for taxis are also to be located here. A parking facility, surface parking and drop-off area serves passengers arriving by car. Cyclists are directed to a centralized bicycle parking facility next to the tram/superbus stop. The section of Linnankatu next to Turku Castle is designated as a pedestrian-oriented street, which public transport may still pass through.

6. Cost Estimate

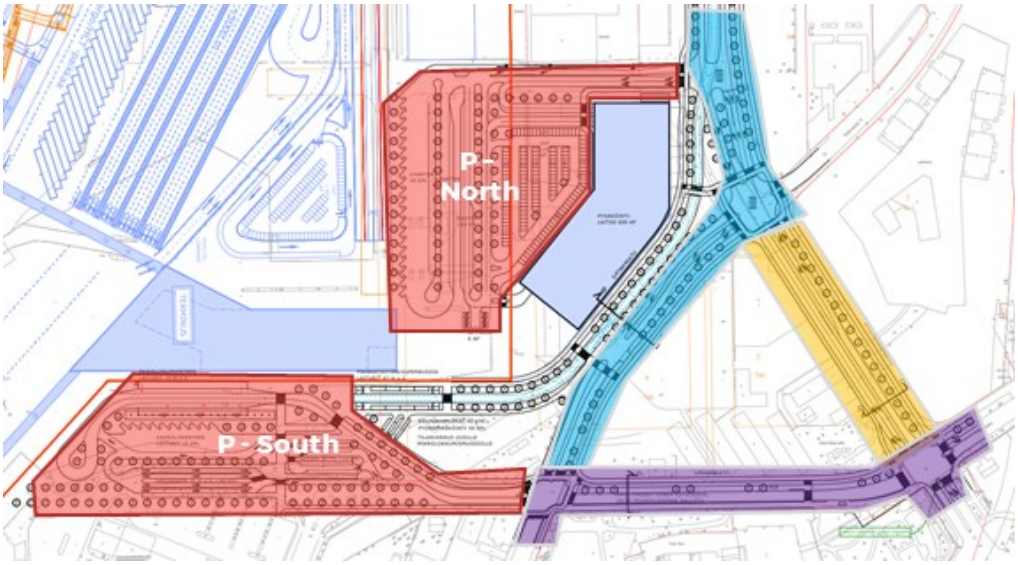


Figure 19. Division of cost accounting around the terminal.

The cost estimates are defined by region below. The total costs are € 30.1 million (with a risk reserve of € 31.2 million for the renovation of the Tuontikatu bridge). The cost estimate does not include the construction costs of the tramway, necessary foundation reinforcements or municipal engineering solutions. The estimates also do not include working-time arrangements (excl. a rough estimate related to the renovation of the Ruissalo bridge) or possible remediation of the contaminated land, which will require more detailed investigations in the future. The construction of the car park and the costs of relocating the train track are also not included in the cost estimate.

Table 4. Cost estimates for traffic arrangements by construction site, MAKU index 105.04 (2015 = 100).

	Street and traffic areas					
	Juhana Herttuan puistokatu, Vallihaudankatu, Linnankatu and Satamakatu	P - North	P - South	Interchange of Pansiontie and Pahaniemi	Partial renovation of Vapaavarastonkatu and Ruissalo bridge	Bridge from Tuontikatu to Latokarinkatu
Main and collector roads	2 059 000	246 000	242 000	285 000	1 208 000 *	209 000
Improvements to the ramps and junctions of the Pahaniemi interchange				976 000		
Regional construction		1 666 000	896 000			
Foundation reinforcements			1 512 000		2 400 000	100 000
Renovation of bridges					2 760 000 (- 3 760 000**)	6 022 000
Lightning	174 000	136 000	112 000		139 000	86 000
Municipal engineering	958 000	650 000	601 000	55 000	273 000	97 000
Project parts and tasks on site in total	**3 191 000**	**2 698 000**	**3 363 000**	**1 316 000**	**6 780 000**	**6 514 000**
Total costs including planning tasks (8%)	**3 446 000**	**2 914 000**	**3 632 000**	**1 421 000**	**542 000**	**521 000**
Construction (6%), client duties (1%) and reservations (10 %) in total	**586 000**	**495 000**	**617 000**	**242 000**	**1 245 000**	**1 196 000**
IN TOTAL, VAT. 0 %	**4,0 M€**	**3,4 M€**	**4,2 M€**	**1,7 M€**	**8,6 M€ (-9,7 M€)****	**8,2 M€**

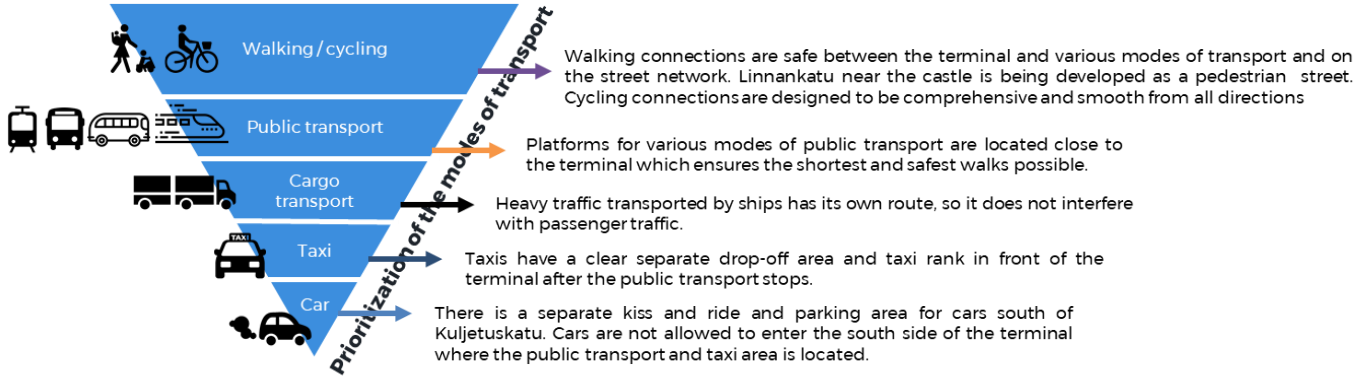
* Includes a 2 m high noise barrier.

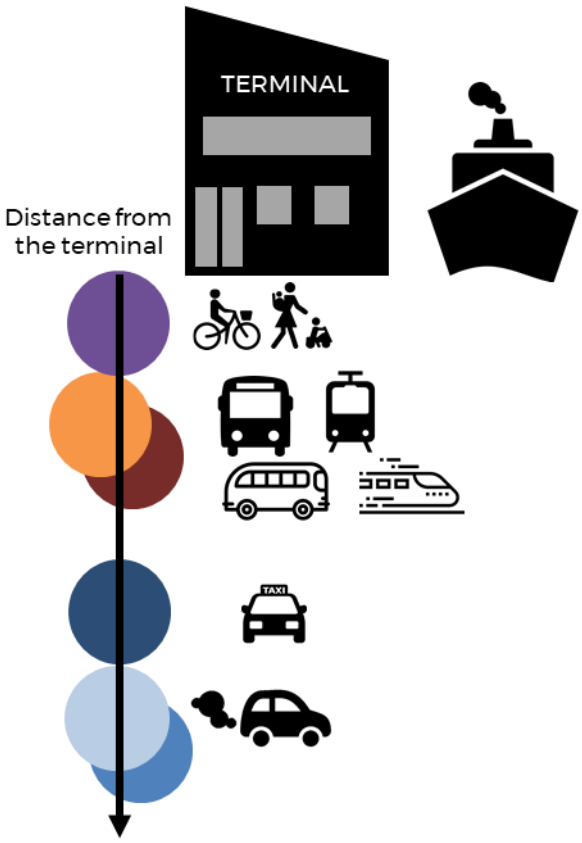
** The cost estimate for the bridge in the direction of Tuontikatu will be specified in further planning. The lower limit of the cost estimate is based on the partial demolition of the current bridge, but if further planning ends with the demolition of the current bridge, the costs are roughly in line with the upper limit.

7. Conclusions

The starting point for drawing up the plan was to take into account all modes of transport in traffic arrangements and the development of mobility services. The aim was to enhance sustainable mobility, travel chains and align traffic volumes with the size of the port. The development of the surrounding areas was also taken into consideration in the plan.

In this work the target for the share of sustainable mode of transport of the terminal area and the Linnakaupunki area were set at 66% and 70%. Sustainable modes of transport and solutions related to them have been prioritized over private cars. In terms of physical infrastructure, the planning objectives have been achieved. In the future, the development of transport services in the area must be taken into account as part of the sustainable utilization of infrastructure. In addition, planning of the land use should promote solutions for real estate's sustainable mobility through cooperation, but also as required by the city.





Figures 20-22. Estimating the achievement of the sustainable mobility objectives of the traffic plan.

The reporting of the process as well as the results can be utilized in similar harbour destinations, where residential areas are growing in the vicinity of the port. This report provided insights and concrete tools on how to plan traffic arrangements, that support especially sustainable modes of transport in developing harbour area. The report also provided recent study results on residents' mobility habits that could be utilized in other locations at least to some extent.