

REGIONAL ACTION PLAN: TURKU CLIMATE PLAN



CONTENT

GENERAL INFORMATION	2
INTRODUCTION	1
POLICY CONTEXT	2
ACTION 1: A SYSTEMATIC APPROACH FOR E-BUS PROCUREMENT AND DEPOT DEVELOPMENT	5
MONITORING OF THE ACTION PLAN	9

GENERAL INFORMATION

Project	eBussed - Building capacities for European-wide e-bus deployment
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INTRODUCTION

The aim of the eBussed project is to support the transition of European regions towards low carbon mobility and more efficient public transport. It promotes the uptake of e-buses in new regions and supports the expansion of existing e-fleets. It brought together six regions in different stages of electrification of public transport. The project increased the capacities among partners and stakeholders through multilevel interregional knowledge exchange and cross-pollination of ideas between various stakeholders throughout Europe. Key lessons learned during the project were adopted to regional action plans aiming to improve regional policy instruments. The improved policies will provide better support for transition towards fully electrified bus fleets and low carbon mobility.

Turku Action Plan aims to improve Turku Climate Plan 2029 by improving its governance regarding the measures for reaching carbon neutral public transport. The Climate Plan sets carbon neutrality goal of 2029 for public transport and a 2025 milestone for municipality-owned bus operator Turku Urban Traffic. The key measure for reaching the goals is set to be electrification the public transport. The action presented in this Action Plan is inspired by the lessons learned during the project and especially four Good Practices shared by partners from Hamburg and Utrecht. The action aims to improve the governance of the electrification measure. This is achieved by developing and piloting a systematic *Fleet Electrification Programme* for the Turku Urban Traffic. The programme will help Turku Urban Traffic for reaching the carbon neutrality in a sustainable and efficient way, and lead the way for the other operators in the area, thus accelerating the decarbonization of public transport in Turku Region



eBussed partners in a study visit to a bus depot during the Utrecht Meeting in 2022

POLICY CONTEXT

The Action Plan intends to impact the following policy instrument:

TURKU CLIMATE PLAN 2029 (other regional development policy instrument)

For its 800th anniversary in the 2029 City of Turku aims to be one of the first carbon-neutral cities in the world and carbon positive onwards. To support this ambitious goal, Turku Climate Plan 2029 was prepared and approved by Turku City Council in June 2018. The plan has been prepared in accordance with the common model of the European Union (SECAP, Sustainable Energy, and Climate Action Plan) and it includes climate policies and milestones for years 2021, 2025, and 2029. Turku City Council decided on the strategy on 16 April 2018. The main target of climate policy in accordance with the city strategy is a carbon-neutral city area by the year 2029.

In order to meet the target, the Turku area strives to reduce greenhouse gases by 80 percent compared to the 1990 level by the year 2029. This target will be reached through milestones that are set for each council term.

- By 2021, reducing emissions by 50 compared to the 1990 level
- By 2025, reducing emissions by at least 65 70 percent compared to the 1990 level
- By 2029 at the latest, reaching carbon neutrality and entirely compensating for any remaining emissions left.

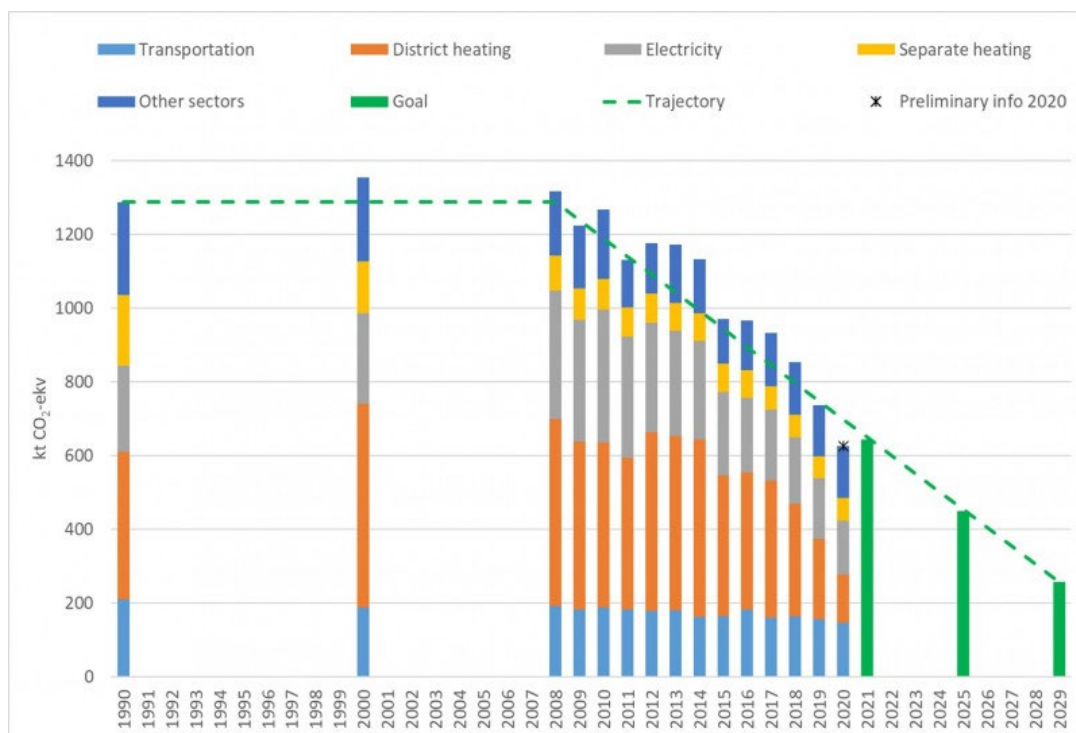
From 2029 onwards, Turku strives to be a climate positive area with negative net emissions (meaning that compensation will be greater than the emissions). Simultaneously with reducing emissions, Turku prepares for climate change as comprehensively as possible and the city is developed to better sustain the change.

Turku implements a strong climate policy and strives to be an internationally recognised pioneer and developer of sustainable solutions and expertise.

The following measures are needed in order to meet the set climate targets

- Bringing energy and mobility system emissions to a low level
- Reaching a sustainable low carbon community structure and development
- Implementing Turku City Group's own climate responsibility
- Mobilising citizens, communities, companies, stakeholders, development partners, and universities the entire civil society to create climate measures together and to implement a carbon-neutral Turku
- Increasing carbon sinks, production of renewable energy, and other compensations

- Increasing awareness of the risks of and vulnerabilities to



Mitigation measures will be targeted as efficiently as possible based on the emission distributions presented above. Actions are aimed at reducing emissions as efficiently and sustainably as possible (direct effect on emissions, indirect effect on emissions, and exemplary/ pilot effect).. The most significant entities in mitigation actions include:

- Carbon neutral energy system
 - o Approximately two-thirds of greenhouse emissions in the Turku area
- Low carbon sustainable mobility
 - o Approximately one-fifth of greenhouse emissions in the Turku area
- Sustainable urban structure
 - o Affects both energy and mobility in the entire urban area
- Turku City Group's climate responsibility
 - o Turku City Group sets an example and creates the story of a carbon-neutral Turku together
- Strengthening carbon sinks
 - o The ability of the Turku area and region to absorb atmospheric carbon is improved

In the section on low carbon sustainable mobility sub-objectives for public transport have been defined.

This action plan aims to impact the implementation and achievement of the first two objectives.

- **Public transport in Turku will be turned into a carbon-neutral service by 2029. In terms of Turku Urban Traffic Ltd., carbon neutrality will be reached already by 2025.**
- **Electrification of lines proceeds at the pace enabled by technical development and competitive tendering and electrification is complemented with biofuel solutions.**

- The service capacity of public transport will be significantly improved in order to implement the strategic carbon neutrality objective of the City of Turku and to support sustainable and attractive urban development.
 - Carbon neutral public transport system of large capacity (separate decision)
 - Improved public transport services (trunk routes, route planning, guaranteed transfer, smart buses and systems)
 - The use of public transport will be significantly promoted by means of urban and traffic planning
 - The public transport service will be subject to active communication and its use will be supported with campaigns and spreading of information.
 - Public transport is a strong and natural part of trip chains and development and implementation of Mobility as a Service concepts. Innovative businesses and developers have a significant role as solution makers.

ACTION 1: A SYSTEMATIC APPROACH FOR E-BUS PROCUREMENT AND DEPOT DEVELOPMENT

Background and objective

This action helps reaching the carbon neutrality goals set in Turku Climate Plan by improving the governance of measure of electrification bus lines. The improved governance is achieved by developing and piloting a systematic approach for e-fleet procurement.

As part of the overall carbon neutrality target, Turku Climate Plan aims to turn public transport service completely carbon neutral by 2029. As a milestone the municipality-owned bus operator's service is set to be carbon neutral already by 2025. To meet these milestones, the Climate Plan defines electrification of bus lines supplemented with biofuel solutions as the key measure. Practical implementation of this measure is left to Turku Region Public Transport and especially the bus operators in the region.

The municipality-owned bus operator Turku Urban Traffic Ltd. does not have a holistic plan on how to implement this measure and have instead carried out separate pilots. It is easy to underestimate the complexity of e-bus transition as PTO. It is not enough to exchange a diesel bus by an electric bus, changes are required in processes, infrastructure, financing, training of staff and other operational areas. To implement this measure more effectively and efficiently, a systematic approach needs to be developed and implemented.

The objective of this action is developing and implementing a systematic approach for change management in e-bus transition. The direct outcome of this is the structured programme steering the sustainable, efficient and future-proof investments in e-buses and the depot. This improves the governance of the electrification bus lines measure set in Turku Climate Plan.

Link to eBussed project

This action has been inspired by several Good Practices and other lessons learned during the project. The main concept was derived from the *Good Practice: Structured approach to e-bus transition (Hamburg)*. The study visits in Utrecht and in Hamburg, as well as the three Good Practices on charging infrastructure, provide valuable feedstock for elaborating the approach in regards of depot development. The following four Good Practices have been utilized

1. Good Practice: Structured approach to e-bus transition (Hamburg)

Hamburg bus operator VHH acknowledged the complexity of e-bus transition and developed a structured approach for that. This framework was the starting point when drafting this action.

2. Good Practice: *Peak Shaving, Smart Charging, V2G Charging (Utrecht)*

Grid impact of depot charging will grow significantly when whole fleet is electrified. This good practice from Utrecht will be utilized when grid impact is evaluated for depot development plan together with the local electricity grid operator.

3. Good Practice: *Optimising charging infrastructure according to available space (Hamburg)*

Depot development plan will utilize this good practice when planning the charging infrastructure and evaluating the possibilities of covering the open-air depot area.

4. Good Practice: *(Automated) Pre-conditioning of e-buses (Hamburg)*

Pre-conditioning becomes important when transferring to depot charged e-buses. This Good Practice and experience from Hamburg will be utilized when elaborating the plans for depot development.

Implementation

In this action Turku Urban Traffic will develop and implement a Fleet Electrification Programme - a systematic approach for electrification the fleet. The action comprises of two sub-activities that are implemented back-to-back. In the first activity a systematic approach is developed together with stakeholders utilizing the lessons learned during eBussed. After developing the approach, it is piloted. Changes to the approach are made based on the results of piloting and finalized systematic approach is adopted as a permanent measure.

Activity 1.1 Developing a Fleet Electrification Programme

Currently the electrification of the fleet is still on a pilot level. 6 out of 35 buses are electric and the depot charging infrastructure is limited. In this activity a detailed Fleet Electrification Programme will be developed by Turku Urban Traffic together with its stakeholders. The developed Programme will steer the vehicle procurement and depot development and ensure that the investments made for the vehicles and depot in years 2023-2029 will be financially viable, sustainable, and future proof.

The Fleet Electrification Programme will consist of following three main elements:

1. Depot investment and development Plan
 - Investments to structural and charging infrastructure
 - Improved fire safety measures
2. Improved public procurement practices for procuring e-buses
3. Detailed vehicle procurement schedule for electrification of the existing fleet

These elements are elaborated in multidisciplinary working groups consisting of staff members from different departments along with relevant stakeholders. Working groups will utilize and adopt the above-mentioned Good Practices in the programme. The other measures include test drives of

different e-bus models and manufacturers and testing renewable fuel. The test drives were started already with test drives of Solaris and Volvo buses 12/2021 and 01/2022. Renewable diesel for existing diesel fleet is planned to be the supplementing carbon neutrality measure during the transition period.

Activity 1.2 Piloting the Fleet Electrification Programme

The developed Fleet Electrification Programme will be piloted thoroughly between 01/2023-05/2023. It will be implemented in all levels of operation and systematic feedback is gathered during the pilot. The Programme is also evaluated by a steering group formed of close partners and other relevant stakeholders of Turku Urban Traffic. At the end of the piloting period, necessary changes and improvements to the Programme will be made. By 07/2023 Turku Urban Traffic Board of Directors will officially approve the Programme as a permanent electrification strategy.

Actors involved

Key player of this action is Turku Urban Traffic Ltd and its owner City of Turku. The activities involve other stakeholders to more limited extent. Other actors with a supporting role in elaboration of the two plans include include Turku University of Applied Sciences, Turku Energia Ltd. (energy provider) and Korjaamo Turku Ltd. (maintenance company).

Turku Urban Traffic is an in-house company 100 % owned by city of Turku and it is providing services only to its owner. It is operating approximately 15 % of the public transport in Turku region public transport. It has a contracted role as a piloting and monitoring partner for its owner and the results for the pilots are utilized for spreading the new technologies and systems, such as e-buses, for the private operators operating the remaining 85 % of the public transport.

Due to this role, the ambitious target for 2025 is set for the company. Turku Urban Traffic currently has only six e-buses out of 35 and a lot of development must take place before 2025. Decarbonizing the operation of Turku Urban Traffic will set an example and framework for the other operators how to accomplish the transition by 2029.

Timeframe

The development of the Fleet Electrification Programme was started with test drives of Solaris and Volvo e-buses in December 2021 and January 2022. Further elaboration of the Programme will be started in 08/2022 and the development of the programme is expected to be finished in 01/2023 and is piloted during 02-07/2023. The Fleet Electrification Programme is validated by Turku Urban Traffic's board of directors during spring 2023 and the finalized programme is put into permanent use by 07/2023.

Costs

The main cost of the action is the working hours required from Turku Urban Traffic personnel.

Funding sources

This action can be funded with Turku Urban Traffic own funding.

MONITORING OF THE ACTION PLAN

The implementation of the Action Plan will be monitored by Turku University of Applied Sciences in cooperation with Turku Urban Traffic Ltd., Turku Region Public Transport Föli, and other stakeholders. The progress in the implementation of the action will be monitored with 1-3 meetings supplemented with other means such as phone calls or emails if necessary. Turku University of Applied Sciences develops a template before the monitoring period starts for documenting the progress of each action.

For eBussed project the monitoring period for is 1st August 2022 – 31st of July 2023. During which the results of action plan implementation will be reported to the Interreg Europe programme.

ACTION	INDICATOR	MONITORING METHOD	BY WHOM
A Systematic approach for e-bus procurement and depot development	Fleet Electrification Programme developed	Programme document	Turku Urban Traffic
	Fleet Electrification Programme validated	Programme validated as permanent strategy	Turku Urban Traffic board of directors

APPROVAL AND SIGNATURE OF THE ACTION PLAN

On behalf of the Turku Urban Traffic Ltd, I agree to support and promote the implementation of the action plan described above.

Signature

Juha Parkkonen

CEO

8.6.2022

