

## Climate City Contract

# 2030 Climate Neutrality Action Plan

## 2030 Climate Neutrality Action Plan of the City of Tampere



**TAMPERE**





## Disclaimer

The content of this document reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

## Table of Contents

Table of Contents.....	2
1 Introduction .....	6
2 Work Process.....	8
3 Part A – Current State of Climate Action.....	12
3.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory .....	12
3.2 Module A-2 Current Policies and Strategies Assessment .....	20
3.3 Module A-3 Systemic Barriers and Opportunities to 2030 Climate Neutrality .....	29
4 Part B – Pathways towards Climate Neutrality by 2030.....	36
4.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways .....	36
4.2 Module B-2 Climate Neutrality Portfolio Design .....	42
4.3 Module B-3 Indicators for Monitoring, Evaluation and Learning .....	48
5 Part C – Enabling Climate Neutrality by 2030 .....	62
5.1 Module C-1 Organisational and Governance Innovation Interventions.....	62
5.2 Module C-2 Social and Other Innovation Interventions .....	66
5.3 Module C-3 Financing of Action Portfolio.....	71
6 Outlook and next steps.....	74
7 Annexes.....	76



## Summary

An abstract **summarizes the content** of the 2030 Climate Neutrality Action Plan (Action Plan) that is developed jointly by local authorities, local businesses and other stakeholders.

### Textual element

The City of Tampere has a very strong foundation for its climate work. Tampere started its systematic work to mitigate climate change in 2010. Since then, Tampere has been one of the national forerunner-cities in climate change mitigation and adaptation in Finland. The results have been quite remarkable.

City's main guiding tool for climate work is the biennially updated "Tampere Carbon Neutrality Roadmap 2030". The roadmap contains a comprehensive set of measures defined in cooperation with city's units and its subsidiaries. The roadmap also includes impact assessment for a wide variety of actions, including both emission reduction and cost estimates. The progress of climate work is monitored in the Climate Watch and the Climate Budget, which transparently communicate the city's climate work to citizens, politicians, private sector and other stakeholders.

Tampere has already reduced climate emissions from a 1990 baseline more than 30 % in absolute numbers and more than 50 % per capita. According to current action and projections, the roadmap can take us to 73 % reduction, when the target is - 80 % by 2030. As the results obtained so far indicate, the low hanging fruit to enhance climate change mitigation have been picked. Tampere has already successfully invested in renewable energy and the public transport system. At the time being the very difficult systemic challenges remain to be solved. The most difficult of them is the reduction of GHG emissions from transport. This will require a mix of systematic work jointly with the citizens, private sector and the authorities.

Therefore, Action Plan focuses on the emissions gap remaining after the roadmap. This leaves 7% of the baseline emissions to be addressed. Also, so far the roadmap has been focused on what the city organisation can do to reduce emissions. To achieve our goal, we also need to involve city residents, businesses and communities. The action portfolio in the Action Plan addresses what needs to be done in the future and with which stakeholders to cover the gaps. The actual co-creation will take place during future updates of the roadmap and through development projects.

Action Plan has identified systemic strategic priorities that need to be taken into account in addition to those already planned to reach the target:

- 1) Boosting modal shift by co-creating actions with citizens and big employers to promote sustainable transport, and studying the public opinion.
- 2) Transforming city logistics move to lighter vehicles and alternative propulsion by guiding.
- 3) Promoting industrial electrification by communicating with big fossil fuel users to update projections and plans, implementing Green Deal for zero-emission construction sites and providing oil heating advice to SMEs.
- 4) Providing energy advice and alleviating energy hardship/mitigating energy vulnerability by oil heating advice to private homeowners, developing financing models and piloting energy advice to people with potential energy hardship.
- 5) Promoting smart energy systems and systems integration by preparing an energy strategy and an urban development platform.

In addition to the identified additional strategic priorities, we should focus on in the coming years, Action Plan contains our plan to:

- Understand the system we're working in and cross the special barriers we have identified
- Co-designing solutions with deeply committed but also recent stakeholders, specially citizens and companies in Tampere region
- Take action combining the Carbon Neutral Tampere 2030 Roadmap to measuring and estimating the results.

The costs of the additional prioritised measures identified in Action Plan could not yet be estimated and have therefore not been included in the Investment Plan. Investment Plan covers actions and



their costs that are already largely in the Carbon Neutral Tampere 2030 Roadmap. Investment Plan summarises the financial resources planned for these actions, and the potential capital needed in addition to the planned costs.

Our aim is to integrate the Climate City Contract, the roadmap and the climate budget into a single process that will complement each other with each update, ensuring that Tampere is carbon neutral by 2030. In achieving the climate neutrality goal by 2030, the City of Tampere recognizes the importance of collaboration with citizens, businesses, and academia.

## List of figures

Figure No	Figure title	Page No
Figure 2.1	The NZC Climate Transition Map	8
Figure 2.2	Climate Neutral Tampere 2030 Roadmaps measures	10
Figure 2.3	Climate work process in the City of Tampere until 2030	11
Figure 3.1	Energy balance of Tampere	12
Figure 3.2	Total emission and per capita emissions of Tampere yearly since 2010 with comparison to 1990	13
Figure 3.3	Breakdown of the latest emissions inventory from 2021	13
Figure 3.4	Breakdown of the baseline emissions inventory from 1990.	14
Figure 3.5	Total reduction of emissions in each sector as compared to 1990	14
Figure 3.6	Climate budget and realized emissions as presented in the financial statements 2022 of City of Tampere	15
Figure 3.7	Climate budget and realized emissions as presented in the financial statements 2022 of City of Tampere	15
Figure 3.8	Consumption based emissions in Tampere in 2022	16
Figure 3.9	Carbon footprint of construction in Tampere in 2020	16
Figure 3.10	The Tampere climate stakeholder model brings together the main actors in society	34
Figure 4.1	Transport system impact pathways part 2	41
Figure 4.2	Carbon Neutral Tampere 2030 Roadmap themes, goals and measure packages updated in 2022	42
Figure 4.3	Conclusion of the Carbon-neutral Tampere 2030 roadmap projection about the gap emissions needed to mitigate in order to reach the target	43
Figure 5.1	The City of Tampere's Climate Leadership Model	65
Figure 5.2	The Carbon Neutral Actions programme co-creates solutions together with the citizens	69
Figure 5.3	Recognized stakeholders of the Carbon Neutral Action's Programme	70



## List of tables

Table №	Table title	Page №
Table A-2.1	List of relevant policies, strategies & regulations	20
Table A-2.3	Emissions gap	28
Table A-3.1	Systems & stakeholder mapping	29
Table B-1.1	Impact Pathways	36
Table B-2.2.1	Individual action 1 outlines	44
Table B-2.2.2	Individual action 2 outlines	44
Table B-2.2.3	Individual action 3 outlines	45
Table B-2.2.4	Individual action 4 outlines	45
Table B-2.2.5	Individual action 5 outlines	46
Table B-2.2.6	Individual action 6 outlines	46
Table B-2.2.7	Individual action 7 outlines	47
Table B-2.2.8	Individual action 8 outlines	47
Table B-3.1	Indicators	48
Table B-3.2.1	Indicator 1 – 1.7 Metadata	51
Table B-3.2.2	Indicator 2 Metadata	51
Table B-3.2.3	Indicator 3 Metadata	52
Table B-3.2.4	Indicator 4 Metadata	53
Table B-3.2.5	Indicator 4.1 Metadata	53
Table B-3.2.6	Indicator 4.2 Metadata	54
Table B-3.2.7	Indicator 5 Metadata	55
Table B-3.2.8	Indicator 6 Metadata	55
Table B-3.2.9	Indicator 7 Metadata	56
Table B-3.2.10	Indicator 8 Metadata	57
Table B-3.2.11	Indicator 9 Metadata	57
Table B-3.2.12	Indicator 10 Metadata	58
Table B-3.2.13	Indicator 11 Metadata	58
Table B-3.2.14	Indicator 12 Metadata	59
Table B-3.2.15	Indicator 13 Metadata	60
Table B-3.2.16	Indicator 14 Metadata	60
Table B-3.2.17	Indicator 15 Metadata	61
Table C.1.1	Enabling organisational and governance interventions	62
Table C.2.1	Enabling social innovation interventions	66
Table C-3.1	Summary of interventions with cost implication (to be unpacked in Investment Plan)	71



# 1 Introduction

## Introduction - textual element

The City of Tampere started its systematic work to mitigate climate change in 2010. Since then Tampere has been one of the national forerunner-cities in climate change mitigation and adaptation in Finland.

Reducing greenhouse gas reduction goals have been set by the City Council and the needed work has been manifested over the years in city's strategy documents. The "Sustainable Tampere 2030" guidelines accepted in the City Council 2018 set the objective for Tampere carbon neutrality by 2030. The current city strategy contains the city's carbon neutrality target for 2030 and related actions. Furthermore, carbon neutrality has risen to one of the four focus areas of the city strategy. This objective is reflected in the City Strategy which sets the objective of increasing the share of sustainable modes of transport by 5% by the end of the City Council's term of office (2021-2025).

The results have been quite remarkable. To summarize the results, we have achieved a 30 % reduction in absolute greenhouse gas (GHG) emissions (reference year is 1990) while the city population has grown from 173 000 to 250 000 or 45 %. Subsequently, the per capita emissions have reduced more than 50 %. Since these figures from 2021, the city energy utility has renewed its largest plant in 2022 which will bring a further 20% decrease in GHG emissions.

The city has from the start taken the stand that climate issues do not have a dedicated climate management subsystem but they and their advancement will take place within the city's existing management structures. This was more challenging in the beginning but has proven to be the right choice as climate issues are dealt within normal strategic, governance and financial processes. This has also enabled us to include more easily largest city owned companies including energy utility, housing companies, real estate firms and water utilities under the same strategic goals as rest of the city. Subsequently, most city-owned companies of climate relevance have calculated their carbon footprint and created their own, internal roadmaps how they will reach carbon neutrality by 2030. For the companies, setting these goals makes also business-sense.

City's main guiding tool for climate work is the "Tampere Carbon Neutrality Roadmap 2030". It contains all the implementation actions across the city including their carbon relevance as well as investments needed to carry them out. All city units from early-childhood education to street planning and school building prioritize annually from the roadmap the actions they will carry out that year and they will also reserve the required funding in their budgets. The results are then collated in "Climate Watuard" that is a transparent interface to city climate work open to all citizens, politicians, the private sector and other stakeholders. The roadmap is updated by city units every two years.

The climate budget is part of the Tampere City Annual Budget. The climate budget sheds light on where we are currently regarding our climate targets, where we should be and what is being done about it. Tampere was the first Finnish city to start developing this structure and incorporate it in the city financial processes and financial statements.

To include various stakeholders even more, the city has also initiated a Climate Partners network for regional companies. There are now currently over 100 companies in this network. Further, Tampere is active in national networks including but not limited to Finnish Green Building Council, the Climate Leadership Coalition network for professionals and other professional networks. Internationally, Tampere is actively involved in network and Horizon Europe projects and has received international recognitions for its climate work.

As the results obtained so far indicate, the low hanging fruit to enhance climate change mitigation have been picked. Tampere has already successfully invested in renewable energy and the public transport system. Renewables in energy production have grown from 5 % to 55 % and will soon be 70 %. The per capita growth of energy consumption in heating and electricity has also stopped. It can



be said that most of the low hanging fruit as well as some of the heavy lifting is done. Thus, only very difficult systemic challenges remain to be solved. The most difficult of them is the reduction of GHG emissions from transport. This will require a mix of systematic work jointly with the citizens, private sector and the authorities.

No silver bullet is available: electrification of cars is not enough but a major model shift is needed in transport towards more sustainable future. To this end, the city has started a multi-year strategic programme that works with residents to empower them to change their mobility and consumption habits towards more sustainable alternatives. We try to find novel ways for doing this as traditional ways have not borne fruit anywhere.

The future looks bright. According to our impact estimates the latest update of the roadmap can lead to 73 % emissions reduction compared to 1990 while the goal is 80 %. In order to close the gap of the remaining 7 %, the modal shift in transport is needed. We can achieve this only with our citizens and various stakeholder groups in the coming few years.



## 2 Work Process

### Work Process - combination of textual and visual elements

In this chapter we describe our work process, according to the NZC Climate Transition Map (Figure 2.1). The City of Tampere has already made huge steps towards climate neutrality before becoming a Mission City. Here we describe how we have done it and what are the plans for future. We acknowledge that there is more work ahead in the future, and EU Mission work will be important in this.

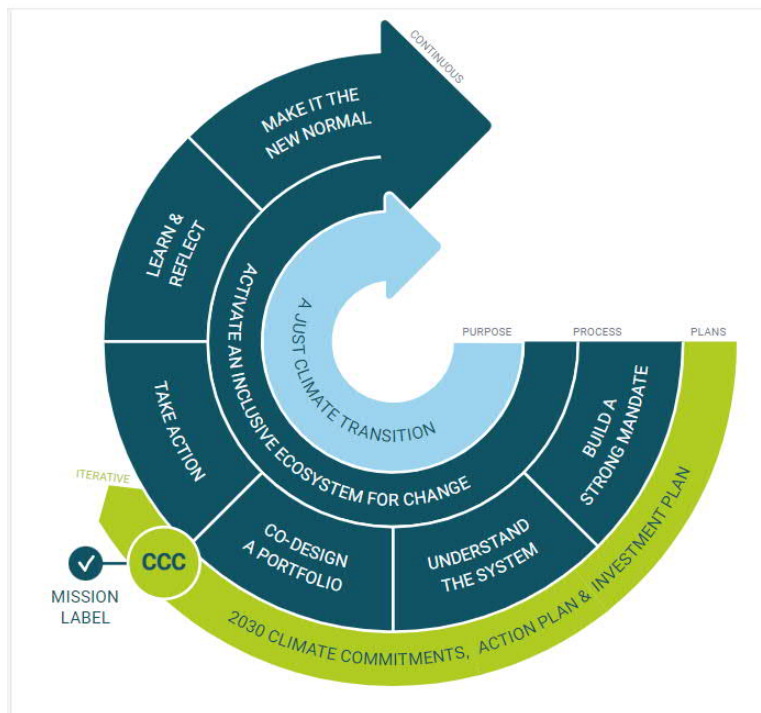


Figure 2.1. The NZC Climate Transition Map.

#### Build a strong mandate:

The City's climate actions have been gathered into [the Carbon Neutral Tampere 2030 Roadmap](#). The roadmap was created together with all the city's service areas, various units, public utilities, and city's companies. The Climate and Environmental Policy Unit coordinates the process and monitors the implementation of the measures. [The Climate Watch](#) service has been created to monitor the measures, where everyone can follow the implementation of the City of Tampere's climate work. The roadmap currently contains a total of 305 measures under six different themes: sustainable urban planning, sustainable mobility, sustainable energy, sustainable construction, sustainable consumption, and sustainable urban nature.

The City Board approved the roadmap on August 31, 2020, and the first update on October 3, 2022. The roadmap will be updated every two years and the next updating process for 2024 has already begun. The implementation of the roadmap is embedded into the City's strategic management systems as the City units include their climate actions from the roadmap to their annual service and financial plans, which will be officially monitored.

Tampere's climate budget and Climate City Contract's Investment plan combines climate work with the city's budget and financial statements. It is used to monitor the progress towards the climate neutrality target and the adequacy of implemented measures. At the same time, the goal of climate neutrality becomes more concrete in the annual budget. The climate budget provides information for decision-making and increases transparency for residents. Tampere's climate budget consists of two parts: the climate emissions budget, and the financial plan for climate actions.





The latest demonstration of city's commitment to net-zero ambitions, including citizens, is its latest development program "Climate Neutral Actions". Development programme operates at city district level and promotes change from a local perspective. It concentrates on changing people's mobility and consumption habits as well as enhancing conditions for circular economy. The program enjoys funding until 2025.

Besides citizen work, Climate Neutral Actions programme's aim is to support companies in climate and environmentally sustainable business and help them find new business opportunities through circular economy and carbon neutrality. One of the many forms of business collaborations is the [Tampere Region Climate Partnership](#) which has systematically involved companies, associations, and communities in pursuing a carbon-neutral Tampere since 2020.

Our aim is to integrate the CCC, the roadmap and the climate budget into a single process that will complement each other with each update, ensuring that Tampere is carbon neutral by 2030. In achieving the climate neutrality goal by 2030, the City of Tampere recognizes the importance of collaboration with citizens, businesses, and academia.

**Understanding the system:**

We have identified systems through expert work, and workshops have also been held on these among other services in the context of the impact pathways. We have identified systems and linkages before, for example in our roadmap process, but the preparation of the CCC gave us a better understanding of the multiple systems and their linkages. For more information on these, see Chapter 3 for a discussion of the content of our portfolio, current policies, and strategies at local, regional, national and EU level. We strongly recognize the role of the city in this, and the engagement and commitment of stakeholders in our climate work.

**Co-designing the portfolio:**

The process of preparing the Climate City Contract was carried out jointly at national and local level. The City of Tampere has been strongly involved in the Mission's national support network, participating in meetings and workshops with other Mission cities. Tampere also hosted a Mission meeting in connection with the Climate Change Conference in May 2023.

As we are already well advanced in our Carbon Neutral Tampere 2030 Roadmap work, and as mentioned before, it has been created in cooperation with the whole city organization and its subsidiaries, we focused our Action Plan work on identifying gaps and stakeholders. Because of this, we organized stakeholder workshops during the summer of 2023 within the city, involving key people from areas such as transport system planning unit and land use, in addition to climate and environmental policy. We also organized workshops to consider impact pathways, with a particular focus on transport, which is one of the main challenges for the City of Tampere in terms of reducing emissions.

We have also held discussions about the Mission with Business Tampere, which coordinates the Climate Partners network. We have also had close discussions with Tampere University and the Tampere University of Applied Sciences, and they also joined us as partners in this round already.

**Take action**

We have had a Carbon Neutral Tampere 2030 Roadmap since 2020, and measures are being implemented across the city organization. The implementation of the measures is updated in the Climate Guard tool, which everyone can follow, i.e., the city's climate work is transparent both to citizens, politicians and private sector.

At the same time as the roadmap update process will start again in autumn 2023, the measures of the previous roadmap will be implemented. Our aim is to make the measures part of our core work. Some of the measures, for example in the building sector, are already in place and have reached their targets. 21% of the measures in the current roadmap are complete and only less than 10% have not been started. Most of the measures are at the implementation or planning stage (see figure 2.2.).

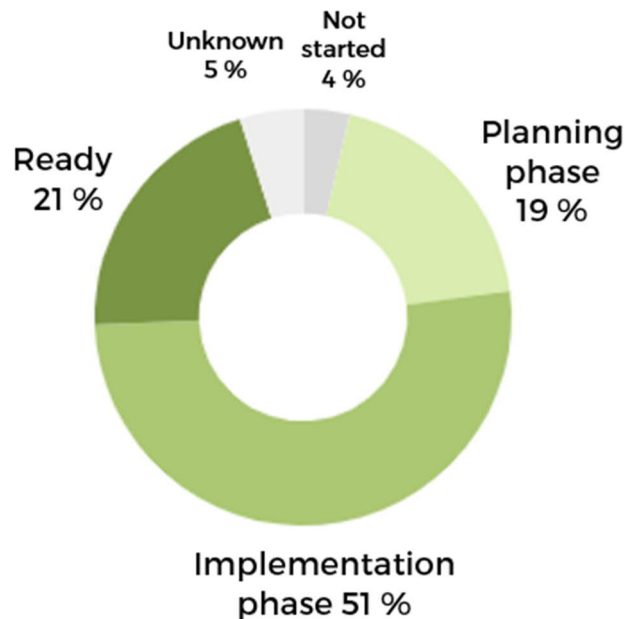


Figure 2.2. Climate Neutral Tampere 2030 Roadmaps measures.

### Learn and reflect

The City of Tampere updates the Tampere 2030 Roadmap every two years. The updates are accompanied by workshops and meetings to discuss how the roadmap could be developed. This autumn, we have also conducted customer feedback interviews with the people in the departments responsible for updating the roadmap in those departments. In these interviews, we looked at how we could improve the process ourselves.

One of the lessons we have already learned from the current Roadmap measures is that some of them are difficult to measure: they are ongoing, basic work and will never be completed. For example, improving public transport service levels is an ongoing effort, and much progress has been made in recent years. We will also clarify our objectives and measures. Some measures have multiple responsibilities, with no one person taking ownership of the measure. We will consider these with other units during the next round of updates.

We also intend to learn from others as the mission work progresses. For example, we have now had discussions with other Finnish mission cities, and shared lessons with each other.

### Make it the new normal

Our overall goal is to make climate work a new normal. For example, we have focused on a model of climate governance, which we are taking forward. Our roadmap measures are those that aim to become part of the core work of the city so that they do not need to be implemented separately. This is why we are constantly collaborating with other units. The intention is to extend this to businesses and other stakeholders in order to achieve our carbon neutrality goals. We are also working hard on sustainable lifestyles for residents, and our aim here too is to make climate action a normal part of everyday life.

In this CCC, we have identified our current gaps, which we will look to address in the next roadmap update process, which will start this autumn. Similarly, in the next CCC we will be able to update the measures of the new roadmap, as well as identify any gaps that exist at the moment. This will be repeated until 2030 (Figure 2.3). At the same time, we will implement our measures, as they are part of the annual plan of the services and the strategy of the City of Tampere. Our next steps are described in more detail at the end of the Action plan, in chapter six.



## Climate Work Process in the City of Tampere

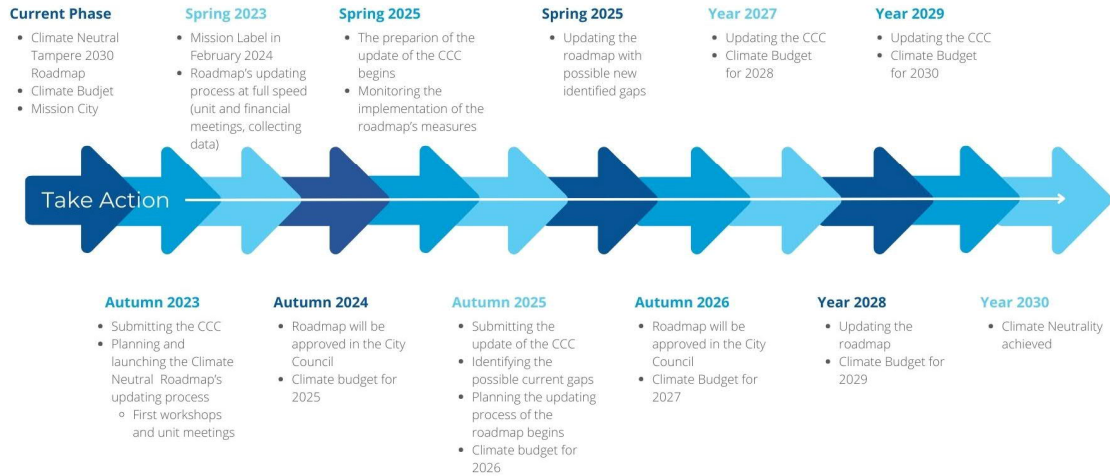


Figure 2.3. Climate work process in the City of Tampere until 2030. While updating the roadmap, the CCC and the Climate Budget, we will continue to implement measures listed in the roadmap the whole time.



## 3 Part A – Current State of Climate Action

### 3.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory

#### A-1.5: Graphics and charts

The latest full Greenhouse gas inventory from Tampere is from 2021. Tampere has also reported fully to CDP platform since 2021. Thus, details of the emission calculations are not reported here, but the calculation excel sheet is attached to the Action Plan just as it is to the CDP-report.

Tampere follows up on the energy system separately from the emissions calculation, which is performed by an external partner. The full energy balance is done with few deviations the most important being that the energy use of road transport is based on fuel sold, whereas the emission calculations are based on a national model where the kilometres driven in Tampere are allocated there. Figure 3.1 presents the energy balance of Tampere from 2021. The current situation in 2023 has already changed significantly. The importance of natural gas has changed due to the war in Ukraine and subsequent embargos. The use of peat is quickly coming to an end due to a new biomass power plant that started producing energy in December 2022. The share of electricity being used for transport has yet to be estimated, but the share of electric cars is growing fast, so an estimate will need to be made in future balances.

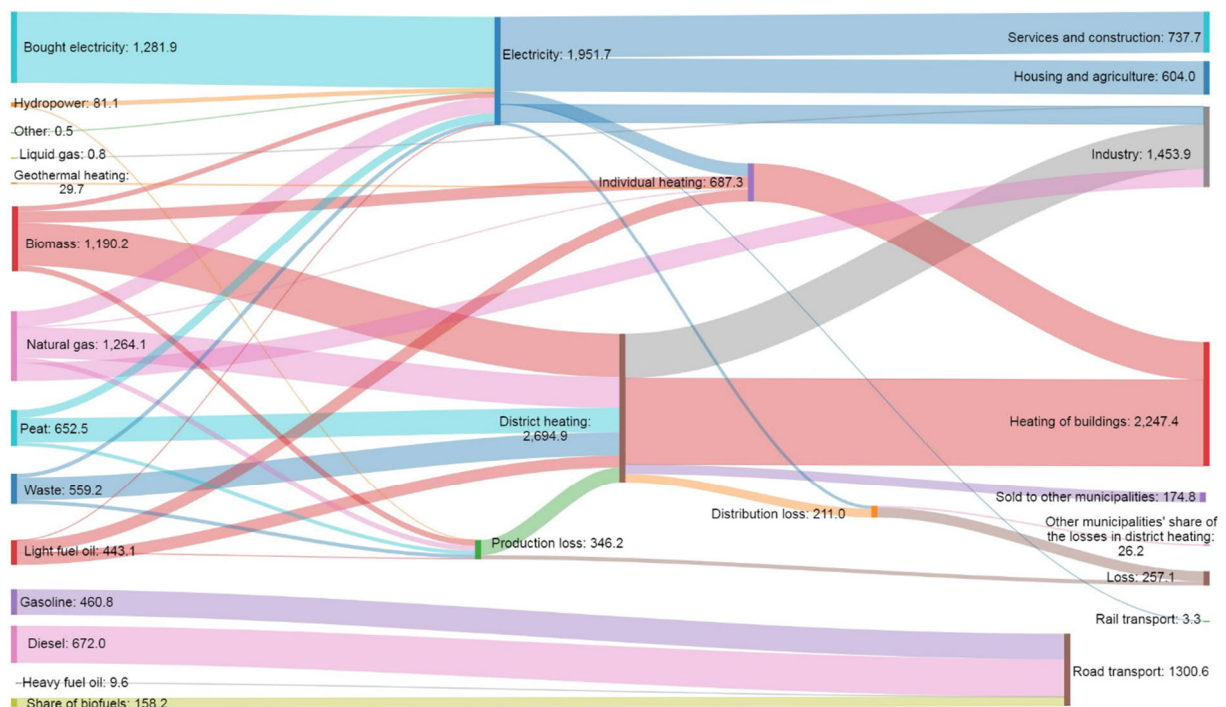


Figure 3.1. Energy balance of Tampere (all units are GWh). Total primary energy use is 6835 GWh, total end use is 6377 GWh. An amount of 174,8 GWh of district heating is sold to other municipalities, which causes some discrepancy here.

The main greenhouse gas inventory in Tampere is based on a national calculation that largely corresponds to GPC protocol for cities and thus accounts for scope 1 and scope 2 emissions within the geographical borders of the city. The total amount and per capita emissions are presented in Figure 3.2,



a further breakdown of the latest inventory by sector can be seen in Figure 3.3. For comparison, Figure 3.4 provides a similar breakdown of the baseline in 1990.

### Greenhouse gas emissions in Tampere 1990-2021

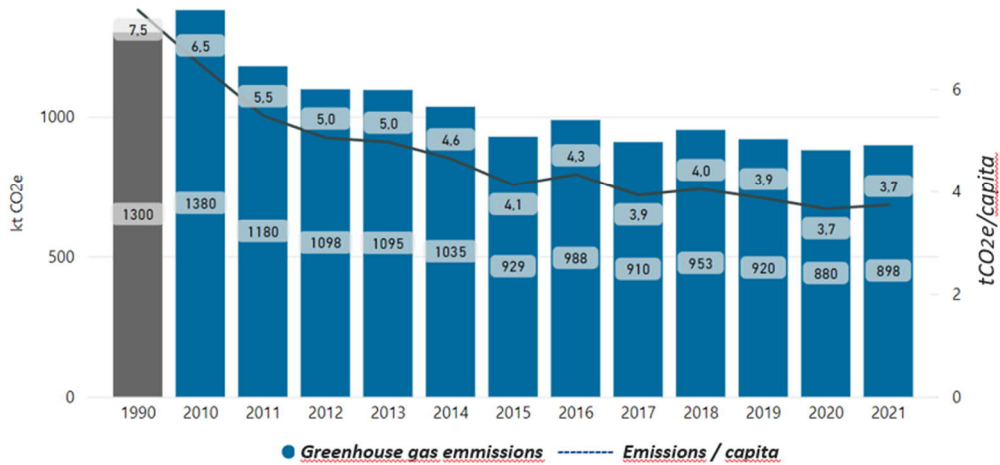


Figure 3.2. Total emission and per capita emissions of Tampere yearly since 2010 with comparison to 1990.

### Sources of greenhouse gas emissions in Tampere 2021

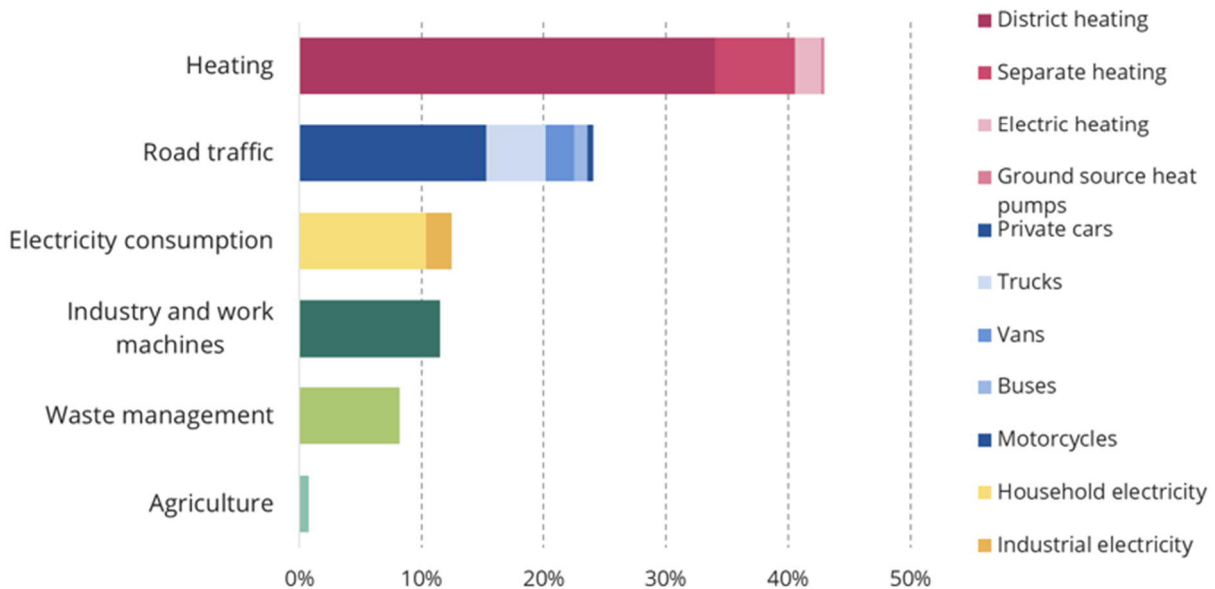


Figure 3.3. Breakdown of the latest emissions inventory from 2021. The main inventory does not include F-gases yet, but the numbers are now available. This is to be integrated in the inventory soon.



### Sources of greenhouse gas emissions in Tampere 1990

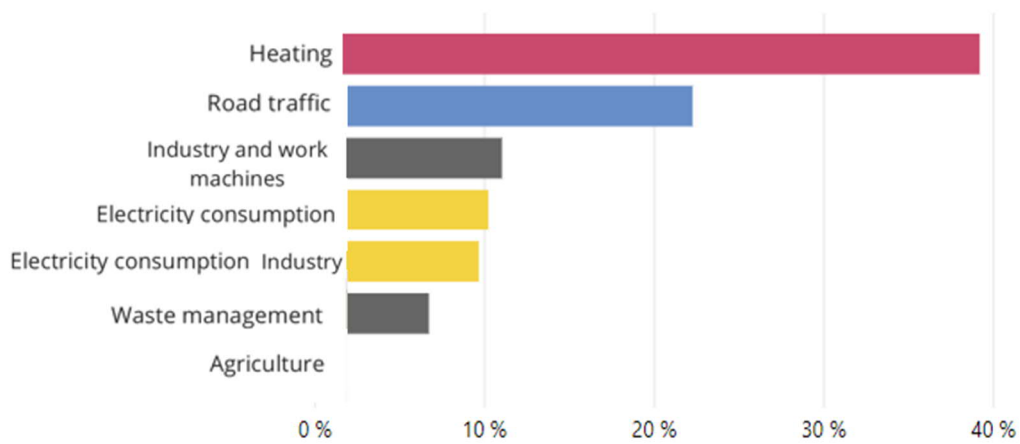


Figure 3.4. Breakdown of the baseline emissions inventory from 1990. This inventory does not include F gases.

### Carbon neutral Tampere 2030 roadmap emissions prediction

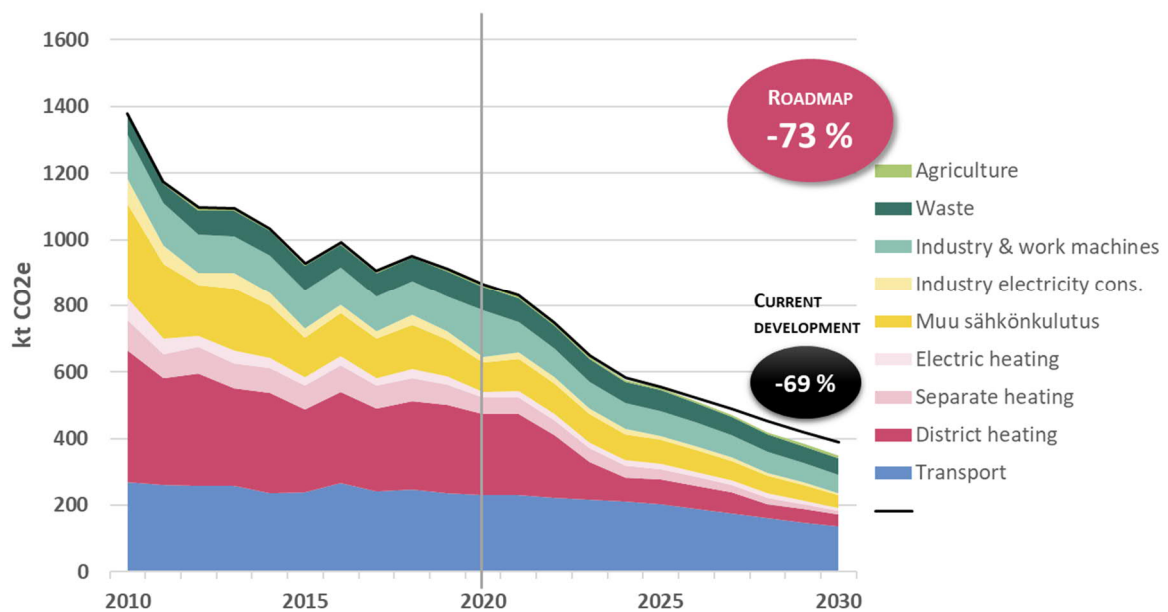


Figure 3.5. Total reduction of emissions in each sector as compared to 1990.

Both the emissions projection and climate budget are based on the same calculation method as the main greenhouse gas inventory. The climate budget, unlike the projection, is based on the target of -80 % by 2030 and states the maximum amount of emissions for each financial year that allows the city to achieve its carbon-neutrality target. The latest climate budget is presented in Figure 3.6.



	Realized 2019	Realized 2020	Realized 2021	Difference to budget	Budget 2021	Preview 2022	Budget 2022	Goal 2030
District heating	265 000	242 700	300 200	64 200	236 000	285 500	190 000	28 000
Separate heating	63 600	52 000	58 000	-2 000	60 000	53 300	53 000	4 000
Heating electricity	23 300	17 200	21 200	1 200	20 000	19 500	19 000	7 000
Traffic	238 200	231 200	212 600	20 600	192 000	228 200	184 000	115 000
Other electricity cons.	111 000	88 200	91 800	-13 200	105 000	87 200	93 000	40 000
Industry electricity cons.	25 700	17 700	18 200	-1 800	20 000		20 000	7 000
Industry and work machines	104 000	139 200	101 900	2 900	99 000		92 000	39 000
Agriculture	6 500	6 500	6 700	200	6 500	6 700	6 000	5 000
Waste management	76 900	72 600	72 700	7 700	65 000	72 700	64 000	15 000
<b>Sum</b>	<b>914 200</b>	<b>867 300</b>	<b>883 300</b>	<b>79 800</b>	<b>803 500</b>		<b>721 000</b>	<b>260 000</b>
Reduction compared to 1990	-30 %	-33 %	-32 %	10 %	-38 %		-45 %	-80 %

Figure 3.6. Climate budget and realized emissions as presented in the financial statements 2022 of City of Tampere.

A full picture of the current situation can be seen in Figure 3.7. Tampere is currently lagging behind the climate budgets of 2020-2021 but is likely to catch up by 2025 according to roadmap projections. However, there is still a significant gap projected at 2030. More information about the Climate Budget can be found in the link provided in Annexes.

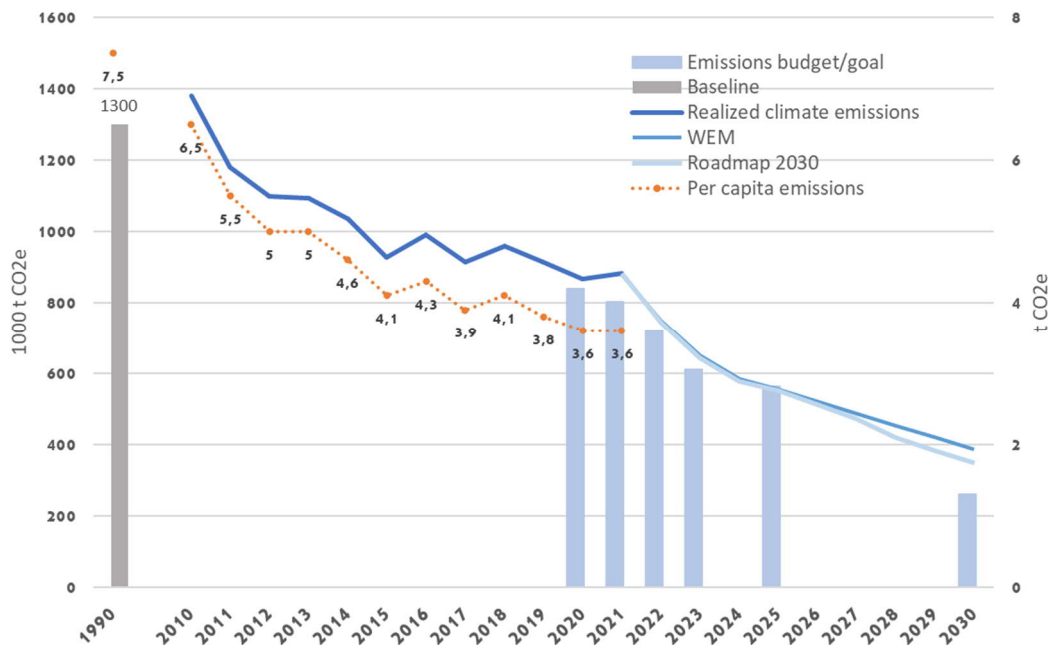


Figure 3.7. Climate budget and realized emissions as presented in the financial statements 2022 of City of Tampere.

Tampere has not included scope 3 emissions in its reporting or climate targets yet, but has been actively involved in developing methods for their calculation. Figure 3.8 presents the consumption based emissions from 2020 and 2022 from a recently completed co-operation with an external consultant and several Finnish cities. As expected, the total of consumption-based emissions is about double the amount of geographic emissions since there is not much industrial operations in the geographical area of Tampere.



Greenhouse gas emissions from consumption, kt CO <sub>2</sub> eq	2020	2022
<b>Energy consumption</b>	<b>419,0</b>	<b>472,9</b>
Electricity consumption	117,7	118,8
District heating	242,0	291,5
Oil, natural gas and wood heating	46,3	49,9
Cottage living (electricity consumption and wood burning)	12,9	12,7
<b>Construction</b>	<b>153,0</b>	<b>160,0</b>
New buildings	133,6	142,5
Streets and roads	14,8	16,6
Bridges	4,6	0,9
Carbon handprint of construction (positive climate impact achieved by choices of building materials)	-79,8	-79,4
<b>Transportation</b>	<b>283,4</b>	<b>284,9</b>
Passenger car traffic	160,0	157,4
Aviation, international	108,8	110,2
Aviation, national		0,1
Waterborne navigation, international	14,6	14,8
Waterborne navigation, pleasure boats		2,3
<b>Food</b>	<b>491,1</b>	<b>495,4</b>
<b>Goods and services</b>	<b>430,3</b>	<b>425,3</b>
Private sector consumption	368,1	366,0
Public sector consumption	62,2	59,4
<b>Total</b>	<b>1776,7</b>	<b>1838,6</b>

Figure 3.8. Consumption based emissions in Tampere in 2022.

Tampere has also developed a method for estimating the carbon footprint (scope 1 -3) of all construction taking place in Tampere city area based on a national calculation made of the entire construction industry together with Gaia Consulting. The results of the pilot from 2020 are presented below.

Total emissions from construction activities in Tampere in 2020 (ktCO<sub>2</sub>e)

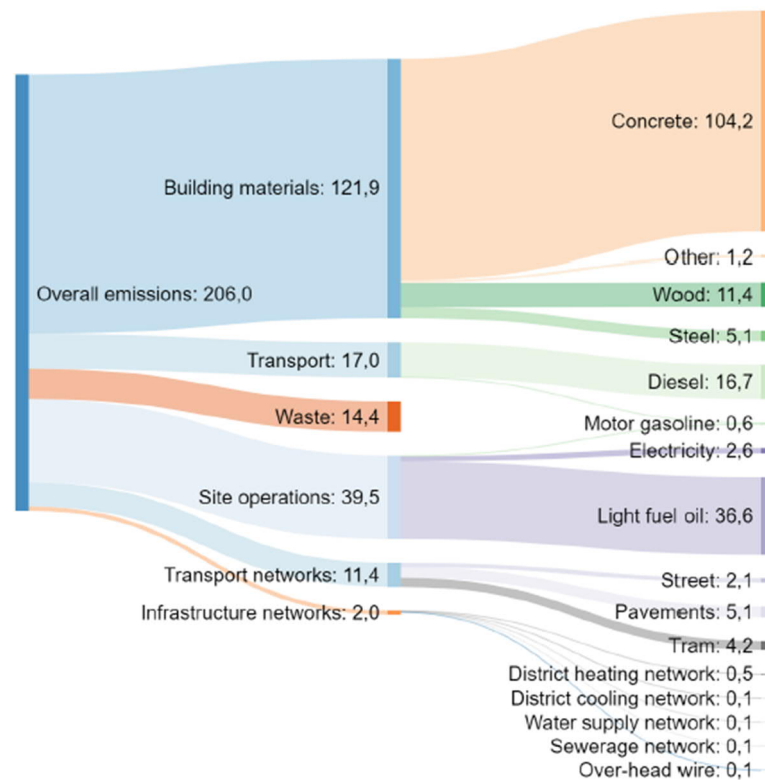


Figure 3.9. Carbon footprint of construction in Tampere in 2020.





### A-1.6: Description and assessment of GHG baseline inventory

Emissions are presented in this Action Plan only as charts, but the details are openly reported to Carbon Disclosure Project -platform (CDP) since 2020. In this Action Plan we use emission calculations exactly as we use them in our local plans, objectives and management. For historical reasons, that does not include F gases, but now the data exists also for this sector and will be integrated soon.

#### Methodology

Tampere has had a yearly climate emissions inventory drawn up since 2010 using a nationally comparable methodology called CO<sub>2</sub>-raportti (CO<sub>2</sub>-report). The method calculates emissions from the geographical area of City of Tampere. A detailed description of the methodology is linked in the annexes of this Action Plan.

The division of sectors differs slightly from the Common reporting Framework:

Instead of *stationary energy*, the inventory presents separately emissions for heating and electricity use in buildings. The emissions for heating and electricity consumption can be calculated with a very high level of accuracy due to availability of both consumption and production data. Thus heating is further divided into categories: district heating, separate heating (oil and gas), electric heating and ground source heat pumps (electricity use). Electricity is divided into industrial electricity consumption and other electricity consumption. All energy emissions cover scope 1 and scope 2 emissions.

*Transport emissions* in total is the same as CRF, but it is broken down to by vehicle type. This sector covers only road traffic since the emissions from air and water in Tampere are negligible. Rail emissions are included in the projections since the share of tram and local trains is growing. Transport emissions cover scope 1, electricity used to charge vehicles cannot be separated from stationary energy.

*Waste* sector is the same. The waste that is collected from households in the region can be accounted for, the emissions are divided to municipalities based on the number of residents.

*IPPU-sector* is called industry and work machines. It covers fossil fuel use in industrial facilities and work machinery. Tampere has next to no industry with climate emissions from product use.

*AFOLU* sector covers the emissions from agriculture. There is no national methodology for land use and forestry emissions to be broken down by region. This is the next gap to be covered in the inventory.

*F-gases* are calculated by SYKE, a national environmental research center. The numbers are not yet integrated into the basic inventory or the climate budget, but that will be addressed latest in 2024. The numbers are reported to the CDP platform.

#### Working on scope 3

Tampere has started working on covering emissions occurring elsewhere due to consumption. The carbon footprint of construction from 2020 has been estimated earlier with an update to 2021 and 2022 being planned shortly. The results are seen in Figure 3.9.

There has been a common effort of several cities in Finland and the consultancy Sitowise Ltd to develop methods for calculating comparable consumption-based emissions for cities in Finland. The results from 2022 are visible in the Figure 3.8. These results show that the total emission just about double when emissions occurring elsewhere are taken into account.

#### Baseline and current situation



Tampere's baseline emissions are from 1990 as according to the Covenant of Mayors, which the city has joined already in 2009. The SEAP, SECAP, Carbon-neutral Tampere roadmap 2030 and Climate Budget are all based on this. As seen in figure 3.2, the baseline total of emissions is 1 300 000 t CO<sub>2</sub>e, which means that the residual emissions total in 2030 should be a maximum of 260 000 t CO<sub>2</sub>e. In per capita numbers, the baseline is 7,5 t CO<sub>2</sub>e and residual emissions an estimated 1,0 t CO<sub>2</sub>e, which is deemed to be less than our fair share by WWF in the One Planet City Challenge of 2021. Figure 3.4. shows are breakdown of emissions in 1990, which is not as detailed as the one from 2021 (Figure 3.3.) due to lack of granularity in data.

The latest emissions inventory is from 2021 and the total there is 898 000 t CO<sub>2</sub>e, which, compared to 1990, is a 31 % reduction in absolute emissions and 51 % in per capita emissions. Since the emission statistics come in very late, the actual situation has already changed in 2023. The local power utility has just completed an investment in a new, extremely efficient biomass power plant that allows ending use of peat in district heating. We estimate this reduces the emissions of the city by a total of about 20 % from 2021. So in effect, the reduction compared to 1990 is now around 45 % in absolute numbers.

Figure 3.5 gives a full picture of the emissions development in each sector from 2010 to 2020 as well as the emissions projection until 2030. More detailed analysis of the development of each of the sectors is included in the attached Carbon Neutral Tampere 2030 Roadmap pp. 20-22

### **Climate budget and emissions projection**

The latest version of the carbon-neutrality roadmap from 2022 included an update of the emissions projection. The results are presented in Figure 3.5. This projection includes assumptions for external changes such as the decarbonization of national electricity production, baseline projection for heating and electricity demand and an optimistic scenario of electric vehicles and biofuels.

In addition, the *current development* scenario includes such climate action that cannot be seen in the GHG inventories yet, but the investments have already been decided and are being implemented.

The *roadmap scenario* includes other actions from the roadmap that could be accounted for. The biggest remaining question marks are modal shift impacts of the plan, the actual emissions from existing landfills (as opposed to modeled) and the impact of actions by industrial players.

More detailed analysis of the projection and the remaining gap is also presented in the annexed Carbon neutral Tampere 2030 roadmap on pages 128-129 and its appendix 1 pp. 142-149.

Tampere sets yearly targets for each emission sector in the Climate Budget, which is a part of the annual financial planning and documents. This allows for transparency in how well the city is advancing towards its targets as well as an annual analysis of progress in each sector. The latest analysis from financial documents of 2022 can be seen in figure 3.6.

Figure 3.7 brings together all of the above: baseline, past and current emissions, climate budget and the emissions projection. As can be seen, Tampere can get very close to its target, but there is still clear gap that remains and it is the toughest change that still needs to happen.

### **Residual emissions**

The residual emissions for 2030 should be a maximum of 260 000 t CO<sub>2</sub>e. A breakdown of the target per sector is the target of the climate budget as in figure 3.6 above.

The remaining emissions from *heating* are based on predictions of how much of fossil fuels can be replaced in the sector by 2030. Residual emissions in district heating are mainly from waste incineration, where district heating can be considered waste heat usage. A small fraction of oil heating will likely remain in 2030 and the national legislation only demands a 10 % share of biofuel in it. Heating consumption is affected by increases in energy efficiency and renewal of the building stock.



*Electricity emissions* are calculated according to the national average production. It will be almost decarbonized by 2030 but an estimated 31 g CO<sub>2</sub>/kWh is predicted to remain. This is enough to reach the targets set in the climate budget.

Residual *traffic emissions* target is set according to the national target and made a little bit stricter since Tampere is a city with more potential for sustainable transport than small towns and rural areas. According to projections and analysis, it will be very hard to reach in a short amount of time. Even with very optimistic assumptions of the share of electric cars and biofuels, it is clear we need more efficient transport to reach the target. That means modal shift to sustainable modes and optimization of logistics as well as reduction of transport need through urban planning.

Residual emissions for *industry and work machines* is set according to current trends and national projections of industry emissions reductions. It might be possible to reach lower levels, if major industrial facilities will electrify their operations in time. Work machines are electrifying very slowly, so some level of residual emissions is likely.

Residual emissions from *waste* are set according to an estimation of how the emissions from existing landfills will gradually decrease. However, the emissions inventories from last years are far from the predicted trend. This needs to be studied more closely to see if the issue is with real emissions or the calculation. Other emissions from waste will be dealt with by 2025.

Emissions from *agriculture* are very small to begin with and the transition to more climate friendly methods is slow. The target is set as lenient and the projection is made based on current trends.



## 3.2 Module A-2 Current Policies and Strategies Assessment

Table A-2.1: List of relevant policies, strategies & regulations					
Type	Level	Name & Title	Description	Relevance	Need for action
(regulation/ policy/ strategy/ action plan)	(local, regional, national, EU)	(Name of policy/ strategy/ plans)	(Description of policy/ strategy/ plans)	(Describe relevance/ impact on climate neutrality ambition)	(list any suggested action in relation – to be further picked in Module C-1)
Local policies, strategies, initiatives and regulation					
Policy	Local	City of Tampere's environmental and climate policy guidelines	Tampere aims to be carbon neutral by 2030. Tampere will reduce its climate emissions and strengthen its carbon sinks. Natural resources will be used and consumed resource-wise.	Sets the aim for climate-neutrality	Guidelines are transformed into action via roadmap which includes a list of actions. More information below.
Action plan	Local	<a href="#">Carbon Neutral Tampere 2030 Roadmap</a>	The roadmap aggregates the actions that the city plans to take in order to achieve climate neutrality by 2030.	Engages the city organisation in the climate neutrality target. Includes impact assessments of the planned actions.	Capacity building about systems thinking in both the city organisation and among stakeholders while updating the plan in 2024
Policy	Local	Strategic Local Master plan for main city area	The plan seeks solutions for the urban and natural environment that support adaptation to and mitigation of climate change.	Promotes sustainable land use in a growing city.	Studying future energy systems while making the city urban plan
Policy	Local	City of Tampere housing and land policy guidelines 2022-2025	A lot of new housing has been built in Tampere, mainly along public transport routes and by densifying existing residential areas. Efficient public transport and high quality walking and cycling routes move people quickly and with low emissions from one area to another. The need to move around in everyday life is reduced by the proximity of services and jobs to homes. Energy is renewable and increasingly produced by non-combustion	Climate-neutrality and sustainability are mainstreamed and integrated in the daily workings of the city. Developing a holistic approach to housing and land use.	Ensuring new holistic ways of working and innovations are taken up widely in the city. This requires resources, planning and follow-up.



			<p>technologies, nearby or self-produced.</p> <p>The principles of the circular economy are widely applied to all activities, including construction. Recycled materials and building components are used in buildings. Buildings are designed to be flexible, durable and ultimately demountable and recyclable.</p> <p>Construction and renovation will minimise the carbon footprint of buildings throughout their life cycle.</p>		
Policy	Local	<a href="#">Tampere City Strategy</a>	The City Strategy lays the foundation for the city's management. It represents city's long-term goals from the present to 2030.	One of the four priorities of the strategy is carbon neutral actions.	Ensuring continuity of climate action over the course of time.
Strategic plan	Local (and city region dimension)	<a href="#">Sustainable Urban Mobility Plan (SUMP)</a>	SUMP is a strategic plan that reviews people's mobility needs from the perspective of better quality of life.	Transport and mobility are a key emission area for Tampere to work on in order to reach the 2030 target. SUMP promotes a transition into more sustainable modes of transport required by traffic climate targets.	<p>Making sure the political will and resources continue to match the objectives set in SUMP.</p> <p>Pilot project for boosting the modal shift and producing information that supports the change and communicates co-benefits well to different actors.</p>
Action Plan	Local	<a href="#">Cycling Development Programme 2030</a>	The programme puts together actions to achieve a minimum 15% modal share of cycling in Tampere by 2030.	Promoting bicycle traffic plays a significant role in achieving carbon neutrality.	Ensuring the programme is matched with the required resources.
Action Plan	Local	<a href="#">Walking and Urban Life Programme 2030</a>	The programme intends to improve the walking conditions in the city to make walking a more attractive modal choice while also developing the city centre.	Promotion of walking in the city centre and more widely has an important role in the toolbox as the city works towards climate neutrality.	Coordination with the Cycling Development Programme and collaboration across service areas.
Action Plan	Local	<a href="#">Biodiversity Programme 2021-2030</a>	The programme sets the ambition to improve biodiversity in the city – from the city centre to protected areas. Biodiversity is seen as a key component of urban development. The programme has six main goals that are complemented with 112 actions.	Climate change and biodiversity are closely linked to each other. Biodiversity has value as such but can also help with adaptation to climate change.	Growing city and its landuse needs are a challenge for biodiversity. Cross-sector coordination of different objectives and interests requires continuous work as defined in the programme.
Regional policies, strategies, initiatives and regulation					



Policy	Regional, national	Regional MAL agreement: Land use, housing and transport agreement	The purpose is to facilitate and support the cooperation between municipalities in urban regions and between municipalities and the State in the guidance related to the urban structure.	Includes the objectives for land use development and housing production in the coming years (current period is 2020-2023) and key development projects concerning the transport network. These in turn affect the emissions of built environment and transportation.	The climate change mitigation measures should be prioritised more in the agreement.
National policies, strategies, initiatives and regulation					
Regulation	National	Climate Act	Finland aims to be carbon neutral by 2035. The Climate Act was recently reformed to reach the target.	Obliges municipalities to draw up climate plans and set emission reduction targets.	Making sure the state financially supports the cities to the degree that is necessary in order to reach the target.
Policy	National	The Government Programme 2023	<p>Finland aims to be a leader in clean energy: Businesses will be offered stable and predictable operating conditions in order to promote the green transition and cleantech investments and attract new business to Finland.</p> <p>The Government will explore the need and possibilities for the central government to participate in financing solutions for strategic investments (guarantees or capital investments). E.g., Clean Energy Finland projects.</p>	Financial support for major energy and infrastructure investments of the cities could significantly promote climate neutrality.	The policy is expected to promote investments related to large-scale energy projects in the city. Making sure the city benefits these opportunities.
Regulation	National	The Government Programme 2023	<p>The Government will ensure that the regulatory and permit processes for solar power parks are uniform, flexible and predictable throughout the country.</p> <p>The up-to-dateness of the determination of the tax values of the structures of solar power plants is checked, ensuring that the solar power plant is not subject to a disproportionately</p>	Will reduce red tape and accelerate increasing the share of solar power in the city and surrounding region of Tampere.	Improving preparedness in the city for when constructing more solar power becomes easier.



			<p>higher property tax than wind power.</p> <p>Solar power parks are expected to become more common due to improved profitability and accelerated permit processes also in the cities</p>		
	National	The Government Programme 2023	The link between meeting the objectives of MAL agreements and financing the investments will be strengthened. The Government Programme 2023 includes investment support to MAL agreements.		
Policy	National	The Government Programme 2023	Development of main Helsinki-Tampere rail-link, Liminka-Oulu twin track. The Government will make substantial investments in developing the railway network in various parts of Finland. In addition to the State the municipalities may be shareholders in the companies that execute infrastructure projects. Linked to use of CEF funds which will also be used to fund Tampere related projects.	Will enable Tampere to be more sustainably accessible hence reducing emissions.	Continuous lobbying to ensure adequate funding for major railway projects related to Tampere.
Policy	National	The Government Programme 2019	The municipalities, residents and communities have been able to apply for ARA grants (energy-efficiency improving subsidies) and ELY grants (e.g. replacing oil heating) to switch to low-emission forms of heating since 2020.	The financial support to public authorities and citizens to make climate-neutral changes in their real estates promotes climate-neutrality.	Continue to utilise the mentioned grants.
Regulation	National	The act banning the use of coal for energy generation in 2029	<p>Coal-fired power and heating generation will be banned as of 1 May 2029.</p> <p>Programme of Prime Minister Sanna Marin's Government 2019 included supporting investments to replace coal, EUR 90 million during the budget planning period.</p>	Directly promotes decarbonisation.	Applying for available funding.
Regulation	National	Land Use and	New construction and large-scale renovations	Increase use of renewable energy	Making sure city's construction and



		Building Act (927/2021), (132/1999)	<p>will be subject to a minimum requirement of renewable energy. In construction projects, it must be ensured that at least 38 percent of the calculated purchase energy used in the energy calculation in a new building or a building undergoing large-scale repair is renewable energy, if it is technically, functionally and economically feasible.</p> <p>These requirements ensure investments in renewable energy in new construction and large-scale renovations.</p>	sources will reduce use of fossil sources hence promoting carbon-neutrality.	renovation projects fulfill the requirements.
Programme	National	KIRA, The programme on a low-carbon built environment	<p>The programme on a low-carbon built environment offers a total of EUR 40 million in funding in 2021–2023 to support Finnish companies and other organisations in developing low-carbon solutions related to the built environment. Municipalities and other public procurement entities can receive funding for innovative public procurement.</p> <p>Funded projects have concerned, e.g., development of climate and energy impact assessment and solutions for low-carbon suburban development.</p>	Promotes climate-neutrality in the field of built environment, a major emission sector.	City should apply for funding available.
European policies, strategies, initiatives and regulation					
Regulation	European	EU Directive on Energy Efficiency and Energy Efficiency Act	The Energy Efficiency Directive (EU/27/2012 & amendment (EU/2018/2002). The directive lays down energy efficiency targets at the EU and national level, the national energy saving obligation and measures and obligations to promote energy efficiency. As part of the recast of Fit for 55 Package in 2021	The directive will reduce emissions by pushing member states to improve energy efficiency.	Ensuring cities have the needed tools such as funding and financing instruments to do their share of the work.





			<p>the target to reduce energy consumption by 32.5% in the EU will be tightened to 36–39%. The target will become binding. Finland would need to limit final energy consumption to 255 TWh by 2030.</p> <p>These requirements encourage investments to be directed to improving energy efficiency and, e.g., energy-efficient construction.</p>		
Regulation	European	<p>The Renewable Energy Directive, (RED II; 2018/2001).</p> <p>EU emission trading system (ETS)</p>	<p>Finland has announced that it aims for a renewable energy share of at least 51 percent in 2030. The RED II directive also requires that 14 percent of the energy used by transport in the member states is renewable energy by 2030.</p> <p>The Directive encourages directing investments to renewables and stabilizes the investment environment. A cap, or limit, is set on the total amount of certain GHGs that can be emitted by the factories, power plants and other installations in the system. The cap is reduced over time so that total emissions reduce. The system allows trading of emission allowances so that the total emissions of the installations stays within the cap and the least-cost measures can be taken to reduce emissions. (Directive 2003/87/EC, Delegated Decision (EU) 2020/1071 and Delegated Regulation (EU) 2021/1416.)</p> <p>The Fit for 55 package aims to reform the EU ETS by making it more ambitious.</p>	<p>Power plants and installations which the city owns (or a share of them) or transport systems run by cities are affected. More significant incentive to invest in climate-neutrality.</p>	<p>Collaboration with the organisations affected. Supporting them in making more sustainable investment decisions.</p> <p>Once the Social Climate Fund starts to operate, the city should see if it can benefit of its funds.</p>



			<p>The system can bring investments in low-carbon technologies to ETS power plants and other installations.</p> <p>Revenues from the sale of the allowances are put into the social fund. The Social Climate Fund will provide support to vulnerable groups.</p>		
Regulation	European	European Climate Law	<p>The European Climate Law - as part of the Fit for 55 package - makes reaching the EU's climate goal of reducing EU emissions by at least 55% by 2030 a legal obligation. The Innovation Fund (IF) and Modernisation Fund (MF) already existing in the EU ETS are retained in the Fit for 55 package and increased, while a new Social Climate Fund (SCF) is introduced.</p>	Directly tightens the emission reduction target contributing to climate-neutrality.	The city needs to act with the binding target in mind. However, city's own target of 80 % for 2030 is already more ambitious than that of the EU's.
Regulation	European	EU Clean Vehicles Directive	<p>Clean Vehicles Directive (CVD) 2019/1161 is aimed at promoting the adoption of low and zero-emission vehicles in the EU. It sets mandatory procurement targets for clean vehicles in the public sector, including electric and hydrogen-powered vehicles, with the goal of reducing GHGs, air pollution, and energy consumption in transportation. The directive stimulates investments in clean vehicle technologies and related infrastructure.</p>	Growing number of clean vehicles and public procurement will inevitably reduce GHGs and hence promote climate-neutrality.	City's transport and mobility investments need to be aligned with the directive in the context of public procurement. The city's infrastructure and planning also need to be adjusted to the changing clean vehicle environment.
Regulation	European	EU legislation on buildings and construction	<p>The Energy Performance of Buildings Directive EPBD; 2010/31, 2018/44. Construction-related matters such as construction product approvals, the environmental impacts of buildings and the energy efficiency of</p>	The renewal of building stock is expected to reduce energy bills and help curb climate change.	Making sure the city's procurement, investment, installation and maintenance plans are ready for 2027+.



			buildings and construction products. The legislation contains, e.g., regulations for urban buildings to utilize solar energy. From 2027, each new government building or private office building larger than 250 square meters must have solar panels. Legislation guides investments for more environmentally friendly buildings and construction.		
Regulation	European	Revision of the <a href="#">Energy Union Governance</a>	Original plan consists of five dimensions: - decarbonisation (GHG reduction and renewables) - energy security - energy efficiency - internal energy market - research, innovation and competitiveness	Direct impact on climate-neutrality. To be confirmed later one.	Upcoming (situation in 9/2023)
Regulation	European	<a href="#">Green Deal Industrial Plan</a>	Four pillars:  Predictable and simplified regulatory environment  Faster access to funding  Enhancing skills  Open trade for resilient supply chains	City's role as an enabler for economic development (e.g. partnering up with companies or exploring regulatory sandboxes on local level) and being in charge of e.g. vocational training is something where objectives of Green Industrial Plan should be taken into consideration.	Upcoming (situation in 9/2023)

### A-2.2: Description & assessment of policies

The Carbon Neutral Tampere 2030 Roadmap describes climate change mitigation efforts in the city. In total there are over 300 measures – and their number may develop according to needs - under seven themes. We have compiled the roadmap in close cooperation with the entire city organization. Each measure has at least one team that is responsible for its implementation. However, the roadmap does not follow the administrative structure of the city. Therefore, several bodies may be responsible for a given measure. The operating model ensures that the entire city organization is committed to the carbon neutrality target.

The aim of the roadmap is to reduce 80 % of city's CO<sub>2</sub> emissions from 1990 level by 2030. When setting the climate neutrality target, we have been aware of the Paris agreement emission scenarios and have set a significantly stricter target than the national one. This comparison is basically qualitative in nature since no detailed calculations have been made. While making our SECAP and



this roadmap, we have made scenarios of climate emissions of the city with current developments and another one with roadmap actions. These scenarios are quantitative and fairly detailed. The roadmap is actually based on the work started in SECAP and currently, we focus on improving and updating the roadmap instead of SECAP.

The sustainable urban mobility plan (SUMP) reinforces and demonstrates the objectives set for mobility in the local master plan, the Carbon Neutral Tampere 2030 Roadmap and other city's development plans. The key goal of SUMP is to instill the principles of sustainable urban mobility more prominently into mobility planning and decision-making. The sustainable urban mobility plan and actions have been drawn up for 2021–2024. The plan will be updated in connection with updates of the local master plan or earlier, if necessary, in case significant change needs arise.

The Strategic Local Master plan for main city area is periodically updated once every electoral term. In the most recent update, the themes of this plan are adaptation to climate change and development of the green environment. This plan is the second master plan to include a wide estimate of climate emission impacts. The residents can provide feedback on the plan online. In addition, four events are organized to give the residents an opportunity to ask questions and comment the plan.

The importance of climate change mitigation has been recognized in the Tampere city strategy as well. The focus of the theme “Carbon Neutral Actions” is on citizens and private sector. We have found a four-year development program to pursue the strategy. The aim of the program is to enable sustainable choices for everyone.

To conclude, we feel that our plans are quite advanced already, but we also need evaluation of the city's governance approaches to ensure the city's governance system truly is fit for the 2030 objective. For example, funding issues are a big challenge for us, and this is what we will be working on before the next CCC update to make up for the gaps. The City of Tampere is already engaged in co-development, but this needs to be continuously developed in a way that takes into account all citizens and businesses of different backgrounds.

**Table A-2.3: Emissions gap\***

	Latest emissions (percentage), 2021		Residual emissions (from 1990) / offsetting <sup>1</sup>		Necessary reduction <sup>2</sup>	Projection for emissions in 2030 according to Roadmap <sup>3</sup>		Emissions gap (to be addressed by action plan) <sup>4</sup>
	<i>(absolute)</i>	<i>(%)</i>	<i>(absolute)</i>	<i>(%)</i>	<i>(absolute)</i>	<i>(absolute)</i>	<i>(%)</i>	<i>(absolute)</i>
<i>All units kt CO<sub>2</sub>e</i>								
Buildings – electricity	<b>91,8</b>	10	<b>40</b>		-51,8	<b>39</b>	11	1
Buildings - heating	<b>379,4</b>	42	<b>39</b>		-340,4	<b>62</b>	18	-23
Transport	<b>212,6</b>	24	<b>115</b>		-97,6	<b>135</b>	38	-20
Waste	<b>72,7</b>	8	<b>16</b>		-56,7	<b>51</b>	14	-35
Industrial Process and Product Use (IPPU) + work machines	<b>116,6</b>	13	<b>39</b>		-77,6	<b>54</b>	15	-15
Industrial electricity cons.	<b>18,2</b>	2,0	<b>7</b>		11,2	<b>6</b>	2	1
Agriculture	<b>6,7</b>	<1	<b>4</b>		2,7	<b>6</b>	2	-1
<b>Total</b>	<b>898</b>	100	<b>260</b>	20	638	<b>353</b>	100	-92



\*The emissions gap has been presented here in a similar fashion as it is presented in the Climate Budget of Tampere. Thus the structure is slightly different to what has been proposed in the template.

<sup>1</sup> Residual emissions consist of those emissions which can't be reduced through climate action and are being offset. Residual emission may amount to a maximum of 20 % as stated by the Mission Info Kit. *Residual emissions are compared to 1990 as per the decisions made in Tampere when joining the Covenant of Mayors*

<sup>2</sup> Necessary reduction = Latest emissions – residual emissions offsetting.

<sup>3</sup> Emissions in 2030 according to the Carbon Neutral Tampere 2030 Roadmap emissions projection including the estimated impact of actions in the roadmap. The projection is unable to include the impact of every single action, especially when it comes to the actions gearing towards modal shift.

<sup>4</sup> Emissions gap = Residual emissions offsetting – Projection for emissions in 2030.

### 3.3 Module A-3 Systemic Barriers and Opportunities to 2030 Climate Neutrality

<b>Key stakeholders</b>	<b>Systems and networks they are involved in</b>	<b>Influence and interest</b>
Public sector Tampere Region City	Mobility& transport Urban planning Built environment Education Sustainability Climate change mitigation	Sustainable and smooth mobility, transport, housing and living in the region. Key policy maker and influencer among smaller towns in Tampere central region.
Council of Tampere region	Sustainability Climate change	Strategy work for the whole region. Local provider of EU structural funds.
Centre for Economic Development, Transport and the Environment ( <a href="#">ELY Centres</a> )	Mobility& transport Waste & circular economy Climate change mitigation	Sustainable solutions for mobility, climate change and circular economy in the region. Key policy maker in climate change related actions and an additional channel for us to national government
Environmental institutes, e.g. the Baltic Institute of Finland  Circular Economy Networks	Broad networks in the Baltic Sea area in innovation and sustainability, waste management & circular economy	Project engine and expert organization in their key substance areas.  Impact through extensive networks. Collating scattered players together.  Seeking to provide assistance in European-wide projects.  Promoting Circular Economy



	Business Finland	Government agency for innovation, including green innovation	Financier of R&D&I, start-up, also cities. Run extensive thematic programs that city can benefit from.
	Finnish Government, the Ministry of Environment	Governance & policy	Supporting the work of municipalities. Operates mostly through Economic Development Centers, see above
	Ministries of Environment and Employment and Economy	These two ministries are the key ones in climate change mitigation, green transition and novel business opportunities and innovation in green economy	These are the key players. Policymakers, financiers, partners for the city.
	Mission support projects; Climate Mission Finland 2030, NetZeroCities	Governance & policy	Supporting cooperation (e.g. through common brand)
<b>City of Tampere owned development firms</b>	Business Tampere	Green industry Waste & circular economy Clean-Tech Logistics & mobility Operates Climate Partner network for the city	Speeding up company growth opportunities and partnerships in the Tampere Region, Finland and globally.
	EcoPartners Ltd (non-profit)	Citizen engagement in sustainable actions from energy to circular economy and citizen engagement. Broad European networks.	Promoting sustainable lifestyle and business. Project engine.
<b>Private sector</b>	Companies (over 800 firms in clean-tech and circular economy ecosystems)	Green industry Mobility & transport Energy Clean-tech in manufacturing Consumer behavior, circular economy	Sources of industrial emissions.  Employee, customer and logistic mobility and transport emissions. Procurements.  Reaching their own climate targets, due diligence and brand.
	Climate Partners, a network of over 100 firms committed to climate actions.	Green industry, Mobility & transport, Energy  Consumer behavior, circular economy	Sources of industrial emissions.  Employee, customer and logistic mobility and transport emissions. Procurements.  Reaching actively their own climate targets, due diligence and brand.  Brand, pioneering



	Development partners, e.g. Kausal	Green industry, Mobility & transport, Energy	Developing through knowledge; developing tools for monitoring climate neutrality
<b>Citizens</b>	Carbon Neutral Actions development programme  Local active citizens and communities	Mobility & transport, Food, recycling, consumption  Consumer behavior  Social innovation Social impact, education	Engagement and ownership to reaching climate-neutrality through co-creation in three areas in Tampere.  Creating new resident coming from activity that suites to everyday life in the areas.
	Organizations	Social impact, education Housing  Consumer behavior	Citizen participation within organizations having some other unifying factor than carbon neutrality.  Get publicity and more members, brand, influence.
	Public opinion	Social impact  Consumer behavior	Have on influence on what is taken as normal or expected in e.g. consumption or mobility.
<b>University/ research</b>	Tampere University  Tampere University of Applied Sciences  Students  VTT Research Center	Research, innovation, education, mobility & transport, circular economy.  One of the key stakeholders from the city point of view. Source of new knowledge.	New research and innovations in all aspects of sustainability; city plays the role of partner and platform for Uni's.  Students as future experts, employee and students mobility and transport emissions, procurements, Research funding, education, brand.
<b>Media</b>	Local newspapers  Tv, radio (Yle)	Social impact, education	Influence the way sustainability issues are discussed locally, educating and keeping citizens up to date, Get more customers, be the first to publish articles and stories.
	Tampere.fi	Social impact, education	Influence the way sustainability issues are discussed locally, educating and keeping citizens up to date.
	Social media	Social impact	Influence the way sustainability issues are discussed locally



### A-3.2: Description of systemic barriers – textual elements

As can be seen in Figure 3.6 of the climate budget, the sectors clearly lagging behind targets are district heating, traffic and waste. The emissions development in each sector is further analysed in the Carbon Neutral Tampere 2030 Roadmap attached to this Action Plan.

**District heating** is not far behind its target, the reinvestments from fossil fuels to renewables and waste incineration has already taken place. The remaining use of fossil fuels for district heating is only for peak load times in very cold weather with no excess electricity production. On the other hand, combined heat and power production from waste remains base load for the district heating system. Merely improving energy efficiency or doing demand side management will not reduce these emissions. So the systemic barriers to overcome are:

- **Waste CHP emissions**
- **Lack of demand side management in peak load times**
- **Producing clean heat at peak load**

In **traffic** emissions, the challenge is much bigger. The focus is on private cars and logistics as they cause more than 90 % of the emissions together with more than 60 % caused by private cars. Tampere has already made major investments in a tramway and service levels of public transport. The land use planning for residential buildings is also focused to public transport zones. The use of public transport is growing fast despite the adverse impact of pandemic times. According to projections, even very optimistic scenarios of electric vehicles and the nation mandated biofuel distribution share will not take us to the 2030 target, which is set at 115 000 t CO<sub>2</sub>e. Thus, it is necessary to reduce the amount of kilometres driven compared to current levels despite a significant population growth. The systemic analysis here becomes very complex. The main barriers identified are:

- **High persistence of having a private car and driving smoothly anywhere:** the actions are necessary to make the most of sustainable mobility investments and make space on the road network for necessary driving.
- **Funding for necessary changes to existing road network to have space for sustainable transport:** Tampere invests a lot to new residential areas as the population growth has only gotten bigger in recent years.
- **Funding the needed growth of public transport:** the national government might not be willing to provide growing financial support for growing public transport operation.
- **Making choices in land use planning :** Balancing different interests and needs in land use planning while making determined effort for reaching climate neutrality especially when it comes to traffic emissions is challenging. It is necessary to find ways to measure the impacts against each other.

More than 30 % of traffic emissions come from logistics. Tampere already has a logistics action plan for 2023-25. The climate aspect and especially the systemic aspect of logistics remains yet to be unpacked. It's important to start co-operation with private companies that are big employers and have big logistics needs (e.g. big grocery store chains and industry) to work on the traffic system transition together.

The challenge with **waste management emissions** is lack of reliable data. Based on the current emissions calculation method, the main part of emissions is existing landfills. It remains unclear if the reason for the high emissions is in the model or the data used for the model. The results are very different for different regions in Finland. Another indication of this kind of error is that the methane collected from the landfill is reducing faster than the calculated emissions. Otherwise many necessary emissions-reducing solutions have already been implemented in the waste sector:

- Municipal biowaste is being treated to produce biogas for transport and fertilizer for farming, the biogas is used for transporting waste in the region





- Wastewater treatment is being transferred to a new facility that is built underground to control emissions from waste water, the sludge will be treated to biogas and used for heat and power production for the facility
- Landfills are no longer in use, all municipal waste that is not recycled is used as fuel in a combined heat and power plant
- Biogas is collected from the existing landfill and used as fuel at the combined heat and power plant

In addition, a few sectors look fairly good on the climate budget, but have known challenges for getting to the target.

**Industry and work machines** emissions look good on the Climate Budget table, but are very dependent on big industrial facilities using fossil gas to produce heat. The challenge here is to find a technical solution that will not be too hard on the electricity production system. Work machines are the smaller portion, but the change also needs to happen. It starts with a national Green Deal for zero-emission construction sites. The city's own construction sites are a fraction of all construction in the city. But, by showing example and demanding a change in the technology the city can have a widespread impact.

At the moment **Oil heating** (more than 95 % of separate heating) looks like it might get to its target, but the situation could change. This sector has gained speed from financial support from the national government to private homeowners. The latest government has cut the support from future budgets, which might hinder the progress and lead to lagging behind from targets. The city provides support and advice to oil heaters but has no means to provide financial assistance. This is an important topic related to energy poverty. Some people cannot afford the investment it would take to lower the cost of daily energy.

The final systemic barrier is not directly related to emissions but **financing** the work that needs to be done both in investment and operations terms. Financing has been readily available and for the big investments Tampere has successfully applied innovative financing models. However, systematically following up and planning to the future for the climate action has not been done for very long. Changing ways of working and starting to document cost saving and measure sustainability impacts along with money takes time in a big organization. Financial barriers are further analyzed in the Investment Plan Module A-3.1 and Table 4

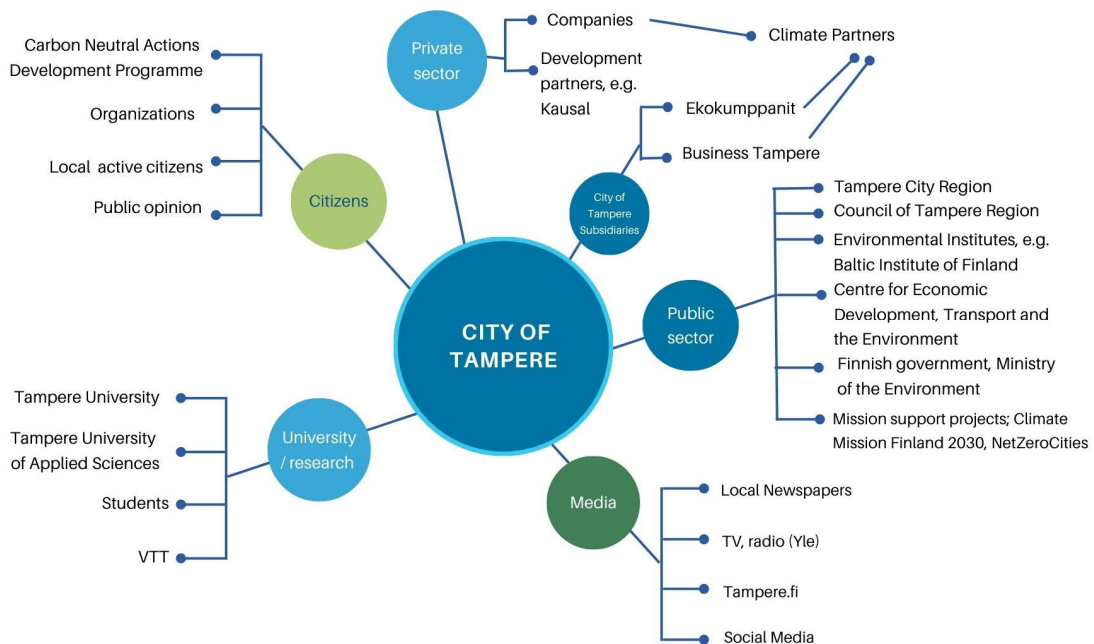

**A-3.3: Description or visualisation of participatory model for the city climate neutrality – textual and visual elements**


Figure 3.10. The Tampere climate stakeholder model brings together the main actors in society. For the time being the focus has been on the public sector, but it is increasingly clear that the contribution of businesses and residents is fundamental.

Figure 3.10. The Tampere climate stakeholder model brings together the main actors in society. For the time being the focus has been on the public sector, but it is increasingly clear that the contribution of businesses and residents is fundamental.

**Public sector sharing crucial data and goals**

The most important field of stakeholders, at least for the time being, is the public sector, whose actors in different sectors and levels are central to the work. The City of Tampere is an active forerunner of the Tampere City Region. The eight municipalities in the region co-operate through a joint 2030 Roadmap for a Carbon Neutral City Region. The work is organized through national [HINKU-network](#) and follows the targets and framework of the network. The Council of Tampere Region holds the strategy work for the whole region. The Council also provides EU structural funds locally.

In close cooperation there is also the Centre for Economic Development, Transport and the Environment ([ELY Centres](#)) that leads the local Climate forum, providing a common network to share information about funding opportunities, local new research innovations, crucial data and local information about the local development scenarios of emissions and carbon sequestration. Environmental institutes like [The Baltic Institute of Finland](#) bring the civil society to discussion with the local governance.

**Circular Economy Networks**

As an environmental institute for the circular economy there are publicly (municipalities) owned organizations promoting Circular Economy, these include Pirkanmaa Regional Council, Tampere City Region, Business Tampere, [Ekokumppanit Oy/EcoFellows](#) and especially its Circular Economy Project in Pirkanmaa region (main focus on the construction sector and industrial symbiosis). There is a good co-operation between public operators to work together and Pirkanmaa has been selected as one of the pilot regions in Europe in Circular Cities and Regions Initiative, CCRI ([Circular Cities and Regions Initiative | Circular Cities and Regions Initiative \(europa.eu\)](#)). Also other stakeholders, such as university of Tampere, private sector (Tampere Chamber of Commerce & Industry, private companies) and the waste management company owned by 17 municipalities in Pirkanmaa Region are part of the circular economy network in Tampere.



At the national level [the Ministry of the Environment](#) and EU Mission support projects such as Climate Mission Finland 2030 and the [Net Zero Cities network](#) are naturally important stakeholders.

### **Subsidiaries reach the companies**

Of course, the private sector is also essential. The economic development agency [Business Tampere](#) is owned by the City of Tampere. It is the link between the public and private sectors. Business Tampere promotes investments and creates an attractive environment for sustainable business in the region. The same applies to Ekokumppanit/EcoFellows from another angle. Ekokumppanit is also a subsidiary of the City of Tampere. It is counselling, training and offering expert services in the Tampere region to promote a sustainable lifestyle and business. The unique eco-partnership activities were launched in 2003, when the City of Tampere and its enterprises together with [Pirkanmaan Jätehuolto Oy](#) established the company. The third owner of the company since the beginning of 2009 has been [Tampereen Energia](#). Ekokumppanit belongs to the European network of energy agencies. It is also social enterprise and holds [The Finnish Social Enterprise mark](#) to show the engagement to responsible business activities and the social good as a primary objective.

### **The Climate Partnership actively engages businesses**

Together with Business Tampere and Ekokumppanit the City of Tampere reaches for private companies. The Tampere region's climate partnership model (Ilmastokumppanit) is to involve companies and communities in the region in pursuing a carbon-neutral Tampere. The Climate Partnership is, as the name implies, a partnership; it is intended to benefit both parties to the partnership agreement. There are already 116 climate partners in Tampere Region. Kausal is an example of a company with which the City of Tampere work closely, for example in assessing carbon neutrality work.

### **Explicitly and openly involving residents in climate work**

The importance of citizens and the communities they form as stakeholders is increasing. The city is well into the process of changing the way it does things, now that it is realising that sustainable transport choices, for example, are residents' choices. The Carbon Neutral Actions development programme, one of the four priorities of Tampere's strategy, explicitly involves residents in climate work and openly develops with them ways in which citizens can build a good and sustainable everyday life. This will be done in partnership with communities and associations, but in three selected areas in particular. The aim is for public opinion to reach the point where sustainable choices become the choices of the majority. The aims and process of the programme is described in more detail in chapter 2.1.

### **Strategic cooperation with academia and research**

The stakeholder model also includes [the University of Tampere and Tampere University of Applied Sciences](#) with its students. The city is now to set a target for research community collaboration and hired resource to promote strategic partnerships between the city and the higher education community (TAMK and the university), including student cooperation, international cooperation, business cooperation and RDI. The City of Tampere has strategic collaboration agreement with two of its major research partners and climate action has been identified in them as one of strategic topic. The carbon neutrality work is also evaluated by the state-owned research institute VTT. Major barrier found here is strategic funding of processes.

### **The media as a shaper of public opinion**

The media is also a relevant stakeholder; local newspapers, especially [Aamulehti](#), have a strong influence on public opinion. So do the regional radio, television and online operations of the [Finnish Broadcasting Corporation \(Yle\)](#). The [Tampere.fi](#) website, as the city's information channel, is an opportunity to report on the progress of climate work without using the media as a tool. The social media channels of the city and its various communities also have a strong and human influence on the opinions and everyday choices of Tampere residents.



## 4 Part B – Pathways towards Climate Neutrality by 2030

### 4.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

Table B-1.1: Impact Pathways					
Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-6 years)	Direct impacts (Emission reductions)	Indirect impacts (co-benefits)
Energy systems	Technology/ infrastructure	Renewable energy sources the district heating network with biofuels, heat storage, heat pumps and electricity	Carbon-neutral energy available	District heating emissions will drop to 25 g CO <sub>2</sub> /kWh  Local CHP electricity production decreases significantly	Regional biofuels strengthen local economy and create jobs  More stable energy prices for consumers  Non-combustion heat production units can participate in the demand response market
		Investment in solar panels increases due to more volatile energy prices	Local renewable energy production replaces grid-provided energy	Reduction in need of grid-provided electricity, 1 500 t CO <sub>2</sub> e	Self-sufficiency in electricity production increases  Consumers are less vulnerable to electricity prices
		Adding storage capacity and demand side management to public and private facilities that have a significant peak power demand during the day	Electricity demand adapts better to growing variable renewable energy production	Less need for fossil peak load production -> national electricity system can decarbonise efficiently	Electricity prices become more stable
		Applying solutions to heat demand side management	District heating and electricity peaks loads become smaller	Less need for fossil peak load production -> district heating emissions	District heating prices are less dependent on imported fossil fuels



				reduce further	
		Feasibility studies for CCS/U implementation	Carbon capture and use/storage in biomass CHP and waste CHP	Reliable carbon removals produced locally 300-400 000 t CO <sub>2</sub> e  Potential for producing hydrogen and synthetic fuels	Opportunities for local economy to grow from using captured carbon in ways that permanently store it  Hydrogen production can add to flexible electricity capacity
	Learning and capabilities	City planning takes local energy production into account	Local renewable energy production increases	Local renewable energy production replaces grid-provided energy	Consumers are less vulnerable to electricity prices
		City provides energy advice to citizens, housing companies and targets especially those in danger of energy poverty	Citizens can identify the most affordable energy efficiency actions	Energy use becomes more efficient in residential buildings  Oil heating is changed to renewable energy or district heating	Risk of energy poverty decreased  Dependence on imported fossil oil reduces
Mobility & transport	Technology/ infrastructure	Expand the tramway after phase 2  More local trains  Improvements in walking and cycling infrastructure and bike parking  Enhanced winter maintenance of the cycling and walking paths	Public transport zones and transfer zones develop  Urban structure supports walking, cycling and the use of public transport  Cycling is smooth, attractive and safe	Reduced private car use and number of vehicles in the city,	Less traffic noise, health benefits (more walking), accessible public transport, more jobs, improved safety for all travellers, more space in the city for city life, economic benefits to citizens as well as the public and private sectors  See Figure 4.1 for details
	Finance and funding	Ensuring sufficient funding for sustainable mobility infrastructure and public transport services in local	Sustainable mobility growth		



		and national context			
	Social innovation	Mobility management:  Co-operation between city units  Nudging  Communication  Stakeholders promoting sustainable transport choices	Changing attitudes about sustainable transport and reaching a social tipping point in growth of sustainable transport		
	Democracy and participation	Climate neutral actions programme	Co-creation of the needed actions together with citizens		
	Governance & policy	Mixed urban structure in city centres, major tramway stops and public transport transfer terminals	Sustainable mobility growth		
		Sustainable mobility and travel chain improvements a common practise in urban planning			
	Capabilities and capacities	Data platform on transport system situation created	More knowledge provided on the impacts of sustainable mobility to city planners, decision makers and citizens		
	Governance & policy	Find ways to regulate city logistics to favor light vehicles and cleaner propulsion	Less heavy fossil fuel vehicles used in city logistics	Less transport emissions from city logistics	Traffic safety increases  Cycling and walking becomes smoother in the center areas



					Less noise and air pollution in center areas
		Taking a convenient EV charging network and biofuel stations into account in urban planning	The share of electric vehicles and biofuel use increases	Average emission from car travel output decreases, impact included in roadmap projection	Health benefits from improved air quality
Waste & circular economy	Technology & Infrastructure	Ensuring that existing landfills capture as much of the methane emissions as possible		Emissions from existing landfills are under control, 50 000 t CO <sub>2</sub> e	Increased amount of renewable energy available from biogas
	Governance & Policy	Implement Tampere's Circular Economy plan  Improve availability of material flow data in the city	Awareness of material flows and co-creation of actions with stakeholders to optimize the reuse and use of materials	Use of primary materials decreases, scope 3 impact	Material prices remain more stable
Green Industry	Technology & Infrastructure		Electrifying industry that currently uses fossil gas/biogas as energy source	Emissions from industrial process will go down about 50 000 t CO <sub>2</sub> e	Adding capacity to the demand side management market
	Governance & policy	Joining the National Green Deal for zero-emission construction sites forces the city to develop ways for procuring emission-free construction jobs	Zero-emission construction sites start becoming the norm	Emissions from construction work machines will be reduced 5 000 t CO <sub>2</sub> e	Less noise and air pollution in the city despite inevitable construction sites from densifying city structure and traffic infrastructure changes
Built environment	Governance & policy	Urban planning of new residential buildings focused in public transport zones and district centres	More people have the opportunity to use sustainable modes of transport in their everyday lives  The need to travel long distances for	Less transport emissions from reduced mileage with private cars  Less need to build new infrastructure for new residents	Less need to disturb natural areas and disrupt biodiversity



			everyday needs decreases	Less need to build new greenfield areas	
		Demanding readiness for data collection and demand side management of energy in new buildings	New buildings don't add as much to peak load demand of energy	Less need for peak load fossil production	Energy prices are more stable
		Encouraging wood construction in plots rented out by the city	Lower footprint from construction of new buildings  Carbon storage in the Tampere grows	Scope 3 emission impacts and carbon storage increase	Use of non-renewable resources decreases  Faster construction on-site  More diverse urban environment

### B-1.2: Description of impact pathways– textual and visual elements

Tampere focuses on mapping the most critical impact pathways remaining in the way of reaching the carbon neutrality target in 2030. Figure 3.6 from the Tampere climate budget clearly highlights which sectors are notably falling short of their targets - specifically district heating, traffic and waste management. Urban development is included in impact pathway analysis due to its pivotal role in establishing a sustainable transport system. The emissions development in each sector is further analysed in the Carbon Neutral Tampere 2030 Roadmap attached to this Action Plan.

District heating in Tampere is making impressive strides towards its target. The transition from fossil fuels to renewable energy sources and waste CHP is almost done. The limited use of fossil fuels now primarily occurs during peak load times in very cold weather conditions. While local electricity production has decreased because of this transition, it's worth noting that national electricity production has seen substantial growth, particularly in the domains of nuclear and wind power. While local electricity production is a valuable addition to our energy strategy, it's important to note that there are no significant issues with a shortage of clean electricity supply, except during peak load times in extremely cold weather or in the rare event of electricity shortages in neighbouring countries.

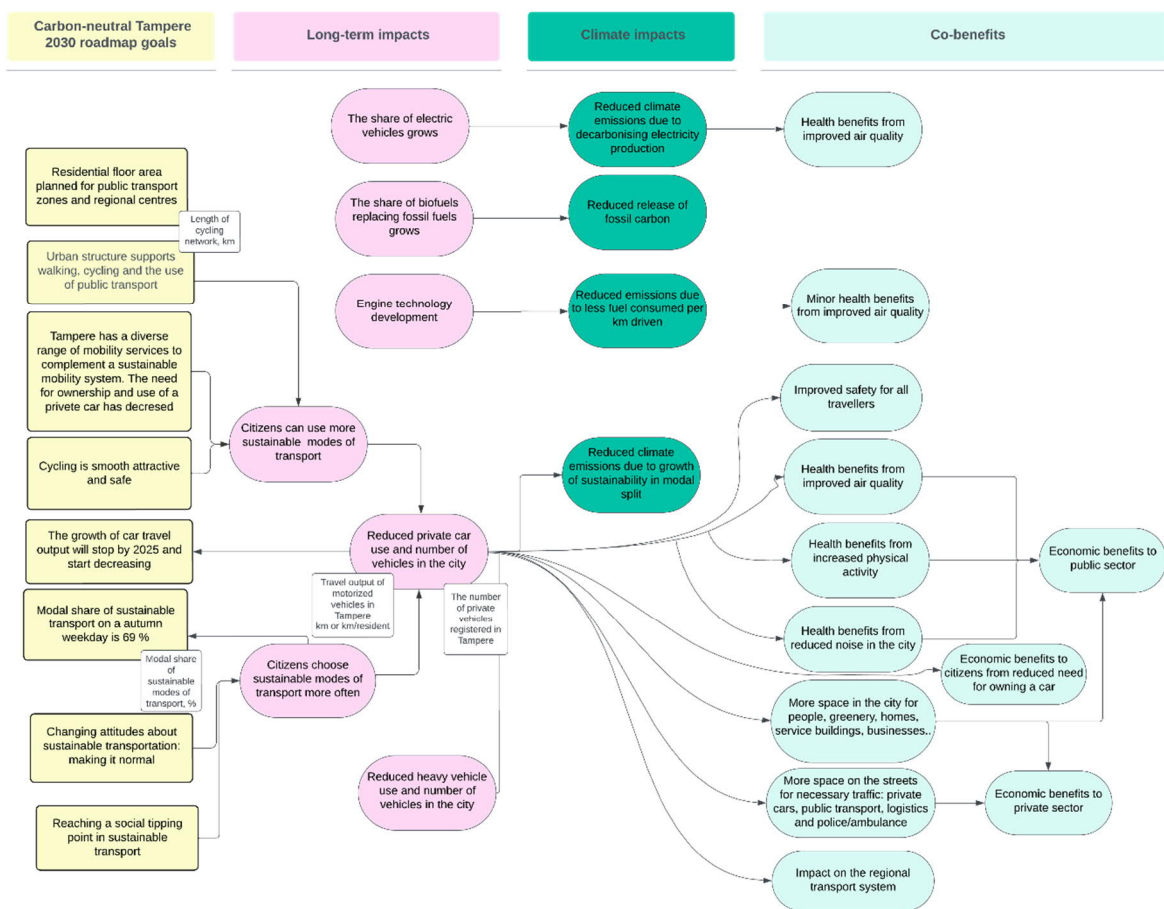
As result, the energy system impact pathways are related to utilization of renewable energy sources in heating production, aiding housing companies in enhancing energy efficiency and implementing demand-side management measures within both the energy system and the built environment. Significant progress has already been made in the decarbonization efforts, particularly in improving the energy efficiency of housing company buildings constructed during the 1970s and 1980s. However, the primary focus has now shifted to buildings from the 1990s and the early 2000s, which were constructed before energy efficiency directives were put in place. Implementing demand-side management strategies for both heating and electricity will play a crucial role in reducing reliance on fossil fuel production during peak load times and maintaining stable prices for consumers.

Traffic emissions are key to achieving climate neutrality in Tampere and the most challenging system to change in a short period of time. The climate budget leaves a significant amount of the 2030 residual emissions to traffic due to the current slow development and the challenges in making the change happen. The complete impact pathway of transport system transition is very complex and thus very hard to present in one picture. So, the essential impacts are broken down to two parts. The first part is





included in Table B-1.1 with the possible paths of action and their impacts in the short and long term. The end part and a very essential part of the pathway is presented below in Figure 4.1.



**Figure 4.1 Transport system impact pathways part 2.** The figure indicates the multiple benefits from reducing the use and number of private cars in the city as opposed to the few benefits from alternative propulsion and technology development.

Both alternative propulsion and reduction of total kilometrage of vehicles are vital to get to the targets and create a sustainable and safe traffic system. However, the alternative propulsion change is happening and being supported on the national level. The charging infrastructure seems to be progressing well on a free-market basis and is included in national regulation. However, the change to sustainable modes is very much up to the city organisation's work and decision making in urban planning, working with companies and citizens to co-create solutions and doing guidance for the new infrastructure and public transport options to be used more. Also, as seen in Figure 4.1 the local benefits to the people and the public sector are multiple when it comes to sustainable transport, whereas the benefits from propulsion change are scant.

Industrial emissions look to be okay, but a lot of the progress towards targets depends on one specific industrial facility. Tampere has not officially co-operated with the facility yet, but electrification of their operation by 2030 is already a part of their corporate responsibility plan. That will create a significant change in the energy demand when their load is likely to transfer from fossil gas to electricity. However, that should work well together with the growing production of wind power, if the electrification is combined with storage capacity.



## 4.2 Module B-2 Climate Neutrality Portfolio Design

### B-2.1: Description of action portfolios - textual or visual

Climate action has been taking place in Tampere for a more than a decade already. The latest update of Carbon Neutral Tampere 2030 Roadmap brings together all the climate action in City of Tampere and its subsidiaries. It includes 37 measure packages that contain a total of 305 smaller actions. Each package belongs to a theme and each of the 7 themes have their individual goals and indicators for progress (Figure 4.2). The roadmap was created together with the city's units, subsidiaries and public utilities. The last update to the roadmap was made in 2022, so this Climate City Contract action plan does not repeat the actions in the roadmap itself, which can be found as an annex.

However, many of the actions from the roadmap are covered in the Investment Plan. Module B-1 of the Investment Plan covers actions and their costs that are already largely in the Carbon Neutral Tampere 2030 Roadmap. Tables 5 and 6 of the Investment Plan summarise the financial resources planned for these actions. Module B-2 of the Investment Plan includes the capital needed in addition to the planned costs. However, for most actions the capital needs cannot be accurately analysed at this stage.

Instead this action plan focuses on the emissions gap remaining after the roadmap. According to our projections, the roadmap can take us to -73 % of emissions compared to 1990. So 7% of the baseline emissions remain to be addressed. Also, so far the roadmap has been focused on what the city organisation can do to reduce emissions. To achieve our goal, we also need to involve city residents, businesses and communities. The action portfolio in this CCC addresses what needs to be done in the future and with which stakeholders to cover the gaps. The actual co-creation will take place during future updates of the roadmap and through development projects. The costs of these additional measures have not yet been estimated and therefore not included in the Investment Plan.

Figure 4.2 collects together the measure packages and themes and their goals in the Roadmap.

0. Coordination and monitoring of the city's climate efforts						
<b>1. Sustainable urban planning</b> Benefit goal 2030: The city will grow primarily into public transport zones and regional centres.	<b>2. Sustainable mobility</b> Benefit goal 2030: The modal share of sustainable mobility modes will be 69%.		<b>3. Sustainable construction</b> Benefit goal 2030: New construction will be at zero-energy level and the carbon footprint of housing will be small.	<b>4. Sustainable energy</b> Benefit goal 2030: Renewable energy will amount to 80%.	<b>5. Sustainable consumption</b> Benefit goal 2030: Consumption will be sustainable and the circular economy functional.	
<b>6. Sustainable urban nature</b> Benefit goal 2030: Urban nature and urban structures will bind carbon and preparations have been made for climate change.	1.1. Climate impact assessment 1.2. Conditions for sustainable mobility 1.3. Strengthening green belts 1.4. Five-star city centre 1.5. Carbon-negative Hiedanranta	2.1. Tram transport 2.2. Local train transport 2.3. Bus transport 2.4. Public transport service level 2.5. Pedestrian and bicycle traffic	2.6. Road transport 2.7. Transport equipment and work machines 2.8. New mobility services 2.9. Mobility management	3.1. New construction of city properties 3.2. Guidance of private new construction 3.3. Renovation construction at city properties 3.4. Renovation construction at private properties 3.5. Wood construction 3.6. Infrastructure construction 3.7. Use of recycled materials	4.1. Centralised renewable energy 4.2. Smart energy networks and services 4.3. Decentralised renewable energy and energy efficiency 4.4. Giving up oil heating	5.1. Waste management 5.2. Circular economy 5.3. Sustainable consumption 5.4. Meals 5.5. Procurement 5.6. Raising environmental awareness 5.7. Sustainable business and events
6.1. Carbon sinks of forests 6.2. Urban-green carbon sinks 6.3. CO <sub>2</sub> emissions from green and drainage construction 6.4. Climate change adaptation measures 6.5. Carbon offsetting						

Figure 4.2 Carbon Neutral Tampere 2030 Roadmap themes, goals and measure packages updated in 2022.

The detailed analysis of remaining emissions by sector can be found in the annexed Carbon-neutral Tampere Roadmap pp 128-129 and its appendix 1 pp. 142-149. However, there is also a more practical approach to the emissions gap in the roadmap that serves as an action portfolio starting point. The specific emissions from each sector that remain to be addressed are identified in Figure 4.3.



### What steps to take to reduce the remaining 7%?

1. Emissions from **traffic** must decrease significantly faster, also including a modal shift to sustainable mobility
  - Deficit 20–40 kt CO<sub>2</sub>e
2. **Oil consumption** by industry, construction and other work machines (such as maintenance) must be reduced more rapidly
  - Deficit ~17 kt CO<sub>2</sub>e
3. **Oil heating** must end both in residential and in industrial buildings
  - Deficit 7–10 kt CO<sub>2</sub>e
4. Emissions from existing **landfills** must be investigated more closely and mitigated
  - Deficit 10–35 kt CO<sub>2</sub>e
5. **District heat** production still needs more solutions to cut emissions
  - Deficit ~8 kt CO<sub>2</sub>e

*Figure 4.3 Conclusion of the Carbon-neutral Tampere 2030 roadmap projection about the gap emissions needed to mitigate in order to reach the target*

In this Action Plan work we created an outline for action portfolios necessary for reaching climate neutrality in 2030. The individual actions are still drafts and the detailed content needs to be co-created with several stakeholders.

#### City of Tampere gap portfolios

- Boosting modal shift
  - Co-creating actions in pilot areas to make all forms of transport more equal
  - Co-creating actions with big employers to promote sustainable transport
  - Studying the public opinion
- Transforming city logistics
  - Guiding city logistics move to lighter vehicles and alternative propulsion
- Industrial electrification
  - Communicating with big fossil fuel users to update projections and plans
  - Implementing Green Deal for zero-emission construction sites
  - Oil heating advice to SMEs
- Energy advice and alleviating energy hardship/mitigating energy vulnerability
  - Oil heating advice to private home owners, developing financing models
  - Piloting energy advice to people with potential energy hardship
- Promoting smart energy systems and systems integration
  - Energy strategy
  - Urban development platform

Individual actions in the tables below are based on this action portfolio. More precise information on the 305 individual actions planned already earlier are in the annexed Carbon Neutral Tampere 2030 roadmap.



<b>Table B-2.2.1: Individual action 1 outlines</b>		
Action outline	Action name	Co-creating actions in pilot areas to make all forms of transport more equal
	Action type	Social participation and spatial intervention
	Action description	To be determined in more detail during 2024
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Democracy and participation, Infrastructure
	Outcome (according to module B-1.1)	Co-creation of the needed actions together with citizens.
Implementation	Responsible bodies/person for implementation	Carbon Neutral Action Programme/City of Tampere, Traffic System Planning Unit/City of Tampere,
	Action scale & addressed entities	District scale intervention with how transport infrastructure is distributed between different modes of transport
	Involved stakeholders	Citizens
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Transport fuels
	GHG emissions reduction estimate (total) per emission source sector	Reduced private car use and number of vehicles in the city
	Total costs and costs by CO <sub>2</sub> e unit	Costs have not yet been estimated.

<b>Table B-2.2.2: Individual action 2 outlines</b>		
(fill out one sheet per intervention/project)		
Action outline	Action name	Co-creating actions with big employers to promote sustainable transport
	Action type	Stakeholder co-creation with awareness campaign and physical intervention
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Democracy and participation
	Outcome (according to module B-1.1)	Co-creation of the needed actions together with citizens/employers.
Implementation	Responsible bodies/person for implementation	Climate and Environmental Unit/City of Tampere, Traffic System Planning Unit/City of Tampere
	Action scale & addressed entities	Chosen stakeholder organisations and their employees, co-creation leading to awareness campaigns and physical interventions
	Involved stakeholders	Big employers
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Transport fuels



	GHG emissions reduction estimate (total) per emission source sector	Reduced private car use and number of vehicles in the city
	Total costs and costs by CO <sub>2</sub> e unit	Costs have not yet been estimated.

**Table B-2.2.3: Individual action 3 outlines**

Action outline	Action name	Studying the public opinion
	Action type	Awareness raising
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Learning and capabilities
	Outcome (according to module B-1.1)	More knowledge provided on the impacts of sustainable mobility to city planners, decision makers and citizens.
Implementation	Responsible bodies/person for implementation	Climate and Environmental Unit/City of Tampere, Traffic System Planning Unit/City of Tampere
	Action scale & addressed entities	City/region-wide population studies
	Involved stakeholders	Tampere University, Citizens, Decision makers
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Transport fuels
	GHG emissions reduction estimate (total) per emission source sector	Reduced private car use and number of vehicles in the city
	Total costs and costs by CO <sub>2</sub> e unit	Costs have not yet been estimated.

**Table B-2.2.4: Individual action 4 outlines**

(fill out one sheet per intervention/project)

Action outline	Action name	Guiding city logistics transition to lighter vehicles and alternative propulsion
	Action type	City logistics
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Mobility & transport
	Systemic lever	Governance & Policy
	Outcome (according to module B-1.1)	Less heavy fossil fuel vehicles used in city logistics Less transport emissions from city logistics
Implementation	Responsible bodies/person for implementation	Traffic System Planning Unit/City of Tampere, Climate and Environmental Unit/City of Tampere
	Action scale & addressed entities	City center and district centers, heavy vehicles and logistics companies
	Involved stakeholders	Companies with big logistics needs
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	N/A



	Removed/substituted energy, volume or fuel type	Transport fuels
	GHG emissions reduction estimate (total) per emission source sector	Less transport emissions from city logistics
	Total costs and costs by CO <sub>2</sub> e unit	Costs have not yet been estimated.

**Table B-2.2.5: Individual action 5 outlines**

Action outline	Action name	Communicating with big fossil fuel users to update projections and plans
	Action type	Awareness, technical intervention
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Green Industry
	Systemic lever	Technology & Infrastructure
	Outcome (according to module B-1.1)	Emissions from industrial processes will go down
Implementation	Responsible bodies/person for implementation	Climate and environmental policy unit
	Action scale & addressed entities	Industrial facilities
	Involved stakeholders	Industry stakeholders
	Comments on implementation	Requires private stakeholder investment
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume or fuel type	Natural gas
	GHG emissions reduction estimate (total) per emission source sector	50 000 t CO <sub>2</sub> e (Industry and work machines)
	Total costs and costs by CO <sub>2</sub> e unit	Private investment

**Table B-2.2.6: Individual action 6 outlines**

Action outline	Action name	Implementing Green Deal for zero-emission construction sites
	Action type	Governance intervention
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Green industry
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	Zero-emission construction sites start becoming the norm
Implementation	Responsible bodies/person for implementation	Construction and Maintenance of Urban Environment unit, Real estate and housing, Climate and Environmental policy unit
	Action scale & addressed entities	Construction sites of the city organisation
	Involved stakeholders	Construction contractors
	Comments on implementation	The implementation happens gradually
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Work machinery fuels



	GHG emissions reduction estimate (total) per emission source sector	5000 tCO <sub>2</sub> e
	Total costs and costs by CO <sub>2</sub> e unit	Costs have not yet been estimated.

**Table B-2.2.7: Individual action 7 outlines**

Action outline	Action name	Oil heating advice to SMEs and to private home owners, developing financing models
	Action type	Awareness raising, technical intervention
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Learning and capabilities
	Outcome (according to module B-1.1)	Citizens can identify the most affordable energy efficiency actions
Implementation	Responsible bodies/person for implementation	Climate and environmental policy unit, Ecofellows Ltd.
	Action scale & addressed entities	Citizens and private companies with oil heating
	Involved stakeholders	Citizens, energy efficiency solution providers
	Comments on implementation	Implemented also currently
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Heating oil
	GHG emissions reduction estimate (total) per emission source sector	Oil heating is changed to renewable energy or district heating
	Total costs and costs by CO <sub>2</sub> e unit	Costs have not yet been estimated.

**Table B-2.2.8: Individual action 8 outlines**

Action outline	Action name	Piloting energy advice to people with potential energy hardship
	Action type	Awareness raising, technical intervention
	Action description	To be planned in more detail during 2024
Reference to impact pathway	Field of action	Energy systems
	Systemic lever	Learning and capabilities
	Outcome (according to module B-1.1)	Citizens can identify the most affordable energy efficiency actions
Implementation	Responsible bodies/person for implementation	Climate and environmental policy unit, Ecofellows Ltd.
	Action scale & addressed entities	Piloting in districts
	Involved stakeholders	Citizens, companies with energy efficiency solutions
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Energy efficiency in private homes



	GHG emissions reduction estimate (total) per emission source sector	Energy use becomes more efficient in residential buildings
	Total costs and costs by CO2e unit	Costs have not yet been estimated.

### B-2.3: Summary strategy for residual emissions

Tampere has decided to learn more about offsetting residual emissions until 2025 and then build a strategy for creating the market for reliable and permanent carbon removals. The compensation options available currently are not transparent enough.

The local carbon sinks could cover up to 30 % of the needed amount, but according to preliminary studies carbon sink amount varies a lot from year to year. The city owns a small part of forests in Tampere area, but the large part is privately owned and the city does not have means to regulate or guide their use.

Another option that is starting to look viable is local carbon capture. One company in the region produces biochar that can be used for example in green area construction to create carbon storage. Encouraging wood construction does the same. In addition the city has worked together with the power utility on feasibility studies for Carbon capture and use or storage in biomass and waste incineration plants. The future plan is to find viable options for storing carbon and creating synthetic fuels from the captured carbon with the help of renewable energy, biomethanation and hydrogen production.

## 4.3 Module B-3 Indicators for Monitoring, Evaluation and Learning

**Table B-3.1: Indicators**

Outcomes/ impacts addressed	Action/ project	Indicator No.	Indicator name	Target values	
				2025	2030
Global warming potential		1	Climate emissions	526 kt CO2-e/a	260 kt CO2-e/a
Energy systems		1.1	Emissions from buildings – electricity		40 kt CO2-e/a
Energy systems	Action 7	1.2	Emissions from buildings - heating		39 kt CO2-e/a
Mobility & Transport		1.3	Emissions from transport		115 kt CO2-e/a
Waste		1.4	Emissions from waste		16 kt CO2-e/a
Green Industry	Actions 5 & 6	1.5	Emissions from Industry and work machines		39 kt CO2-e/a
Green Industry		1.6	Emissions from industrial electricity		7 kt CO2-e/a
AFOLU		1.7	Emissions from agriculture		4 kt CO2-e/a





Built environment		2	Residential floor area planned for the public transport zones and for the district centres	85 %	90 %
Mobility & transport : modal shift	Action 1 & 2	3	Share of sustainable modes of transport on an autumn weekday	63 %	69 %
Mobility & transport : modal shift	Action 1 & 2	3.1	Cycling	Targets are set for the total only	
Mobility & transport : modal shift	Action 1 & 2	3.2	Walking	see above	
Mobility & transport : modal shift	Action 1 & 2	3.3	Public transport	see above	
Mobility & transport : modal shift	Action 1 & 2	3.4	Private cars	see above	
Mobility & transport : alternative propulsion		4	Percentage of vehicles with alternative propulsion systems in traffic use in Tampere	20 %	35 %
Mobility & transport: alternative propulsion		4.1	Percentage of vehicles using alternative propulsion systems of the city organisation's passenger car fleet	40%	100 %
Mobility & transport: alternative propulsion		4.2	Percentage of vehicles using alternative propulsion systems of the city organisation's all vans	20 %	100 %
<i>Mobility transport: alternative propulsion</i>		5	<i>Share of outsourced low-emission propulsion transport services (bus and tramway</i>	35 %	100%



			<i>line kilometres)</i>		
Built Environment: Wood construction		6	Percentage of wooden apartment block construction from all new apartment blocks on plots allocated by the city	15 %	20 %
Energy systems: Decarbonizing district heating		7	Percentage of renewable energy of local heat and power company's production	80 %	90 %
Energy systems: Decarbonizing district heating		8	Reduction of greenhouse gas emissions from Tampereen Energia production as compared to 2010	80 %	95 %
Energy systems		9	The capacity of grid-connected solar energy		20 MW
Waste & circular economy: Circular economy plan		10	Municipal waste recycling rate	55 %	60 %
Waste & circular economy		11	Percentage of procurements involving environmental criteria of city's all procurements	Targets are yet to be determined	
Waste & circular economy		12	Percentage of meals served by the municipal company Voimia that are climate friendly (includes meals in schools and daycare)	70	90
Green infrastructure & nature based solutions		13	Amount of inner-city green area in town plans and master plans	Targets are yet to be determined	



			per (m <sup>2</sup> /resident)		
Financing		14	Percentage of climate investments in climate budget of city's total investments (5 % in 2022)	No official targets	No official targets
Climate warming potential		15	Residual emissions		20 %

**Table B-3.2.1: Indicator 1 – 1.7 Metadata**

Indicator Name	Climate emissions, total and by sector
Indicator Unit	kt CO <sub>2</sub> -e/a
Definition	Annual regional greenhouse gas emissions in Tampere.
Calculation	Based on the CO <sub>2</sub> report methods, all grid-supplied energy emissions are included in these numbers
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	All sectors
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	-
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Each sector connects to several pathways
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
<b>Data requirements</b>	
Expected data source	CO <sub>2</sub> report
Expected availability	Available
Suggested collection interval	Annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	City Strategy

**Table B-3.2.2: Indicator 2 Metadata**

Indicator Name	Residential floor area planned for the public transport zones and for the regional centres
Indicator Unit	%
Definition	Percentage of residential floor area planned for the public transport zones and for the regional centres
Calculation	
<b>Indicator Context</b>	



Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Mobility & transport, built environment
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	yes
If yes, which NZC impact pathway is it relevant for?	Mobility transport, modal shift and Built environment, focusing residential planning
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	City of Tampere, urban planning
Expected availability	available
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	City strategy

<b>Table B-3.2.3: Indicator 3 Metadata</b>	
Indicator Name	Share of sustainable modes of transport on an autumn weekday
Indicator Unit	%
Definition	Share of sustainable modes of transport on an autumn weekday
Calculation	Based on national travel survey methods. Share of trips.
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Mobility & transport: modal shift
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Mobility & Transport, modal shift
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
<b>Data requirements</b>	
Expected data source	National travel survey, other sources being developed
Expected availability	Available every 4 years
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	City Strategy, SUMP



--	--

<b>Table B-3.2.4: Indicator 4 Metadata</b>	
Indicator Name	Percentage of vehicles with alternative propulsion systems in traffic use in Tampere
Indicator Unit	%
Definition	Percentage of vehicles with alternative propulsion systems in traffic use in Tampere
Calculation	Vehicles with electricity, plug-in hybrid and gas as propulsion are calculated as having alternative propulsion
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Mobility & transport
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Mobility & Transport, alternative propulsion
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
Data requirements	
Expected data source	Traficom database or SYKE indicators
Expected availability	Available
Suggested collection interval	Yearly
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	SYKE

<b>Table B-3.2.5: Indicator 4.1 Metadata</b>	
Indicator Name	Percentage of vehicles using alternative propulsion systems of the city organisation's passenger car fleet
Indicator Unit	%
Definition	Percentage of vehicles using alternative propulsion systems of the city organisation's passenger car fleet
Calculation	Vehicles with electricity, plug-in hybrid and gas as propulsion are calculated as having alternative propulsion
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Mobility & transport
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits



Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Mobility & Transport, alternative propulsion
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Infra Oy subsidiary
Expected availability	Can be acquired
Suggested collection interval	Yearly
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.6: Indicator 4.2 Metadata</b>	
Indicator Name	Percentage of vehicles using alternative propulsion systems of the city organisation's all vans
Indicator Unit	%
Definition	Percentage of vehicles using alternative propulsion systems of the city organisation's all vans
Calculation	Vehicles with electricity, plug-in hybrid and gas as propulsion are calculated as having alternative propulsion
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Mobility & transport
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Mobility & Transport, alternative propulsion
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Infra Oy subsidiary
Expected availability	Can be acquired
Suggested collection interval	Yearly
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	



<b>Table B-3.2.7: Indicator 5 Metadata</b>	
Indicator Name	Share of outsourced low-emission propulsion transport services (bus and tramway line kilometres)
Indicator Unit	%
Definition	Share of outsourced low-emission propulsion transport services (bus and tramway line kilometres)
Calculation	The regional public transport unit estimates the number of vehicle kilometers driven with different fuels and electricity by all operators together and allocates the kilometers to different municipalities it operates in.
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Mobility & Transport
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Mobility & Transport, alternative propulsion
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Nysse, regional public transport service unit
Expected availability	Available since 2023
Suggested collection interval	Yearly
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.8: Indicator 6 Metadata</b>	
Indicator Name	Percentage of wooden apartment block construction from all new apartment blocks on plots allocated by the city
Indicator Unit	%
Definition	Percentage of wooden apartment block construction from all new apartment blocks on plots allocated by the city
Calculation	To be defined more precisely
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Built environment
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits



Can the indicator be used for monitoring impact pathways?	no
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	City of Tampere spatial data
Expected availability	To be determined
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.9: Indicator 7 Metadata</b>	
Indicator Name	Percentage of renewable energy of local heat and power company's production
Indicator Unit	%
Definition	Percentage of renewable energy of local heat and power company's production
Calculation	Tampereen Energia reports annually on their energy sources. Renewables currently include biomass, waste heat (heat pumps) and half of waste used in CHP.
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Energy systems
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Decarbonizing the district heating network
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
<b>Data requirements</b>	
Expected data source	Tampere Power Utility annual report/corporate responsibility report
Expected availability	Available
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	





<b>Table B-3.2.10: Indicator 8 Metadata</b>	
Indicator Name	Reduction of greenhouse gas emissions from Tampereen Energia production as compared to 2010
Indicator Unit	
Definition	Reduction of greenhouse gas emissions from Tampereen Energia production as compared to 2010
Calculation	Tampereen energia emissions energy production emissions in 2010 were 983 kt Co2, the target is to reduce it down to 53 kt of CO2 by 2030.
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Energy systems
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Energy, Decarbonizing the district heating network
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Tampere Power Utility annual report/corporate responsibility report
Expected availability	Available
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.11: Indicator 9 Metadata</b>	
Indicator Name	The capacity of grid-connected solar energy
Indicator Unit	MW
Definition	The capacity of grid-connected solar energy
Calculation	The local electricity network calculates the total capacity of grid-connected solar energy. This includes small units in residential and service buildings.
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Energy systems
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes



If yes, which NZC impact pathway is it relevant for?	Energy, Investments in solar panels increases
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
<b>Data requirements</b>	
Expected data source	Tampere Power Utility Responsibility Report
Expected availability	Available
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

**Table B-3.2.12: Indicator 10 Metadata**

Indicator Name	Municipal waste recycling rate
Indicator Unit	%
Definition	Municipal waste recycling rate
Calculation	The local waste management subsidiary calculates the rate of recycling in the waste they collect.
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Waste & circular economy
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	No
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Pirkanmaan Jätehuolto Ltd
Expected availability	Available
Suggested collection interval	Yearly
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

**Table B-3.2.13: Indicator 11 Metadata**

Indicator Name	Percentage of procurements involving environmental criteria of city's all procurements
Indicator Unit	%
Definition	Percentage of procurements involving environmental criteria of city's all procurements
Calculation	The number of procurements taken place in the city compared to the number of total procurements



<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Waste & circular economy
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	No
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Climate and Environmental Policy Unit
Expected availability	March
Suggested collection interval	Annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.14: Indicator 12 Metadata</b>	
Indicator Name	Percentage of meals served by the municipal company Voimia that are climate friendly (includes meals in schools and daycare)
Indicator Unit	%
Definition	Percentage of meals served by the municipal company Voimia that are climate friendly (includes meals in schools and daycare)
Calculation	
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Waste & circular economy
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	No
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	no
<b>Data requirements</b>	
Expected data source	Voimia environmental reporting
Expected availability	Available
Suggested collection interval	annually
<b>References</b>	



Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.15: Indicator 13 Metadata</b>	
Indicator Name	Amount of inner-city green area in town plans and master plans per resident ( m2/resident)
Indicator Unit	m2/resident
Definition	Amount of inner-city green area in town plans and master plans per resident ( m2/resident)
Calculation	
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Green infrastructure & nature based solutions
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	No
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	yes
<b>Data requirements</b>	
Expected data source	Tampere City spatial data
Expected availability	Available
Suggested collection interval	Annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.16: Indicator 14 Metadata</b>	
Indicator Name	Percentage of climate investments in climate budget of city's total investments (5 % in 2022)
Indicator Unit	%
Definition	Percentage of climate investments in climate budget of city's total investments (5 % in 2022)
Calculation	
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	yes
If yes, which emission source sectors does it impact?	Financing
Does the indicator measure indirect impacts (i.e. co- benefits)?	no
If yes, which co-benefit does it measure?	Co-Benefits



Can the indicator be used for monitoring impact pathways?	No
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
<b>Data requirements</b>	
Expected data source	Climate and Environmental policy unit
Expected availability	March
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	

<b>Table B-3.2.17: Indicator 15 Metadata</b>	
Indicator Name	Residual emissions
Indicator Unit	%
Definition	Percentage of climate emissions remaining in target year 2030 compared to baseline 1990
Calculation	Percentage of emission numbers based on CO2 report
<b>Indicator Context</b>	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	no
If yes, which emission source sectors does it impact?	
Does the indicator measure indirect impacts (i.e. co- benefits)?	No
If yes, which co-benefit does it measure?	
Can the indicator be used for monitoring impact pathways?	No
If yes, which NZC impact pathway is it relevant for?	
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
<b>Data requirements</b>	
Expected data source	Climate and Environmental policy unit, CO2 report
Expected availability	May
Suggested collection interval	annually
<b>References</b>	
Deliverables describing the indicator	
Other indicator systems using this indicator	Climate budget, City strategy



## 5 Part C – Enabling Climate Neutrality by 2030

### 5.1 Module C-1 Organisational and Governance Innovation Interventions

Module C-1 “Organisational and Governance Innovation Interventions” consists of a summary table, listing organizational and governance interventions and describing their impact (C-1.1) and a section for more detailed descriptions and comments (C-1.2).

Table C.1.1: Enabling organisational and governance interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(indicate name of intervention)	(describe the substance of the intervention)	(indicate responsible)	(list all stakeholder involved and affected)	(describe how intervention enables climate neutrality)	(indicate how intervention helps achieve impact listed in Module B-1)
Carbon Neutral Tampere 2030 Roadmap	The roadmap aggregates the actions that the city plans to take in order to achieve climate neutrality by 2030.	Climate and Environmental Policy unit/City of Tampere	All city units and subsidiaries	Engages the city organization in the climate neutrality target. Includes impact assessments of the planned actions.	Increases cooperation, increases transparency on the city’s climate work.
Climate Budget	Monitors the progress towards the climate neutrality target.	Climate and Environmental Policy unit/City of Tampere, Economic unit/City of Tampere	All city units and subsidiaries	Monitors the adequacy of implemented actions and provides input for future budget negotiations.	Increases transparency on the city’s spending.
Climate Partners	Tampere region’s climate partnership model involves companies and communities in the region in pursuing a carbon-neutral Tampere. The Climate Partnership	Business Tampere, Climate and Environmental Policy unit/City of Tampere, Ekokumppanit Oy	A total of 116 companies, associations and communities	Climate partners are committed to continuously developing their operations to be more responsible in accordance with the principles of sustainable development	Increasing cooperation, accelerating climate action by the private sector.



	is, as the name implies, a partnership; it is intended to benefit both parties to the partnership agreement.				
Advisory Board on Circular Economy	To guide and steer up the circular economy within the Tampere Region	Climate and Environmental Policy Unit/City of Tampere		Public-private dialogue on circular economy actions	Implementing Tampere's Circular Economy plan. Material prices remain more stable
School meals working group	Brings together all those involved in school meals and food education in Tampere. The working group will propose measures to promote school meals and food education, which will be incorporated into, for example, school year plans, service contracts and student councils.	Climate and Environmental Policy unit and primary education/The City of Tampere. FUSILLI-project (until 2024)	Politicians, primary education administration and development, Voimia (the city's own company that organises the city's food service procurement), experts (climate and environmental policy, health and well-being), headmasters, teachers, pupils, parents	The development of school meals and food education is an essential part of eco-social education in primary education in Tampere. Increasing food literacy is an important part of the city's efforts to make a long-term impact on the consumption-based emissions of its residents.	Promoting children's well-being and health
Vulnerability analysis	The City of Tampere wants to adapt to climate change in the best possible way. In its adaptation work, the city wants to take into account groups that are particularly	Climate and Environmental Policy Unit/The City of Tampere	Children and young people, Elderly and older people, People with disabilities, People on low incomes, The long-term sick and mentally ill, Immigrants and refugees, People who earn their	In climate work, it is important to identify marginalised groups so that the future is equal for all, regardless of their socio-economic background and where they live.	Equality



	vulnerable to climate change. Therefore, measures to adapt and prepare for climate change will be designed in cooperation with vulnerable groups.		living from agriculture and forestry, Tourism entrepreneurs and event producers, Businesses dependent on international logistics chains and foreign raw materials		
Energy strategy	Co-creating a common energy strategy for all stakeholders addressing a just energy transition in the city/region and local economic development	Climate and environmental policy unit	Energy companies, city planning units, private companies	Creating a common vision and actions related to energy the different stakeholders can work together towards the same goals and thus further the energy transition, make it just and make the most of it in terms local economy	Just transition
Urban development platform	A format of co-operating openly together with different stakeholders of urban development, especially in energy issues in the first phase	REKO-project	Urban planners, companies and start-ups in the urban development and energy fields	Efficiently exchanging information between stakeholders and creating solutions for smart energy systems and systems integration	New economic development in the region




**C-1.2: Description of organisation and governance interventions – textual and visual elements**
**The Climate Neutral Tampere 2030 roadmap**

The City of Tampere's biggest governmental intervention is the Climate Neutral Tampere 2030 Roadmap. The Climate and Environmental Policy Unit coordinates the process and monitors the implementation of the measures. The implementation of the roadmap is embedded into the City's strategic management systems as the City units include their climate actions from the roadmap to their annual service and financial plans, which will be officially monitored (Figure 5.1).

**The City of Tampere's Climate Leadership Model**


Figure 5.1. The City of Tampere's Climate Leadership Model.

**Climate Budget**

Tampere's climate budget with the city's budget and financial statements. It is used to monitor the progress towards the climate neutrality target and the adequacy of implemented measures. At the same time, the goal of climate neutrality becomes more concrete in the annual budget. The climate budget provides information for decision-making and increases transparency for residents. Tampere's climate budget consists of two parts: the climate emissions budget, and the financial plan for climate actions.

**Climate Partners**

The City of Tampere, Business Tampere and Ekokumppanit Ltd are coordinating the Tampere Region Climate Partnership model. A total of 116 companies, associations and communities are already involved. The Climate Partners themselves define their own organisation's climate change mitigation actions and targets. The Climate Partnership Network has meetings with content that supports companies in their climate work.

**Circular Economy (Advisory Board of Circular Economy)**

Besides ambitious climate actions transition to circular economy is highly on the agenda of City of Tampere. Circular Economy has its dedicated *Circular Economy Action Plan* with four focus areas (the built environment in land use planning and construction, material cycles and waste management as well as the sustainable food system). In the climate neutral roadmap circular economy is included especially in "Sustainable consumption" part.

Promoting circular economy still suffers the lack of data on the consumption of materials, material flows and data on the use of natural resources. It can be foreseen though that the information on both CO2 emissions and on materials flows will be complemented within the coming years, as new legislation will require more detailed information. Through pilot projects and public procurement and their circular economy criteria the city of Tampere can influence the operating environment and the demand for green solutions (which private companies offer). This is also one of the most important interfaces of



cooperation between the private sector (companies) and the City of Tampere, in particular in the construction sector. This is why the City of Tampere has organized the Advisory Board of Circular economy, which brings together different stakeholders.

### School Meals Working Group

The FUSILLI (Fostering the Urban food System Transformation through Innovative Living Labs Implementation) project aims to develop and implement sustainable systemic solutions for food systems in cities and surrounding areas. The main objective is to remove barriers to the development and implementation of integrated, systemic food policies that support the transition towards sustainable food systems in urban, peri-urban and peri-urban rural areas.

As the project progressed, the need for a School Meals Working Group was identified, where different stakeholders could discuss about the issue. The working group will propose measures to promote school meals and food education, for example in school year plans, service contracts and student councils.

### Vulnerability Analysis

The City of Tampere wants to adapt to climate change in the best possible way. In its adaptation work, the city wants to take into account groups that are particularly vulnerable to climate change. Therefore, measures to adapt and prepare for climate change will be designed in cooperation with vulnerable groups. Vulnerable groups have been identified as children and young people, the elderly and elderly, people with disabilities, people on low incomes, people with long-term illnesses and mental health problems, migrants and refugees. The results of the vulnerability analysis will be completed by the end of 2023 and will be used, for example, in the update of the Carbon Neutral Tampere 2030 roadmap.

## 5.2 Module C-2 Social and Other Innovation Interventions

Module C-2 “Social and Other Innovation Interventions” consists of a summary table, listing organizational and collaborative governance interventions and describing their impact (C-2.1) and a section for more detailed descriptions and comments (C-2.2).

**Table C.2.1: Enabling social innovation interventions**

Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(indicate name of intervention)	(describe the substance of the intervention)	(indicate responsible)	(list all stakeholder involved and affected)	(describe how intervention enables climate neutrality)	(indicate how intervention helps achieve impact listed in Module B-1)
Climate neutral actions	The Carbon Neutral Actions is a strategic development programme of City on Tampere. The key aim is to support residents in changing their own consumption and mobility habits and ensure fair	Climate and Environmental Policy Unit/ City of Tampere	Citizens, Communities, Residents' associations, Tampere University, Businesses.	The goal is to identify and develop approaches that support citizens' own capability and motivation to change their consumption and mobility habits to make them more sustainable.	Public acceptance of climate action increases when it is co-created. Sustainable mobility and consuming increases overall health, well-



	and equitable transition to a climate resilient society.				being, safety and equality.
We Make Transition! (2023-2025)	The project aims to strengthen societal resilience and eco-social sustainability by learning, adapting and piloting transition management methodology for engaging civil society and other innovation actors to co-create solutions for sustainability.	The Baltic Institute of Finland	Council of Tampere Region, The Helsinki-Uusimaa Regional Council, Regional Council of Southwest Finland, Foundation for Science and Liberal Arts Domus Dorpatensis, Social Innovation Centre, Vidzeme Planning Region. Baltic Institute for Regional Affairs BISER, City of Gdynia, Trøndelag County Authority, University of Bremen	The main output of the project will be a manual on practical utilisation of Transition Arena method at regional and local administrations. The purpose of the manual is to provide local and regional authorities inspiration for a new way of thinking, concrete cases and understanding on the benefits of involving all levels of society in the strategy and development work to enhance societal resilience and eco-social sustainability.	Public acceptance of climate action increases when it is co-created and take into account all groups, which increases equality.
Climate Justice Discussion Forum	A discussion forum bringing together residents and other stakeholders will be set up to support the Carbon Neutral Actions development programme, with the aim of ensuring that the programme's interventions are fair and take account of the different opportunities for	Climate and Environmental Policy Unit/ City of Tampere	Commissions and advisory boards of the citizens (e.g. The youth council, elder people's council, disability council), local NGOs, University of Tampere	The Forum supports the citizen participation in climate action and promotes their empowerment.	Increased public acceptance, equality and safety in the city.



	different types of people in Tampere to take carbon neutral actions.				
The Mobility Carbon Footprint Calculator	The mobility carbon footprint calculator in the Tampere.Finland application encourages Tampere residents to move greener. The calculator shows, for example, user's most common Mode of Transport and monthly carbon footprint.	Climate and Environmental Policy Unit/ City of Tampere	Tampere. Finland - application, Kausal Oy, Geniem Oy.	The city of Tampere receives valuable statistical information and an understanding of where and how the citizens move. In this way, services can be developed to meet the needs of residents. An individual user cannot be identified from the data.	Sustainable mobility increases overall health, well-being, safety and equality.
Keli - Promoting more sustainable mobility with the help of a carbon footprint calculator (2022-2023)	This study project examined whether people could be encouraged to choose walking or cycling instead of driving by appealing to the health benefits of physical activity. The study did an intervention using the mobility carbon footprint calculator.	Climate and Environmental Policy Unit/ City of Tampere	The University of Helsinki, VATT Institute for Economic Research, Kausal Oy, Geniem Oy, Citizens	The project, activated citizens to move more sustainably and participate in the implementation of the city's climate targets, implement the city's strategy and develop the technical implementation of the calculator using open source code.	Sustainable mobility increases overall health, well-being, safety and equality.
Tampere Cycles Project (2022)	The project aimed to improve cycling in Tampere opportunities and a visible campaign year for city bikes 2022. This increased the acceptance of cycling in the city.	Traffic System Planning Unit/ City of Tampere	Public Transport Unit, Nysse/The City of Tampere, Ekokumppanit Oy	As public acceptance and awareness of improved cycling conditions increases, the number of cyclists will also increase.	Sustainable mobility increases overall health, well-being, safety and equality.



City Blues (Bluegreen nature-based solutions for climate change adaptation and citizen wellbeing) Interreg project 2023-2026	In the project integrated nature-based solutions (NBS) are developed for urban flooding and stormwater management. Project involves local residents and stakeholders in planning, implementation, monitoring and maintenance of the selected area in Tampere, near lake Iidesjärvi. The goal is to make the living environment for the inhabitants more inclusive, healthy, and attractive and to reduce pollution.	Green Areas and Stormwater Unit/ City of Tampere	NGOs, citizens, companies	The overall project aim is to support adaptation to negative effects of climate change and to improve green and blue infrastructure of densifying cities through integrated nature-based solutions (NBS) for urban flooding and stormwater management.
--	---	--	---------------------------	--

### C-2.2: Description of social innovation interventions – textual and visual elements

#### The Carbon Neutral Actions Programme

The Carbon Neutral Actions is a strategic development programme of the City of Tampere. The key aim is to support residents in changing their own consumption and mobility habits and ensure fair and equitable transition to a climate resilient society. The guiding principles and tools are co-creation and citizen participation, communication, use of data to support the change and broad collaboration with stakeholders. The goal is to identify and develop approaches that support citizens' own capability and motivation to change their consumption and mobility habits to make them more sustainable.

### Co-creation model of Carbon Neutral Actions

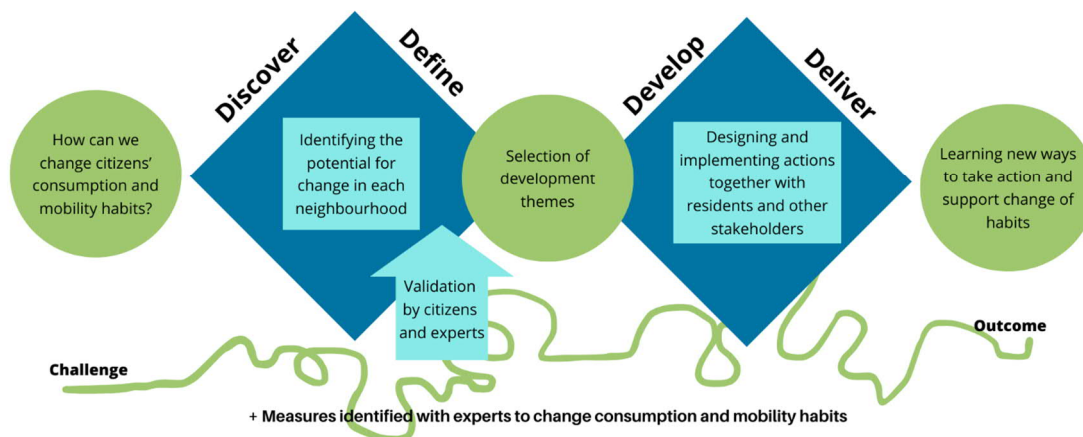


Figure 5.2. The Carbon Neutral Actions programme co-creates solutions together with the citizens.



Development programme operates at city district level and promotes change from a local perspective. Three different city districts have been selected to focus on. Through citizen insight, targeted actions to promote sustainable lifestyles in these areas will be considered. The programme has recognized that people have different motivations to make sustainable choices and it uses different motivational profiles identified through the survey to empower citizens to change their habits.

Besides working with citizens and other local actors, the programme supports actors in city organization to recognize and respond to the need to support citizens in their change. See all programme's stakeholders in Figure 5.3.

### Engaging citizens through different stakeholders

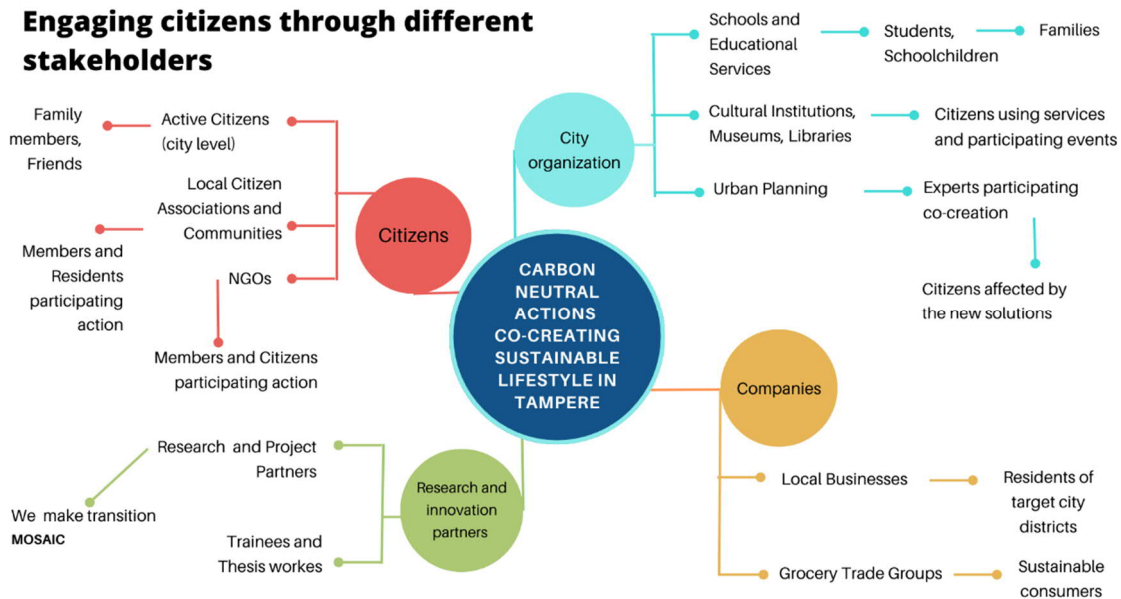


Figure 5.3. Recognized stakeholders of the Carbon Neutral Action's Programme.

### We Make Transition!

We make transition! (2023-2025) is a transnational project co-financed by the EU Interreg Baltic Sea Region Programme. The project has 11 partners from 6 countries and is coordinated by the Baltic Institute of Finland. City of Tampere participates in the project as associated partner being the main beneficiary of the project.

The project aims to strengthen societal resilience and eco-social sustainability by learning, adapting and piloting transition management methodology for engaging civil society and other innovation actors to co-create solutions for sustainability. City of Tampere focuses on finding new ways to foster biodiversity and sustainable lifestyle in urban environment in cooperation with civil society actors, such as NGOs, associations, social entrepreneurs, communities and individuals. Best co-created solutions will be selected and implemented during the project.

### Climate Justice Discussion Forum

The Forum supports the citizen participation in climate action and promotes their empowerment. By providing a forum to discuss climate action and the role of residents, the City of Tampere helps to increase understanding of the need for residents to play an active role and to motivate and support change in private arenas (indirect effects on emissions) to ensure fair and equitable transition to a climate resilient society. The forum will include people from different backgrounds, for example commissions and advisory boards of the citizens (e.g. the youth council, elder people's council, disability council), local NGOs and the University of Tampere.

### The Mobility Carbon Footprint Calculator



Carbon footprint calculators help by steering people to change their behaviour. The City of Tampere has developed and published a free carbon footprint calculator for mobility in its city application. The project produces research information on how residents can be encouraged to use sustainable means of mobility. The calculator shows, for example, user's most common Mode of Transport and monthly carbon footprint. Every month you can aim for gold, silver or bronze level.

The city of Tampere receives valuable statistical information and an understanding of where and how the citizens move. In this way, services can be developed to meet the needs of residents. An individual user cannot be identified from the data.

**KELI – Promoting more sustainable mobility with the help of a carbon footprint calculator**

The Keli project used a mobility carbon footprint calculator in the Tampere.Finland application to see whether it would be possible to motivate people to choose walking and cycling instead of driving by appealing to the health impacts of physical activity. Messages about the health benefits of everyday physical activity were sent to certain users. The results were compared to a control group of calculator users who were not targeted with health messages. The health content made people use the application more, but no potential changes in mobility habits were found during the test period. Even though the people's mobility didn't change during the project, it gave important information about the issue to the city.

**Tampere Cycles Project (2022)**

The project aimed to improve cycling in Tampere opportunities and a visible campaign year for city bikes 2022. This increased the acceptance of cycling in the city. The project included "cycling agents". Every citizen who cycled during the winter was able to apply for the programme. Cycling agents monitored Tampere's cycle paths and reported on the condition of cycle paths, such as snow, slippery roads and icy pavements. As a result, the maintenance of the main cycling routes improved this winter.

**City Blues (Bluegreen nature-based solutions for climate change adaptation and citizen wellbeing) Interreg project 2023-2026**

In the project integrated nature-based solutions (NBS) are developed for urban flooding and stormwater management. Project involves local residents and stakeholders in planning, implementation, monitoring and maintenance of the selected area in Tampere, near lake Iidesjärvi. The goal is to make the living environment for the inhabitants more inclusive, healthy, and attractive and to reduce pollution. The overall project aim is to support adaptation to negative effects of climate change and to improve green and blue infrastructure of densifying cities through integrated nature-based solutions (NBS) for urban flooding and stormwater management.

## 5.3 Module C-3 Financing of Action Portfolio

Module C-3 "Financing of Action Portfolio" should contain the list of action portfolios and interventions outlined in Modules B-2, and those from C-1 and C-2 with cost implication to provide a summary list of interventions that need to be unpacked in the Investment Plan.

**Table C-3.1: Summary of interventions with cost implication (to be unpacked in Investment Plan)**

Action/intervention name	Responsible entity	Start/end date	Field of action	Impact	Total cost estimated
Existing planned actions of the city organisation related to transportation	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Transportation	1 tCO <sub>2</sub>	147,1 M€



Existing planned actions of the city organisation related to built environment	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Built Environment	26 tCO <sub>2</sub>	38,28 M€
Existing planned actions of the city organisation related to energy systems	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Energy Systems	N/A: No Emission Impact Assessment	1,5 M€
Existing planned actions of the city organisation related to green infrastructure and nature based solutions	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Green Infrastructure and Nature Based Solutions	N/A: No Emission Impact Assessment	7,2 M€
Existing planned actions of the city organisation related to waste and circular economy	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Waste and Circular Economy	N/A: No Emission Impact Assessment	N/A No Investments Planned
Existing planned actions of city's subsidiaries organisation related to transportation	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan Table 6	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Transportation	1270 tCO <sub>2</sub>	269,6 M€
Existing planned actions of city's subsidiaries organisation	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap and	Timetable for implementation stated in Carbon Neutral Tampere 2030	Built Environment	16 797 tCO <sub>2</sub>	110,9 M€





related to built environment	in Investment Plant Table 6	Roadmap and in Investment Plan (Annex)			
Existing planned actions of city's subsidiaries organisation related to energy systems	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plant Table 6	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Energy Systems	65 608 tCO <sub>2</sub>	117,9 M€
Existing planned actions of city's subsidiaries organisation related to green infrastructure and nature based solutions	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plant Table 6	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Green Infrastructure and Nature Based Solutions	N/A: No Emission Impact Assessment	5,3 M€
Existing planned actions of city's subsidiaries organisation related to waste and circular economy	Responsibilities stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plant Table 6	Timetable for implementation stated in Carbon Neutral Tampere 2030 Roadmap and in Investment Plan (Annex)	Waste and Circular Economy	N/A: No Emission Impact Assessment	25,6 M€



## 6 Outlook and next steps

This section should draw any necessary conclusions on the Action Plan above and highlight next steps and plans for further refining the Action Plan as part of the Climate City Contract.

### Plans for next CCC and Action Plan iteration – textual elements

This Climate City Contract describes our current situation. Our current Carbon Neutral Tampere 2030 Roadmap shows a 7% gap between our current measures and achieving our carbon neutrality target. In addition, our current measures need to be accelerated to become a reality. This is a gap identified in the Action Plan and we will seek solutions to this gap in the next roadmap update process together with the whole city organization.

The roadmap's updating process has been planned in parallel with the preparation of the CCC. Updating the roadmap is a highly interactive process and has been designed with a strong focus on customer feedback from the city's units. The Climate and Environment Policy Unit will organize workshops for the roadmap's themes. These workshops will take place by the end of January 2024. After the workshops, each unit will be individually met, and the measures taken by each unit will be discussed at these meetings. Cross-pollination meetings will also be organized between the units.

As a newly identified need, we will also organize financing meetings with the management of the units, the economic unit, the city's finance manager and the project office to discuss the financing of the actions; whether sufficient own-financing is available to implement the actions or whether external funding or loans – be they national or European - must be sought. In this way, we aim to ensure that the measures are implemented and meet the Investment Plan's gaps.

All meetings will be held by mid-March, after which the Climate and Environment Policy Unit will start to compile the roadmap into a single document by the end of May. The roadmap will be finalized by the end of August 2024, and at around the same time data will already be collected for the next climate budget, taking into account the measures negotiated in the roadmap's financial meetings. The roadmap will go through the city's management groups and then to the city's board for approval. The final roadmap will be approved in autumn 2024.

The roadmap work will also involve an input from residents, as the Climate Neutral Actions development programme will organize a workshop in late September 2023 before the start of the roadmap's update process itself within the city. With the upcoming Vulnerability Analysis and also the City of Tampere's award-winning SUMP (Sustainable Urban Mobility Plan), we can learn lessons for the roadmap, on inclusion and equality.

We have also identified specific companies in the city with which a more strategic partnership would be relevant in climate work. These include a factory and large companies with the potential to influence the commuting of large numbers of people. Stakeholder engagement will play a key role in the coming years, and the Mission process will support this work.

Since the completion of the latest roadmap, we have responded to the gaps identified in the Action Plan and the Investment Plan. New rounds of updates both in CCC and roadmap will show more need for re-evaluation and gaps. The CCC will be updated in 2025, and to this point we have gained more business and citizen cooperation to implement the Action Plan in collaboration with the Climate Neutral Actions development programme.

While updating the roadmap and later the CCC, actions will be implemented continuously. The Climate and Environment Policy Unit will monitor this by requesting regular updates to the Climate Watch service. We have identified a need for meetings to jointly review the progress of measures within the themes when the roadmap's updating process is not running. These will be held a few times a year.



Along the way, we will learn and ensure the planned implementation of measures to achieve carbon neutrality in Tampere by 2030. To do this, we need cooperation, into which we will focus on in the coming years. We will also engage more Tampere-based companies as our Mission Partners.

The CCC-process has already shown that we have gaps in our climate work. We need support for these and rethinking of the city's governance approaches. For example, funding issues are a big challenge for us, and this is what we will be working on before the next CCC update to make up for the gaps. The City of Tampere is already engaged in co-development, but this needs to be continuously developed in a way that takes into account all citizens and businesses of different backgrounds.



## 7 Annexes

**Add any textual or visual material** to the 2030 Climate Neutrality Action Plan in the ANNEX as necessary.

Annexes:

Carbon Neutral Tampere 2030 Roadmap, version 2022

[https://www.tampere.fi/sites/default/files/2023-04/climate\\_neutral\\_tampere\\_roadmap\\_0.pdf](https://www.tampere.fi/sites/default/files/2023-04/climate_neutral_tampere_roadmap_0.pdf)

Climate budget in visuals

<https://app.powerbi.com/view?r=eyJrIjoiMDA3Njg2ZTgtOWU3ZC00OWYyLTlhNjAtODZiY2QwNDVmMzQ2IiwidCI6ImRkZTVkYzEyLWJkM2MtNGMwNi04NWNjLTM0MzYxZWZlOWFkNCIsImMiOiI9>

Tampere emissions inventory 2021 (pdf-annex)

CO2-report emissions calculation methodology (in Finnish)

[https://co2.sitowise.com/CO2tilastot/CO2-raportti\\_Menetelm%C3%A4kuvaus\\_2023.pdf](https://co2.sitowise.com/CO2tilastot/CO2-raportti_Menetelm%C3%A4kuvaus_2023.pdf)