NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Investment Plan

2030 Climate Neutrality Investment Plan of the

CITY OF TURKU

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January 2023	V1	BwB	/
June 2023	V2	BwB	The template was amended to include a front-page note “The IP template is to be followed closely, and cities should fill in every section to the level of detail that they have, remaining mindful of the CCC Checklist and guidance documents. If it is not possible to complete a section, please state why it cannot be filled out”.

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Glossary of Terms

Acronym	Description
AP	Action Plan
IP	Investment Plan
KPI	Key Performance Indicator
MEL	Monitoring Evaluation & Learning
MRV	Monitoring Reporting Verification
WP	Work Package

Part A – Current State of Climate Investment

Part A "Current State of Climate Investment" is the **structural element** of the climate neutrality investment plan, putting the basis for the development of the plan through a detailed-oriented evaluation and assessment of your city's existing financial policies and funding/financing activities.

Module IP-A1: Existing Climate Action Funding and Financing

This section represents the initial step of the 2030 Climate Neutrality Investment Plan (Investment Plan) and will require you to evaluate and assess previous and existing funding and financing for climate activities by field of action.

A-1.1: Textual element
In accordance with Turku's Mayor's Programme and Climate Plan, the city has started to develop a climate budget, which aims to improve the steering, monitoring and visibility of the climate objective implementation. Turku's climate budget was first published in 2023. The so-called pilot budget focused on the City group's climate objectives and the investments supporting the aforementioned. The EU taxonomy regulation published in 2022 was selected as the evaluation framework in the investment classification performed in preparation of the 2023 climate budget. The framework was selected on the basis of its usability as a multidimensional tool for reviewing environmental objectives as well as the potential utilization of green financing. The 2023 climate budget classifies investments in three main categories, which are 1) investments that support the City Group's climate objectives, 2) investments that are not yet evaluated on the basis of climate objectives and 3) investments that do not include any climate objectives. The city's climate budget and its figures will be used as a basis of the investment plan. The 2023 figures will be used as a base when describing the current state of climate investment. The figures 2023-2026 from the climate budget together with additional data will be used when describing the pathways to climate neutrality 2030. Investments supporting Turku Group's climate objectives in 2023 are a total of 330.5 million euro. This number is divided into more detailed subsections in Table 1. The investment amount allocated into each subsection is presented on the last column. The subsection amount divided by the total 330.5 million euro equals the percentage presented in the same column. The allocated investments per subsection are described below in further detail. *Development of the infrastructure network for walking and cycling* subsection includes the infrastructure investments related to the building of new pedestrian and biking routes as well as investments related to the energy efficient lighting of these routes. *Urban infill* subsection includes infrastructure investments related to the supplementary construction the aim of which is to create a denser urban structure. Urban infill can reduce greenhouse gas emissions created in the construction stage by reducing material use. In addition by building close by existing public transport connections, traffic emissions can be limited. This subsection mainly includes motorways but also the pedestrian and cycling pathways built next to the car lanes. The allocation of the transportation investments will be improved as part of the climate budget development process. *Electrification and other technical interventions* subsection consists mainly of low-emission vehicle investments made by the subsidiaries. Municipal buildings subsection include all the building investments made by and for the municipality such as schools and nurseries, cultural buildings and office buildings. The buildings' energy efficiency figure was used as the mitigation promotion evaluation criteria for these buildings. In order for the building to be considered promoting climate mitigation, the energy efficiency of the building was to be at least 10% lower than the national threshold value for zero energy buildings. For example, educational buildings' demand for primary energy could not be higher than 90 kWh/m2/a. This subsection also includes some costs related to climate change adaptation and energy systems, such as green roofs, rooftop community gardens and solar panels.

Like the municipal buildings subsection, the *residential buildings* and *other buildings owned by subsidiaries* subsections were classified as investments that promote climate mitigation on the basis of their energy efficiency targets. In addition to residential buildings, the subsidiaries are investing in warehouses and other industrial buildings.

Climate change adaptation subsection of the build environment include investments relating to the buildings as well as the infrastructure surrounding them. The investments include various adaptation solutions, which have been measured and monitored with the blue-green coefficient plot planning tool. The tool specifies the green efficiency of a plot/block, i.e. the ratio of vegetation and ecologically useful surfaces to the built area. The tool can also be used to estimate how much the vegetation, surfaces and possible stormwater structures of the plot delay stormwater. Through the assessment of the quantity and quality of vegetation, the tool is linked not only to climate change adaptation but also to the protection of biodiversity.

Increase of renewable energy in district heat and cooling network subsection includes Turku Energy's mitigation related investments for the year 2023.

Strengthening biodiversity and carbon sinks subsection includes the infrastructure investments that can be allocated entirely to the increase of green areas and parks. For clarification, the transportation investment amounts include sums related to this subsection. The subsection allocation will be improved in accordance with the climate budget development process.

Sustainable use and protection of water and marine resources subsection includes investments made by subsidiaries related to the water infrastructure and coastal renovation and/or dredging.

Circular economy transition subsection includes investments related to the city's circularity and recycling park infrastructure as well as investments related to textile recycling.

Waste treatment and pollution prevention subsection includes investments made by subsidiaries related to the sewage water and sludge treatment infrastructure.

Fields of Action	Sector Subsection	% Current Budget Allocation
Transportation	*Development of the infrastructure network for walking and cycling*	*48.0 M€ (14,5%)*
	Urban infill	*27.7 M€ (8.4%)*
	Electrification and other technical interventions	*1.7 M€ (0,5%)*
Built Environment	*Municipal buildings*	*45.7 M€ (13,8%)*
	Residential buildings	*92.8 M€ (28,1%)*
	Other buildings owned by subsidiaries	*35.2 M€ (10,7%)*
	Climate change adaptation investments	*33.4 M€ (10,1%)*
Energy Systems	*Increase of renewable energy in district heat and cooling network*	*8.7 M€ (2,6%)*
Green Infrastructure and Nature Based Solutions	*Strengthening biodiversity and carbon sinks*	*2.8 M€ (0,8%)*
	Sustainable use and protection of water and marine resources	*2.8 M€ (1,7%)*
	Circular economy transition	*5.6 M€ (2,9%)*

Waste and Circular Economy	*Waste treatment and pollution prevention*	*9.7 M€ (5,8%)*

Table 1: Finance Sources By Field of Actions

The above representation for capital flow should be recreated to take into account capital stock as well.

Module IP-A2: Strategic Funding and Financing Evaluation

You will evaluate your city's existing financial policies to understand how they are currently managing the capital allocation towards net zero. This will include strategies in place and what your city has at its disposal to facilitate the transition. Your team should identify the forms of capital it has access to and which are specific to their climate neutrality targets.

A-2.1: Textual element
At the City of Turku, including the subsidiaries / municipal companies, Climate Action and coordination covers the whole organisation and the Climate Team (within central adminitration, under the mayor and city board) has a strong influence and collaboration within the whole city group. The Climate Budget is an integral part of the city's and its subsidiaries budgets. Therefore, the Climate goals are strongly reflected in the whole budget and investment plans and Climate Action enjoys full access to all funding/investment sources that the city operates with. Turku also benefits strongly from good cooperation with different levels of governance, including regional, national and European, and enjoys good access to financing from the market as well as long-term cooperation on Climate Investments with European Investment Bank. At the national level, the Climate Act and the Medium-term Climate Change Policy Plan aim at carbon neutral Finland by 2035. National level policies and actions support capital allocation towards net zero also in the cities. Many EU climate policies and regulations are implemented at the city level or have an impact on the cities. These include, but are not limited to, the EU emissions trading system (ETS), The Fit for 55 package, Energy Efficiency Directive and RePowerEU programme. The programme was launched by the European Commission after the energy crisis caused by Russia's invasion to Ukraine and it aims at saving energy, producing clean energy, and diversifying energy supplies. In other words, phasing out fossil fuels that have at least partially been of Russian origin in the past. Implementation of national and EU level regulations often have cost implications and may require investments. Albeit potentially requiring more resources in the initial stage, the long-term effects on the local economy will usually be of positive nature, not to mention the effects on health or other environmental matters. For instance, measures carried out due to energy efficiency regulations reduce operational costs in cities. New policies and regulations related to climate change can also affect the operations of companies in cities and, along with that, the economy of cities. For example, the EU taxonomy requires certain financial and non-financial actors to report on their activities based on a common definition of environmentally sustainable activities, including climate change mitigation. The taxonomy aims at redirecting capital flows towards such acitivities. Climate change causes both physical and transition risks. Transition risk is the potential costs to society of evolving to a low carbon economy to mitigate climate change. TCFD (Task force for Climate-related Financial Disclosure) is a voluntary international reporting framework focused on the threats and opportunities of climate change. With TCFD recommendations, both public companies and other organizations can analyse and report their climate risk using commonly accepted definitions. The change in market and the economy also affects implementation of the Investment Plan. Climate-related regulation and initiatives can raise the costs of raw materials (such as steel) and energy and lead to new taxes

and tariffs. They all change the economic environment in which the cities and businesses operate. If the capital environment weakens, R&D investments may decrease, as well as opportunities for utilizing low-carbon technologies. At the same time, inability to adapt to a carbon-neutral economy threatens the welth in cities. For this reason, it is important to follow the development of technology to ensure the right timing of investments and divestments.

Some key figures:

- **Annual contribution margin 31 Dec 2022 (consolidated income statement) : 190.6 million €** (operating revenue 1 190.2 M€, operating expenses -2 320.7 M€, tax revenue 942.6 M€, central government transfers to local government 382,8 M€, financing income and expenses -16.1 M€).
- **Annual contribution margin 31 Dec 2022 (Consolidated income statement ratios): 963 € per resident**. Number of residents 197 917.
- **Cash flow financing and investments (Consolidated cash flow statement ratios: 52.9%**
- **Loan portfolio 31 Dec 2022 (Consolidated balance sheet ratios): 1 525.3 million €.**
- **Loan portfolio 31 Dec 2022 (Consolidated balance sheet ratios): 7 707 € per resident.** Number of residents 197 917

Income Category	City income	% of city budget
Operating revenue, M€	*1 190.2*	51.3% (operating revenue / operating expenses)
Tax revenue, M€	*942.6*	40.6%
Central government transfers to local government, M€	*382.8*	16.5%
Loan portfolio 31 Dec, M€	1 525.3	

Table 2: List of income sources for the city

Type	Size Range	Level	Description
Source of Capital	*Quantum of Capital Accessible to the city through this source*	*Private or Public*	*(Description of capital source e.g. cost & provider)*
Non-current assets, M€ (Consolidated balance sheet 2022)	2 989.3	Public	Initial capital and loans
Liabilities, M€ Consolidated balance sheet 2022)	2 185.8	Private and Public	Public institutions and commercial banks (EIB, CEB, NIB)
Surplus/deficit from previous accounting periods, M€ Consolidated balance sheet 2022)	479.7	Private and Public	Surplus and previous period

Table 3: List of capital sources for the city

Module IP-A3: Barriers to Climate Investment

You will need to evaluate and identify the range of structural, policy, economic, and financial barriers for capital deployment in support of climate action.

A-3.1: Textual element
City of Turku, like other cities in Finnish/Nordic legal/administrative contexts, enjoys a relatively strong administrative and financial mandate (as based on legislation), which enables the city to plan and finance investments quite independently, taking into account legal requirements and focusing on the local needs and priorities set by the city and supported my municipal taxation, which is in the hands of the city. Thus barriers compared to cities in different administrative contexts are considerably smaller and maybe also partly different. Like mentioned also in previous sections/modules, Turku benefits from good cooperation with different levels of governance, including regional, national and European, and enjoys good access to financing from the market as well as long-term cooperation on Climate Investments with European Investment Bank. During the recent year(s), Turku has started to implement the EU Taxonomy of Green Financing by applying it in evaluation of all investments exceeding the value of one million euros. To overcome internal capacity/competence-related barriers, the implementation of the the taxonomy has been supported by the program/project of capacity-building of a large number of key persons involved in investment planning, funding and implementation. Turku also benefits from a relatively strong involvement in European networks, programmes/projects and funding and this applies also to non-municipal actors/partners in the area, the universities in Turku being active in large number of EU programmes and projects and companies and civic associations being strongly involved as well. Finland also has quite good programmes of national fundind to match with the European ones. So, many potential barriers in Turku/Finland have been or are quite largely overcome by already impemented good practices, forward-looking policies and approaches as well as by proactive work. And of course, the national target of carbon-neutrality by 2035 is very helpful for local climate actions and their funding. Still, there are considerable barriers or obstacles and challenges that we face on the different levels, as follows : **Local level:** The main problems are related to the work-load of the administration, where key experts tend to be overloaded thus requiring very strong prioritisation and also occasional « top-down » definition and empowering to work on climate financing. As mentioned above, the competence issues are being quite successfully approached at the moment and the motivation to work on climate action among city employees is relatively strong too. **Regional level:** Turku with its 200-t. inhabitants is the centre of an urban area with close to 350-t. inhabitants, consisting of 13 municipalities, The city is able to implement ecffective climate policies and investments, but some important investments would benefit from a stronger involvement of other municipalities. This is the case for example for several transport / sustainable mobility investments, such as the regional tram / light rail solution as well as improving further the regional cycling network. The state ministries together with the muncipalities and the regional administration are tackling these challenges through the Agreement of Land-use, Housing and Transport, which is relatively successful, but still leaves obstacles. **National level:** There are several programs and networks and funding in place to support municipalities' climate work. However, at the moment some of the instruments have had draw-backs, such as the announced « cancellation » of the legal obligation and supporting funding for municipalities' climate plans, which had just been approved by the previous Parliament. It remains to be seen, whether and to what extent the current government – aiming at budget cuts – might reduce the different forms of funding available for municipal climate investments. **European level:** Regarding European financing – programmes, projects and loans – the main barrier or challenge is related to internal capacity, i.e. to being able to prioritize among the European opportunities and mobilize sufficient expertise/time and partnerships for the prioritised proposals/initiatives. Sometimes the work on European projects is also somewhat stiff due to the need for quite extensive pre-planning during the application phase and reluctance to use the options to re-plan during implementation due to the time-consuming processes of revisions/approval of changes of plans. **International/global level:** This level applies most to attracting investments for climate-friendly low-carbon companies to Turku area and Finland. Competition is tough and in case of larger production investments, the process is complex and requires solid partnerships on all levels. Sometimes it's challenging for the city to be able to meet the needs of pre-investments competition.

Financial Barriers to achieving Climate Neutrality	Typology of Barrier	Description	Sector and stakeholders involved

Lack of staff capacity for preparing for investment funding	Human Resources	The main problems are related to the work-load of the administration, where key experts tend to be overloaded thus requiring very strong prioritisation and also occasional « top-down » definition and empowering to work on climate financing.	City administration and subsidiaries
Lack of competencies and knowledge	Human Resources	Applying sound climate principles, such as the EU Taxonomy, require new knowledge and skills. (This is already being addressed at the city by capacity-development)	City administration and subsidiaries Private companies
Lack of support within the functional urban area (from other municipalities)	Governance	Many effective Climate investments requite a stronger involvement of other municipalities within the urban area. This is the case for example for several transport / sustainable mobility investments, such as the regional tram / light rail solution as well as improving further the regional cycling network.	City administration Other municipalities Regional administration State ministries
Possible reduction of national funding	Governance and Politics	There are several programs and networks and funding in place to support municipalities' climate work. However, at the moment some of the instruments have had draw-backs. It remains to be seen to what extent the government might reduce the different froms of funding available for municipal climate investments.	Government State administration and agencies
Complexity of European Programmes and funding	Governance and Management of European programme	The challenges are to be able to prioritize among the European opportunities and mobilize sufficient expertise/time and partnerships for the prioritised proposals/initiatives plus the load of extensive pre-planning and « stiffness » of revising the plans during implementation.	EU Programmes Cities and other partners

Intensiveness of Global competition (for low-carbon investments)	Invest-in Strategy and Practice	Competition (for investments) is tough and in case of larger production investments, the process is complex and requires solid partnerships on all levels. Sometimes it's challenging for the city to be able to meet the needs of pre-investments competition.	International companies and investors Cities and regions State authorities

Table 4: Barriers to Climate Investment

Part B – Investment Pathways towards Climate Neutrality by 2030

Part B "Investment Pathways towards Climate Neutrality by 2030" is in place to capture the actions and needs for mobilising and delivering the funding and financing needed for climate neutrality. This Part of the Investment Plan will be aligned with and build upon the Action Plan. In addition, each of these Plans are likely to entail multiple iterations over the course of the path to climate neutrality.

Module IP-B1: Cost Scenarios for Climate Neutrality

These are the actions and measures which make up the 2030 Climate Neutrality Action Plan that need to be costed. Given the Investment Plan needs to be practical, the measures defined within the Action Plan need to be tagged by how much they will cost for the city, considering implementation and operational costs, so the city budget can be adapted to include them.

Cities have the option to provide cost estimates at their own discretion on the measures disclosed in the Action Plan template as per table B-2.2 and in the Investment Plan template as per table B1.2. Given these cost estimates for the actions, cities can then include non-sectorial costs (the cost of the levers to implement these actions) these should be considered alongside the concrete actions.

B-1.1: Textual element
Turku has been implementing a council-adopted Climate Program since 2009 and has been part of the European Covenant of Mayors since 2010. During this time, the city together with partners have invested extensively especially to energy transition from a fossils-based system into a renewable carbon-neutral one. This transition has already been achieved to a great extent and has included investments of over 500 M€. In parallel, work on energy-efficiency has proceeded in line with the energy-efficiency agreements between the city and the state. Considerable investments have already been made also to sustainable mobility, including the regional public transport, its electrification, e-mobility and regional cycling and walking networks. By now (GHG inventory of 2022) Turku has already managed to reduce the city area's scope 2 GHG emissions by 56 percent from the level of 1990 and the emission level per capita is already the lowest among cities in Finland. Most of the reductions so far have come from the energy transition, but other sectors such as transport have also reached considerable reductions. Further emission reductions will come from several different sources – with energy and transport still being very important. During the period now up-to 2030, the city group will be investing over two billion euros. These investments are a critical tool for the city to reach carbon-neutrality. If they can be designed and implemented with maximized climate impacts (direct and indirect GHG reductions), Turku has a very realistic chance to be a carbon-neutral area (scope 2) by 2029/-30. Therefore, while "remaining" energy investments are still important/crucial, the GHG-reduction-impacts of all investments to infrastructure, buildings, built environment, equipment etc. need to be maximized. Of course many other factors will need to contribute too: the staretgy to involve citizens, companies and other civic society entities will need to be successful and the strong interest, knowledge-basis and political support/engagement must continue. As of now (14-Sep-2023, based on Budget 2023 and Financial Plan 2024-2026), over 1,2 billion of the investments during 2023-2026 are expected to influence positively to the attainment of the climate goals. Based on this and the continuation and intensification of our work on Climate Budgeting – we can realistically expect to be able to invest well above two billion euros for climate / with positive climate impact before 2030. Combined with our other climate actions and the – so far – active and increasing involvement of partners, such as the largest companies on the area, this should be enough to get as to (or very close to) carbon-neutrality. The next phases of climate budgeting will include also more work on the operational costs and procurement, where the sustainable procurement strategy is already being impklemented. City subsidiaries are already involved in the work on climate budget and more precise information of their contributions could be made public during the next cycles. However, publicity of their investments is governed more by company laws whereas the municipal laws apply primarily to the city.

The following table includes the investment/implementation costs for the financial planning period of 2023-2026 (budget of 2023 and plan of 2024-2026) as this is what had been approved by the council by now, following our governing system.

Fields of Action	Action / Indicator	Implementation Costs/Capex	Operational Costs	Direct impacts (Emission reductions)*	Indirect impacts (co-benefits)**
Transportation	*Development of the infrastructure network for walking and cycling*	*206.8 M€*	*Enhanced winter maintenance* 0.4 M€/year (2023 Budjet)	*42 kt CO_2-eq/year by 2030*	*Job Creation, Health, Air Quality, Noise, Safety*
	Urban infill	*134.3 M€*	*Winter maintenance of roadways and pedestrian and bicycle pathways* *5,9 M€* (7595,64 €/ha/year, YAOH-rekisteri, 2022 financial statement) *Cost of public transport/resident/year* 16,8 M€ (85 €/resident financial statement 2022, number of residents 197 917)		
	Electrification and other technical interventions	*12.0 M€*	*Subsidiary related information not available*		
0Built Environment	*Municipal buildings*	*215.2 M€*	*Heating 5,4 M€ (schools and nurseries), 2022)* *Electricity 4,0 M€* (schools and nurseries, 2022 financial statement) *Water 0,2 M€* (schools and nurseries, 2022 financial statement)	158 kt CO_2-eq/year by 2030	*Job Creation, Health, Air Quality, Resilience*
	Residential buildings	*418.7 M€*	*Subsidiary related information not available*		
	Other buildings owned by subsidiaries	*144.3 M€*	*Subsidiary related information not available*		

	Climate change adaptation investments	*132.0 M€*	*Stormwater infrastucture maintenance* 0.6 M€ (2022 financial statement)		
Energy Systems	*Increase of renewable energy in district heat and cooling network*	*21.0 M€*	*Subsidiary related information not available*		
	Increase of renewable (wind) electricity production	*50.0 M€ (estimate, not decided)*	*Subsidiary related information not available*		
Green Infrastructure & Nature Based Solutions	*Strengthening biodiversity and carbon sinks*	*5.0 M€*	*Green area maintanance* 1,2 M€ (1528 €/ha (YAOH-rekisteri, financial statement 2022)	*16 kt CO_2-eq/year by 2030*	*Biodiversity, Health, Air Quality, Resilience*
	Sustainable use and protection of water and marine resources	*19.0 M€*	*Subsidiary related information not available*		
Waste and Circular Economy	*Circular economy transition*	*18.0 M€*	*Subsidiary related information not available*	*4 kt CO_2-eq/year by 2030*	*Job Creation, Economy, Biodiversity, Health*
	Waste and pollution prevention	*61.0 M€*	*Subsidiary related information not available*		
Cross Cutting Costs	In parallel with the investments, the city is allocating resources to climate coordination and development of activities (Climate Team of 10 professionals at central administration) collaboration and campaigning, climate projects and maintaining/improving the knowledge-basis and data. Climate expertise is needed and resources for also in many differents city functions and supported by (internal) capacity-building on topics such as the EU Taxonomy of Green Financing. The city is also implementing the Circular Economy Program and Nature City Strategy and severa other programs that contribute significantly and/or have strong synergy with Climate Action.				

**Referring to the Action Plan*

***Indicative indicators*

Table 5: Sectorial Costing

Module IP-B2: Capital Planning for Climate Neutrality

You will need to definite your city's capital goals and how to achieve them. As you implement its programme the below sources of capital can be laid out as a starting point. These should be aligned

with your city's goals and relevant to the actions selected. Ideally this will be a target and then you will optimise towards.

Textual element
As mentioned previously, Turku is already far on its development towards carbon-neutrality, the GHG emissions of the area (scope 2) being down by 56 percent from the level of 1990 and by 61 percent from the peek level and considerable investments to climate action have already been implemented and are ongoing. All main actions of Turku Climate Plan, SECAP (last updated by City Council 16 May 2022 § 103) and Turku' Mission Action Plan are either being funded and under implementation or are in preparation phase with sufficient fundding realistically available from different sources. Therefore, we are relying on our successful startegy to utilize several funding sources, as listed in the table below, and are also constantly building partnerships and analysing new funding options.

Capital need	Possible Sources of Capital	Sector allocation
206.8 M€ *(Development of the infrastructure network for walking and cycling)*	*Public institutions and banks*	*EIB (European Investment Bank), CEB, NIB (Nordic Investment Bank), Kuntarahoitus (Green Financing), Traficom (Infrastructue subsidies for cycling and walking, ARA (National Housing Fund), Ministry of Environment, Regional Adminsitration, EUI, National Climate Fund, Industry funds/investors*
134.4 M€ *(Urban infill)*	*Public institutions and banks …*	same as above
12.0 M€ *(Electrification and other technical interventions)*	*Public institutions and banks*	same as above
215.2 M€ *(Municipal buildings)*	*Public institutions and banks*	same as above
418.7 M€ *(Residential buildings)*	*Public institutions and banks*	same as above
144.3 M€ *(Other buildings owned by subsidiaries)*	*Public institutions and banks*	same as above
132.0 M€ *(Climate change adaptation investments)*	*Public institutions and banks*	same as above
21.0 M€ *(Increase of renewable energy in district heat and cooling network)*	*Public institutions and banks*	same as above
5.0 M€ *(Strengthening biodiversity and carbon sinks)*	*Public institutions and banks*	same as above
19.0 M€ *(Sustainable use and protection of water and marine resources)*	*Public institutions and banks*	same as above
18.0 M€ *(Circular economy transition)*	*Public institutions and banks*	same as above
61.0 M€ *(Waste and pollution prevention)*	*Public institutions and banks*	same as above
Cross cutting costs	*Public institutions and banks*	City budget and project grants from national and European programs

Table 6: Capital Planning

Module IP-B3: Economic and Financial Indicators for Monitoring, Evaluation and Learning

A range of financial policies need to be considered to execute the actions laid out in the 2030 Climate Neutrality Action Plan. You should align your city's financial policies with their current process and capital allocation. This will depend on the actions selected and be drawn from possible financial tools to assist the transition.

B-3.1: Textual element
For each field of action, the shadow cost of saved emissions is estimated as defined in the EIB Sustainability Report 2021 (p. 40, European Investment Bank Group Sustainability Report 2021, https://www.eib.org/attachments/publications/sustainability_report_2021_en.pdf). The shadow cost of carbon estimates the full value for society when a tonne of carbon dioxide is saved. It is based on the estimated full cost to society of limiting the rise in global average temperature to 1.5˚C above pre-industrial levels. According to the report, the shadow cost of emitting one tonne of carbon dioxide equivalent is €250 by 2030 and rises to €800 by 2050. We use the shadow cost in 2030 (250 €/ton) and emission reductions compared to the level in 2020 in accordance with the target and baseline years of the Climate City Contract Action Plan. Regarding Table 8, Financial indicators by sector, we would like to note that in Turku's case/approach ALL city investments will be applied / used for reaching carbon-neutrality as far as possible and the framework used for implementing this is the EU Taxonomy of Green Financing, against which all investments exceeding 1 MEUR are beings systematically evaluated. Therefore, a possible financial indicator could be the share of investments meeting the taxonomy criteria, primarily on mitigation and adaptation. These shares we have already calculated from the budget of 2023 and the investment plan 2024-2026. However, before stating this as the indicator, further work and consultations will be beneficial and are foreseen to be completed by April 2024.

Fields of Action	**Indicator**		**Indicator Unit**	**Indicator Baseline***	**Indicator Target 2030***
Transportation	*The shadow cost of saved carbon*	*M€*	*0*		*22.8*
Built Environment and Energy Systems	*The shadow cost of saved carbon*		*M€*	*0*	*77.0*
Green Infrastructure and Nature Based Solutions	*The shadow cost of saved carbon*		*M€*	*0*	*8.0*

Waste and Circular Economy	*The shadow cost of saved carbon*	*M€*	*0*	*3.8*

**Indicative indicators*

Table 7: Economic indicators by sector

Fields of Action	Indicator	Indicator Unit
Transportation	*Capital Investment*	*% of capital invested in green transportation (over the all-city budget)*
	Private to Public Capital	*% private capital to public capital ratio in green transportation*
	Carbon x Capital Invested	*Unit of carbon abated per unit of currency spent in green transportation*
The above structure applies to the below sectors		
Built Environment		*See above*
Energy Systems		*See above*
Green Infrastructure and Nature Based Solutions		*See above*
Waste and Circular Economy		*See above*

Table 8: Financial indicators by sector

Part C – Enabling Financial Conditions for Climate Neutrality by 2030

Part C "**Enabling Conditions for Climate Neutrality by 2030**" is the third section of the Investment Plan and is intended to identify other enabling factors the city needs to consider in the implementation of the Investment Plan.

Module IP-C1: Climate Policies for Capital Formation and Deployment

You will need to optimise the allocation of capital between both public and private sources across the portfolio outlined in the Action Plan to meet the cost of the actions identified for reaching climate neutrality over time.

C-1.1: Textual element
Turku Climate Team, under the mayor/city board, collaborates extensively with all parts of administration and city subsidiaries as well as external partners. We work intensively together with our colleagues in financial administration, urban environment, planning, transport, constructions, energy etc. and design the investment plans and strategies together, run the development of Climate Budgeting and support fund-raising/financing activities with our expertise. Climate policies listed in the table below include EU and national policies which support capital formation and deployment towards net zero. The listed policies enable us to build low-emission and sustainable urban society, develop and finance sustainable infrastructure, and enforce national and local regulations. Part of our work – and our colleagues work – is also to build cooperation and find synergies with other policy/governance levels.

Climate Policy	**Description of the policy (sector, targeted audience, etc.)**	**Intended Outcome for Capital Formation**
The national Climate Act	*The emission reduction targets are -60% by 2030, -80% by 2040 and -90% but aiming at -95% by 2050, compared to the levels in 1990. According to the Act, Finland must be carbon neutral by 2035 at the latest.*	*The Act enables the development of a stable investment environment towards net zero cities.*
The Government Programme 2023	*Finland is committed to the objectives of the Climate Act. The Government will focus its climate action on generating cost-effectiveness, technology neutrality and sustainable business while recognising the importance of a long-term approach across parliamentary terms for attracting investments.*	*The policy is expected to promote sustainable private investments in the city.*
The Government Programme 2023	*Finland will 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.* *The Government will explore and, as far as possible, implement the*	*The policy is expected to promote investments related to large-scale energy projects in the city.*

	extension of the scope of the infrastructure derogation in the interest deduction limitation with respect to large-scale energy projects. The Government will explore the need and possibilities for the central government to participate in financing solutions for strategic investments primarily through instruments in the form of guarantees or capital investments.	
The Government Programme 2023	*Clean Energy Finland -projects*	*The national level investment support is 160 million.* *The support is expected to bring clean energy investments to cities.*
The Government Programme 2023	*The Government will ensure that there are adequate resources for nuclear energy regulation and SMR development at the Ministry of Economic Affairs and Employment and the Radiation and Nuclear Safety Authority. The Government will also promote the use of SMRs to produce district heating.*	*The national level funding is 2 million per year. The development of regulations regarding SMR reactors may enable their use, for example, in urban district heating in the future.*
The Government Programme 2023	*The Government will ensure that the regulatory and permit processes for solar power parks are uniform, flexible and predictable throughout the country.* *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 higher property tax than wind power.*	*Solar power parks are expected to become more common due to improved profitability and accelerated permit processes also in the cities.*
The Government Programme 2023	*The government continues the MAL agreement (land use, housing and transport) procedure with the largest urban regions. The agreements focus specifically on ensuring the conditions for regional growth and accessibility through infrastructure and housing production investments. MAL agreements will be linked to the national transport system plan.* *Urban areas will be encouraged to increase the density of the urban form, promote public transport, cycling and walking, and prevent segregation.*	*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.*
The Government Programme 2023	*Development of main Helsinki-Tampere rail-link,Liminka-Oulu twin track, electrification of Tornio-Kolari track section. Capitalisation of Turku One Hour Train Ltd (Espoo–Lohja and Turku-Salo)*	*The Government will make substantial investments in developing the railway network in various parts of Finland.* *As a part of One Hour Helsinki–Turku rail link project, the State is prepared to provide capital to a*

		company assembling the funds as part of the Programme. In addition to the State, municipalities may also be shareholders in the company.
The Government Programme 2019	*In Finland, the use of fossil fuel oil for heating will be gradually phased out by the beginning of the 2030s.* *ARA (The Housing Finance and Development Centre of Finland) offers grants to municipalities, residents and communities for removing the oil or gas heating system and changing the form of heating to a more sustainable one in the properties they own.* *Replacing oil or gas heating in private houses is also financed through the ELY (Centre for Economic Development, Transport and the Environment) and tax credit for household expenses.*	*The municipalities, residents and communities have been able to apply for ARA and ELY grants to switch to low-emission forms of heating since 2020.*
The act banning the use of coal for energy generation in 2029	*Coal-fired power and heating generation will be banned as of 1 May 2029.*	*Programme of Prime Minister Sanna Marin's Governent 2019 included supporting investments to replace coal, EUR 90 million during the budget planning period.*
Land Use and Building Act (927/2021), (132/1999)	*New construction and large-scale renovations 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.*	*These requirements ensure investments in renewable energy in new construction and large-scale renovations.*
KIRA, The programme on a low-carbon built environment	*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.*	*Funded projects have concerned, for example, development of climate and energy impact assessment and solutions for low-carbon suburban development.*
EU Directive on Energy Efficiency and Energy Efficiency Act	*The Energy Efficiency Directive (EU/27/2012) entered into force on 4 December 2012 and its amendment (EU/2018/2002) on 24 December 2018. The Energy Efficiency Directive lays down energy efficiency targets at the EU and*	*These requirements encourage investments to be directed to improving energy efficiency and, for example, energy-efficient construction.*

	national level, the national energy saving obligation and measures and obligations to promote energy efficiency. As part of the Fit for 55 Package, the Commission submitted its proposal on the Energy Efficiency Directive recast on 14 July 2021. The target to reduce energy consumption by 32.5% in the EU will be tightened significantly to 36–39% and the target will become binding. Based on the Commission's formula for Member States, Finland would need to limit final energy consumption to 255 TWh by 2030.	
The Renewable Energy Directive, (RED II; 2018/2001).	*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.*	*The Directive encourages directing investments to renewables and stabilizes the investment environment.*
EU emission trading system (ETS)	*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 and aircraft operators 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.)* *The Fit for 55 package aimes to reform the EU ETS by making it more ambitious. New provisions include:* *-extension to emissions from maritime transport* *-faster reduction of emissions allowances in the system and gradual phasing-out of free allowances for some sectors* *-implementation of the global carbon offsetting and -reduction scheme for international aviation (CORSIA)*	*The system can bring investments in low-carbon technologies to ETS power plants and other installations.* *Revenues from the sale of the allowances are put into the social fund. The social climate fund will provide support to vulnerable groups.*
The Fit for 55 package	*The European Climate Law 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.*

EU legislation on buildings and construction	*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 buildings and construction products.* *The legislation contains, for example, 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. The renewal of Europe's building stock is expected to reduce energy bills and help curb climate change.*
EU structural funds	*Funding comes from three funds that complement each other: European social fund plus (ESF+), European regional development fund (ERDF) and Just transition fund (JTF). The funds support, for example, the transition to a green, sustainable and digital economy.*	*The cities may can apply for these funds.*
EU green bond standard	*The European Green Deal of 11 December 2019 underlined the need to better direct financial and capital flows to green investments. The European green deal investment plan of 14 January 2020 announced that the Commission would establish an EU green bond standard (EUGBS).*	*Green bonds offer a source of low-cost capital earmarked for climate-friendly municipal projects. EU-wide standard encourages market participants to issue & invest in EU green bonds and improve the effectiveness, transparency, comparability & credibility of the market.*
EU Taxonomy (2020/852/EU)	*The EU taxonomy is a cornerstone of the EU's sustainable finance framework and an important market transparency tool. It helps to direct investments to the economic activities most needed for the transition, in line with the European Green Deal objectives. The taxonomy is a classification system that defines criteria for economic activities that are aligned with a net zero trajectory by 2050 and the broader environmental goals other than climate.*	*Taxonomy accelerates investments towards net zero cities.*
Green Finance	*MuniFin (Municipality Finance Plc) Green Finance is aimed at financing climate- and environment-friendly investments. The terms of green financing are otherwise the same as those of MuniFin other financing, but Green Finance is more affordable for the customer than a regular loan or leasing. The greener the project, the cheaper the financing.*	*MuniFin's Gree Finance can be used to finance the city's climate projects.*

RePowerEU	*In response to the hardships and global energy market disruption caused by Russia's invasion of Ukraine, the European Commission is implementing its REPowerEU Plan.* *Launched in May 2022, REPowerEU is helping the EU to save energy, produce clean energy and diversify its energy supplies.*	*Cities have a significant role in accelerating the energy transition described in the RePowerEU plan.* *REPowerEU Plan entails additional public and private sector investment by 2027.*
G20 Hamburg Climate and Energy Action Plan for Growth	*With the G20 Hamburg Climate and Energy Action Plan for Growth, the G20 (with the exception of the US) decided on clear measures for implementing the Paris Agreement and commencing the global energy transition in line with the goals of the 2030 Agenda for Sustainable Development.*	*One of the key outcomes of the Climate and Energy Action Plan was the pledge to create an enabling environment that is conducive to making public and private investments consistent with the goals of the Paris Agreement.*

Table 9: List of climate policies to enable capital deployment

Module IP-C2: Identification and Mitigation of Risks

Your team should consider the risks relevant to the implementation of an Investment Plan, which may impact their ambition to achieve climate neutrality, mitigation techniques should be identified where necessary and where possible, these should align with the financial policies selected.

C-2.1: Textual element
The most imminent and “normal” risks are extensively listed and analysed in the table below. It’s worth noting that in several cases these risks are related also to behaviour, attitudes and choices of people. To work on these issues, we have started a closer collaboration with the faculty of Psychology also as part of our mission pilot project “1,5-Degree-City". Due to the relatively “healthy” status of finances and the strong legal/governance mandates in Turku (and Finnish/Nordic cities) as well as our approach of using several different funding sources, projects and partnerships, many of the risks listed below should be more or less “under control”. However, there are also considerable risks related to “larger” external factors and they are more difficult to manage. The aggression and war of Russia against Ukraine causes considerable risks to safety as well as to the functioning of energy markets in Europe. If the situation gets worse, it may have considerable further impacts on economies and funding. Another big group of risks is related to the already imminent and unpredictable impacts of climate change. Severe weather conditions and incidents may cause unforeseen costs and may shift some of the focus of the investments from mitigation (and longer-term adaptation) to immediate responses and even reconstruction. Even when, following all parts of the CoM SECAP model, we have analysed the risks, vulnerabilities and impacts and are implementing programmed adaptation actions, costs of Climate-related incidents may demand funds that otherwise could be invested to mitigation-related actions rather than to responses/repairs - and this could at least temporarily delay our path towards the goals.

Fields of Action	Sectoral Project	Risks Identified	Description of Risk	Mitigation of Risk
Transportation	*Increasing the use of sustainable means of transport*	*Stakeholders' engagement risks*	*The inhabitants of the city stick to their old means of transport instead of changing to more sustainable alternatives*	*Effective communication, understanding stakeholders' needs. Support (e.g. financial) for changing to climate-friendly solutions.*
	Infrastructure for sustainable transport	*Climate risk*	*Weather and climate risks cause challenges to road infrastructure; slipperiness, rail network and road maintenance problems, the risk of railway embankments and roads collapsing increases.*	*Road maintenance, preparation for additional maintenance costs, distribution of maintenance resources to affected areas, real-time communication of impaired conditions to users and maintenance*
	Increasing the use of electric vehicles	*Asset transition risk*	*Transition risks are mainly caused by changes in the price of assets that result from the transition to a more carbon-neutral society. Electric vehicles tend to be valuable assets, but the transition will entail some uncertainties regarding asset transition. Electrification of the car fleet is, for example, likely to*	

			have an effect on the value of gasoline cars.	
	Increasing the use of electric vehicles	*Economic risk*	*Acquisition and maintenance costs of the vehicles and infrastructure required (for electrification). Impact on electricity price*	*Ensuring sufficient electiricity generation capacity and resources for maintenance and development of charging instrastructure.*
	Increasing the use of electric vehicles	*Technical risk*	*Operational reliability of electric vehicles and availability of parts*	*Ensuring working logistics*
	Increasing the use of electric vehicles	*Safety risk*	*Electric vehicles are almost silent, which may increase collision risk with pedestrians and cyclists. Issue is being addressed by legislation.*	*Legislation, traffic safety measures*
Built Environment	*Increasing the amount of buildings with a low carbon footprint*	*Economical risk*	*Recent cost increases also in the building sector may reduce willingness and ability of companies to commit to building climate-friendly properties.*	*Subsidies, promoting R&D of materials that are both cost-effective and sustainable*
Energy Generation	*Decrease the amount of logging to increase carbon sinks*	*Policy- related and economical risk*	*Use of wood as fuel or resource for bio-based products may put pressure to increase loggings.*	*Ensure sustainable management of city's own forests; provide information and encourage forest owners to protect carbon sinks*
	Use of biomass	*Regulatory risk*	*Changes in classification of biomass as a carbon neutral fuel*	*Follow regulatory framework development; shift non-combustion renewables*
	Fossil- free electricity plants (such as SMRs and wind or solar power plants)	*Technical / regulatory risk*	*Difficulties in finding locations that are suitable for new forms of energy generation as well as accepted among the general public*	*Informing the general public about the pros and cons and low risks associated with new technology.*
	Low-emission energy generation	*Technical/ administrative risk*	*Delays in the building process and commissioning of new facilities for energy production.*	*Ensuring smoother building permit processes.* *Ensure sufficient communication and use participatory methods to address the concerns of inhabitants early in the planning process.*
	Low-emission energy generation	*Technical risk*	*Availability of necessary parts and installation services in projects, e.g. solar panels.*	

	Low-emission energy generation	*Market-specific/ technical risk*	*Generally failed investments in new technologies.*	
	Low-emission energy generation	*Capacity and capability risks*	*Unevenness of electricity production and susceptibility to disturbances.* *The replacement of fossil fuels with the production of renewable energy with the electrification of the energy system eliminates the combined production of electricity and heat. During peak demand (e.g. severe frosts) there may be challenges for the efficient operation of the energy system.*	*Developing own energy production and improving energy efficiency.* *Use of smart electrical systems (incl. electrical storages) are to respond e.g. to the need to adjust variable production and changes in the energy market.* *Several network companies are switching to underground cabling, which aims to ensure the weather reliability of distribution networks and which significantly reduces the probability of power outages. Some of the network companies develop operational reliability, for example, by speeding up repair and maintenance activities, moving power lines to the sides of roads, taking care of rolling forests of power lines and/or installing coated open conductors.*
	New policies	*Economical risk*	*For example, carbon pricing mechanisms, supporting low-emission energy sources and energy efficiency may cause effects on financial markets.*	
Green infrastructure and Nature Based Solutions	*Increased amount of vegetation in the city area*	*Policy-related risks*	*Conflict of interests between increased vegetation in public areas and more compact building or land use planning.*	*Pay attention to green areas in the land use and building planning process. Try to direct the building of new residential or office districts to regions with no significant green areas.*

	Increased amount of vegetation in the city area	*Technical risk*	*Fitting both vegetated roofs and solar panels on the same roofs can be challenging.*	
	Climate-friendly zoning and land use	*Institutional risk*	*Complaints regarding land use plans can be time consuming, resulting in a delay in implementing sustainable land use plans*	*Better access to information by the public as well as use of participatory metods usually leads to less complaints*
	Increasing vegetation carbon sinks	*Climate/ environmental risk*	*Slow vegetation growth*	*Different kinds of trees/ plants have different growth rates. Focus on variation in the selection of trees when planning green areas and planting new trees.*
Waste and Circular Economy	*Improved reuse and recycling*	*Capacity and capability risks*	*Lack of experience among different actors*	*Development of competence among companies in the waste management, reuse and recycling business. Better information regarding recycling possibilities for the city inhabitants.*
	Improved reuse and recycling	*Technical or safety risk*	*Lack of knowledge on different materials and substances*	
Cross-cutting	*Promoting climate work of stakeholders*	*Reputation risk*	*Pressure of e.g. companies to look climate-friendly may lead to greenwashing. Reputation risk if the city is promoting climate action of such companies.*	*Careful consideration of how to promote the climate work of companies*
	Stakeholder engagement	*Stakeholder engagement risk*	*Getting all stakeholders to work in the same direction is hard to achieve and is also time-consuming*	*Campaigns, information, co-operation between different stakeholders. Enable stakeholders to meet and plan long-term actions and strategies together.*
	Increased number of climate-friendly solutions	*Regulatory and stakeholder engagement risks*	*The city strategy is different from the goals and strategies of private companies*	*Reach mutual solutions together with the companies, encourage smart solutions and prove that they are viable also for the companies' point of view*
		Economical risk	*Some companies may experience existential threats during global transition to a greener economy. Company*	

			bankruptcies or new companies entering the market also have an impact on the city's economy.	
	Climate work	*Reputational risk (also positive)*	*The effectiveness of climate action affects the image of the city and its attractiveness*	

Table 10: List of Project level Risks

Module IP-C3: Capacity Building and Stakeholder Engagement for Capital and Investment Planning

You should assess and finally work to develop internal capacity and capabilities, working with both internal and external stakeholders to accelerate the transition to climate neutrality by 2030.

C-3.1: Textual element

Public participation, openness, co-creation and partnerships are key elements in Turku's Climate Plan. In Turku everyone has an explicit right to take part in Climate Action and the implementation of the Climate Plan – and the transition towards sustainable living and green economy is a joint vision and effort of the city, citizens, companies, civic society and other partners. Companies and other civic society entities take part in the shared Climate Team of Turku with their own climate actions. At the moment, the team has over 120 companies and entities as members, each contributing with their own actions, which is key to achieving all the needed "remaining" emission reductions before 2029 and creating the sustainable society and advancing green transition together, resultfully. As of today, 22 partners were invited and joined the Turku Climate City Contract and more members of Turku Climate Team (of companies) will be invited to join during the next phases. Below (table 11) are listed the current signatories plus five other companies/partners that are in crucial roles in the implementation of the CCC goals, actions and investments.

Participation of private sector in reaching the climate neutrality is crucial. Turku encourages all companies and organisations to join the city's "Climate team" network by making a climate pledge. The system is based on the SECAP card models are made to serve both the city's own organization as well as Turku City Group's subsidiary communities entities and other operators. The climate actions of the Climate team are reported on the Carbon neutral Turku website and given visibility in the city's communication channels. The goal is to activate citizens, communities, companies and universities – the entire civil society – to create climate measures and implement a carbon-neutral Turku. The capacity building happens through Turku's Mission pilot project "1,5 degree city", in which co-operation with stakeholders will be developed.

Building capacity for investment plan happens internally and externally. By acting responsibly, the city of Turku and the Turku City Group's subsidiary communities entities can significantly reduce the direct and indirect greenhouse gas emissions caused by their operations, demonstrate climate leadership and set a good example. At the same time, they renew and develop their operations, implement Turku's strategy and values, and together create the story of a carbon-neutral Turku. As outlined in the Mayor's programme 2021–2025, Turku will take climate budgeting into use. The climate targets will be taken into account especially in decision-making concerning land use, energy, construction and mobility. In accordance with the mayor's agreement, Turku will introduce climate budgeting as part of the development of the visibility of the implementation of climate goals and the monitoring of goals. Building capacity with Turku City Group's subsidiary communities is going strong, but still needs on going work.

The carbon-neutral Turku 2029 investment program has a strong impact on the climate and circular economy goals, and it also has a follow-up phase. As a result of the further stages, the 2025 budget of the city and Turku City Group's subsidiary communities will have a climate budgeting package that also includes the circular economy and is compatible with the EU's taxonomy of green finance. The Turku City Group's subsidiary communities entities have recorded climate goals in their scorecards for 2023, according to which the entities will implement the Turku Climate Plan, also aiming to develop their own operations to become carbon neutral by 2029. As a common goal, the communities have committed to develop their mobility solutions and/or work sites to be carbon neutral by 2025. The achievement of the goals is measured by monitoring the development of movement and construction site emissions, or by calculating the development of the share of non-fossil

vehicles in the community's vehicle fleet or the share of emission-free construction sites in the community's operations. The communities also participate with their investments in the Turku Group's joint climate budgeting development work, aiming to implement the Green Transition in accordance with the EU taxonomy.

To build capacity internally, city of Turku have organized Taxonomy trainings. The work is still on going and capacity will be developed. Taxonomy trainings have been organized because before that only a few employees had knowledge of taxonomy. The taxonomy training has balanced increased taxonomy competence within the city organization. The tranings were organized for workers who work with Infrastructure and building investments and executing them. The taxonomy training is a course-like entity that is divided into six webinars, each of which deals with one of the themes of the taxonomy's environmental goals. In addition, the Turku approach to climate change adaptation has been developed in spring 2023, which aims to combine the regional climate risks defined in the Turku climate plan with the requirements of the taxonomy's technical evaluation criteria.

Stakeholders involved	Network	Influence	Interest	Level and type of Engagement
Turun Teknologiakiinteistöt Oy	Turku Group's subsidiary company	Considerable influence on venues for companies	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: sustainable facilities
Turun Ylioppilaskyläsäätiö - TYS	Turku Group's subsidiary company	Main provider of student housing	Sustainable living	Active contributor in Turku Climate Plan and actions: energy-positive student housing
TVT Asunnot Oy	Turku Group's subsidiary company	Largest provider of flats (for rent) / social housing	Sustainable living	Active contributor in Turku Climate Plan and actions: sustainable housing/ living
Varsinais-Suomen Asumisoikeus Oy	Turku Group's subsidiary company	Considerable provider of different types of housing in the area	Sustainable living	Active contributor in Turku Climate Plan and actions: sustainable housing/ living
Turku City Data Oy	Turku Group's subsidiary company	City data	Sustainable city and business development	Dialogue on data-solutions for climate work
Turku Science Park Oy	Turku Group's subsidiary company	The main "triple-helix" organisation for innovation and development in the area	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: Innovations for green transition of businesses
Turun musiikinopetus Oy	Turku Group's subsidiary company	Music education	Sustainable living	Education
Turun aikuiskoulutussäätiö	Turku Group's subsidiary company	Adult education	Sustainable living	Education
Turun Ammattikorkeakoulu Oy (Turku University of Applied Sciences)	Turku Group's subsidiary company	Education, applied research, development and innovation, projects and partnerships	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: competencies, innovations for sustainable future

Lounais-Suomen Jätehuolto Oy	Turku Group's subsidiary company	Regional waste / circular economy company	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: circular economy solutions and practices
Turku Energia Oy	Turku Group's subsidiary company	Main energy company in the area, provider of district heat and cold	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: carbon-neutral energy system
Turun Satama Oy	Turku Group's subsidiary company	Harbour company	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: sustainable logistics
Forum Marinum Säätiö	Turku Group's subsidiary company	Maritime museum /center	Sustainable city and business development	Sustainable practices
Turun kaupunginteatteri Oy	Turku Group's subsidiary company	City Theatre	Sustainable living	Active contributor in Turku Climate Plan and actions: sustainable service and access
Arkea Oy	Turku Group's subsidiary company	Provider of of food and other services	Sustainable living	Active contributor in Turku Climate Plan and actions: low-carbon footprint of services
Kaarea Oy	Turku Group's subsidiary company	Provider of food for schools	Sustainable living	low-carbon footprint of services
Kuntec Oy	Turku Group's subsidiary company	Construction and maintenance company	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: green construction
Turun kaupunkiliikenne Oy	Turku Group's subsidiary company	Public transport	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: carbon-neutral bus-services by 2025
Turun seudun puhdistamo Oy	Turku Group's subsidiary company	Regional waste water treatment (13 municipalities)	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: district heat and cold from waste-waters and sludge for biogas / part of energy-positive water system
Turun Seudun Vesi Oy	Turku Group's subsidiary company	Regional Water Company	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: part of energy-positive water system
Turun Vesihuolto Oy	Turku Group's subsidiary company	Turku Water Company	Sustainable city and business development	Active contributor in Turku Climate Plan and actions part of energy-positive water system

Turku 2029 -Säätiö	Turku Group's subsidiary company	Foundtation	Sustainable city and business development	Sustainable practices
Visit Turku Archipelago Oy	Turku Group's subsidiary company	Turku and Archipelago tourism	Sustainable living	Active contributor in Turku Climate Plan and actions
Turun Taiteen talo Oy	Turku Group's subsidiary company	House of the Arts, venue for cultural acitivities	Sustainable living	Reuse and sharing of space, sustainable practices
Blue Industry Park Oy	Turku Group's subsidiary company	Developing /regenerating focus area for green industries	Sustainable city and business development	Green transition of industries
Turun Yliopisto (University of Turku)	Turku's Climate Team network for companies	University	Sustainable city and business development	Active contributor in Turku Climate Plan and actions: knowledge-basis, education, projects
Varha (South-west Finland Welfare Area)	Turku's Climate Team network for companies	Largest public authority / agency in the area	Sustainable city and business development	Sustainable practices, investments and procurement
Seurakunta (Turku and Kaarina Congregation)	Turku's Climate Team network for companies	Evangelic-Lutheran churches in Turku and area	Sustainable living	Sustainable practices, own climate-neutrality program 2029
Bayer	Turku's Climate Team network for companies	Large Medical and Diagnostics Company	Sustainable city and business development	Has already reached Climate neutrality in actions in Finland.
Meyer	Turku's Climate Team network for companies	Large Cruise Ship building Company	Sustainable city and business development	Is developing Climate neutral shipyeard

Table 11: Stakeholder Engagement Mapping