

Helsinki

Carbon-neutral Helsinki Action plan

update 2024



City of Helsinki, publications of the Central Administration 2024:26

Publication name: Carbon Neutral Helsinki Action Plan update 2024

<https://ilmasto.hel.fi/en/>

Publication year: 2024

Lay-out: Innocorp Oy, 2024

Photos: City of Helsinki Material Bank

ISBN 978-952-386-464-1 (pdf)

ISSN-L 2242-4504

ISSN 2242-4504 (printed publication)

ISSN 2323-8135 (online publication)



Contents

Emissions reduction target and development	4
Emissions reduction target	4
Key sources of emissions	5
Heating	5
Transport	6
Electricity	7
Development and monitoring of emissions	7
Principles of the emissions reduction plan	8
Definitions for the actions	8
Target monitoring and updates to the actions	9
Management	10
Other climate-related work	10
Sources	11
APPENDIX 1: Actions in the emissions reduction plan	12
Previous policies and their progress	12
Actions approved in 2022	13
New actions for 2024	14
CLASS 1: Emission reduction measures	15
CLASS 2: Necessary measures to reduce emissions	16
CLASS 3: Studies to define new emission reduction measures	17
APPENDIX 2: Actions in the Carbon-neutral Helsinki 2035 Emissions Reduction Plan	18
APPENDIX 3: Cost effects of emissions reductions	24

Emissions reduction target and development

Emissions reduction target

Helsinki has set a target of becoming carbon-neutral by 2030, attaining carbon zero status by 2040 and aiming to become carbon-negative afterwards (City of Helsinki 2021).

The objective of this emissions reduction plan is carbon neutrality, i.e. reducing the direct emissions level of the year of comparison, 1990, by at least 80% by 2030 and compensating for the remaining emissions (up to 20%). In the later objective of attaining carbon zero status, the option of external compensation will no longer be available: the emissions must be reduced down to a level where the City's own carbon sinks can compensate for the remaining emissions. The actions determined for achieving the objectives are presented in Appendix 1.

In 2022, the total direct emissions of Helsinki were 2,637 kt CO₂e, which means that the emissions were reduced by 25% from the year of comparison, 1990 (Figure 1). The numerical target for the total emissions reduction is 80% by 2030. The target applies specifically to direct emissions, i.e. emissions generated within the city's geographical borders. Even so, some actions are also aimed at indirect ('Scope 3') emissions.

- Emissions in 1990: 3,514 kt CO₂e.
- To achieve the carbon neutrality target, we must reduce emissions from the 1990 level by 80%, or 2,812 kt CO₂e, at the minimum.
- Only up to 20%, 703 kt CO₂e, can be compensated for.

Direct emissions 2000–2022

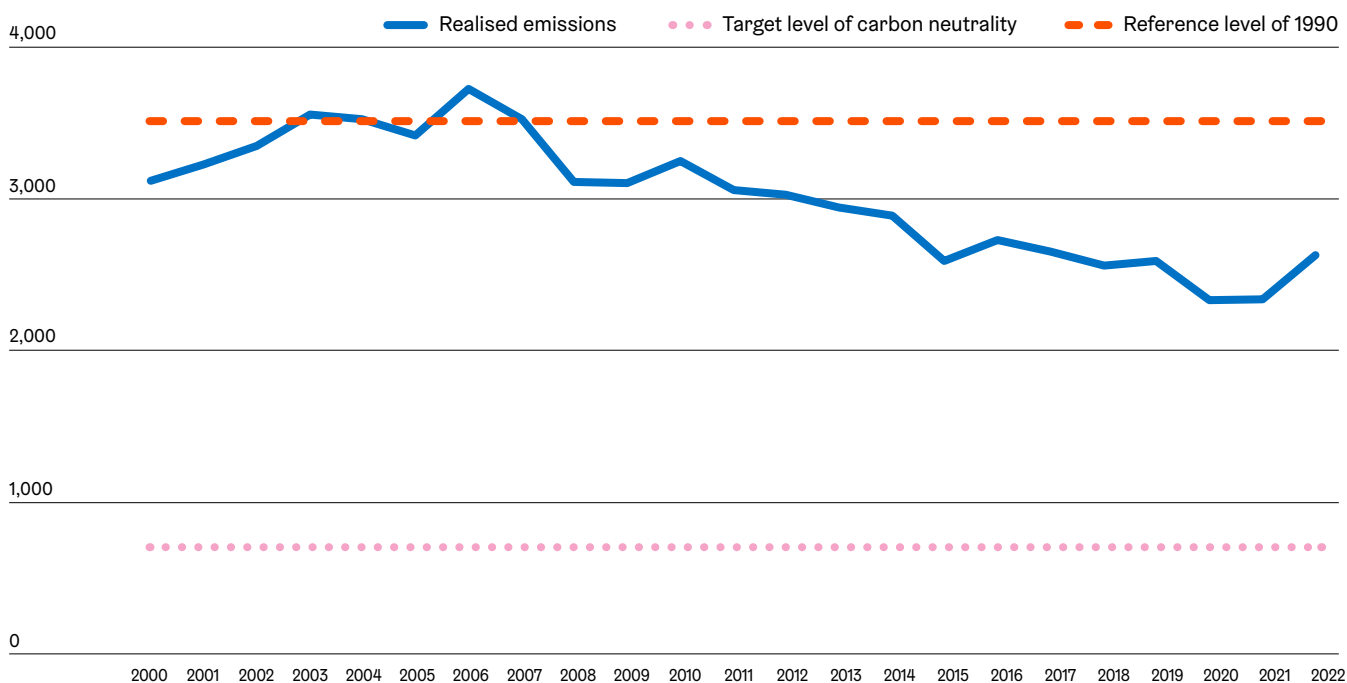


Figure 1. Development of total direct emissions (kt CO₂e) in Helsinki in 2000–2022 (HSY 2023).

Key sources of emissions

In Helsinki, the most significant sources of direct emissions are heating, transport and electricity (Figure 2). The action plan focuses especially on emissions reductions in these sectors.

Heating

Of the direct emissions in Helsinki, a significant majority (62%) come from heating. The emissions from heating are influenced by the amount of heating consumed and the emission factor for heating production. The amount of heating required can primarily be influenced by improving energy efficiency, while the emission factor of heating production can be influenced with zero-emission production methods.

A significant proportion of the emissions from heating in Helsinki (96%) comes from district heating consumption. As such, the specific emission factor for district heating production (an indicator in Helen's development programme) heavily dominates the emissions development (Figure 3).

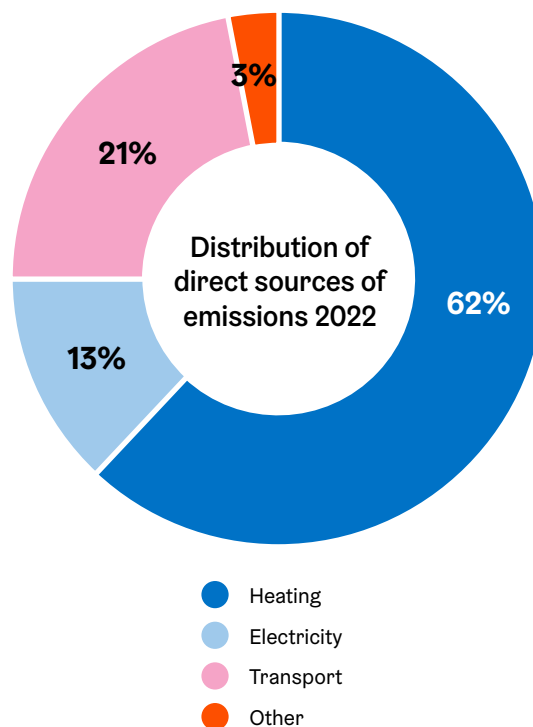


Figure 2. Distribution of direct sources of emissions in Helsinki in 2022 (HSY 2023)

The specific emissions of district heating 1990 and 2000–2022

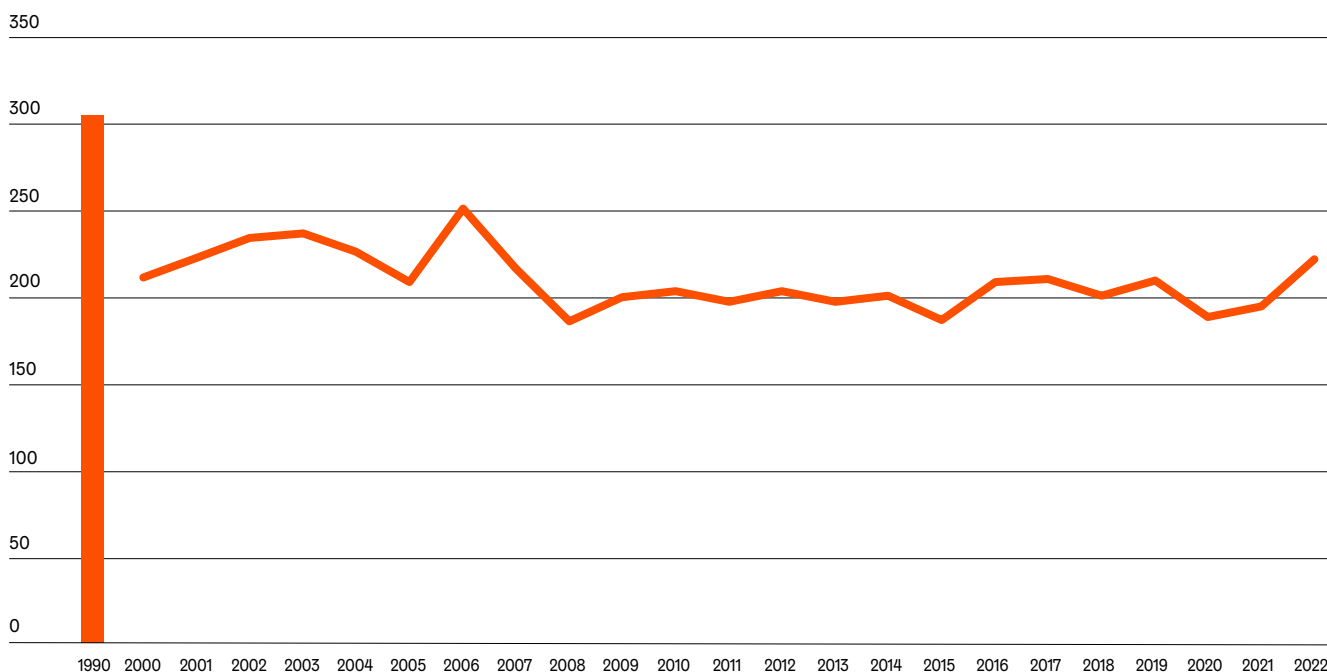


Figure 3. Specific emissions from district heating (g CO₂e per kWh) in Helsinki in 1990 and 2000–2022 (HSY 2023)

The total amount of heating energy in Helsinki has not changed very much over the years (Figure 4). In this context, 'heating energy' includes district heating and oil heating, whereas electricity used for heating is included in electricity consumption. Even as the city has grown rapidly, we have been able to take energy efficiency measures to cut down the need for additional energy caused by the growth. The systematic improvements to energy efficiency made since 2020 can no longer be seen in the development due to the long construction cycle. However, we presume that the need for heating energy will decrease over time thanks to these measures. In the estimate for total emissions from heating, we have presumed that the consumption of district heating will not decrease (~6,300 GWh/year). However, if the total consumption of district heating decreases by 10% from the current level, it would reduce the total BAU emissions of 2030 by 7%. Com-

pared to the emissions level of 1990, the emissions would decrease from -69% to -71% thanks to the above.

Transport

The second-largest emissions sector in Helsinki is transport (21%). Emissions from transport are influenced not only by mileage, but also the specific emissions of the modes of transport used. Most transport emissions (56% in 2020) come from passenger car traffic, with heavy traffic accounting for 20%, buses for 6% and ship traffic for 16% (HSY 2022). As for mileage, the most impactful measure is reducing the volume of passenger car transport. The specific emissions of modes of transport can best be influenced by moving on to low-emission motive power. The total emissions from transport are already on the decrease, but development without additional measures will lead to a significantly lower emissions reduction than desired for transport by 2030 (Figure 5).

Consumption of heating 1990 and 2000–2022

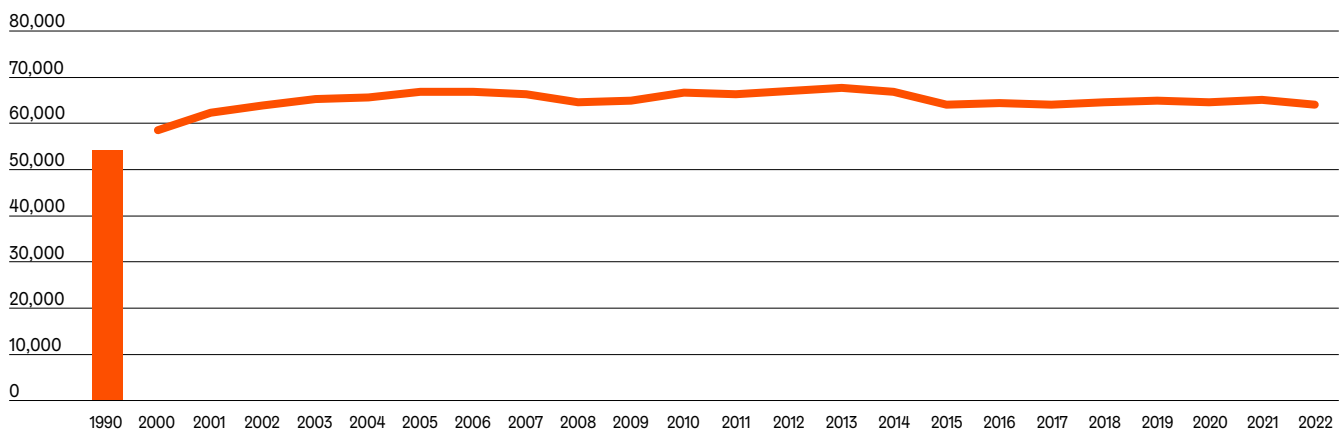


Figure 4. Heating consumption (GWh) in Helsinki in 1990 and 2000–2022 (HSY 2023)

Emission development of transport 2005–2022

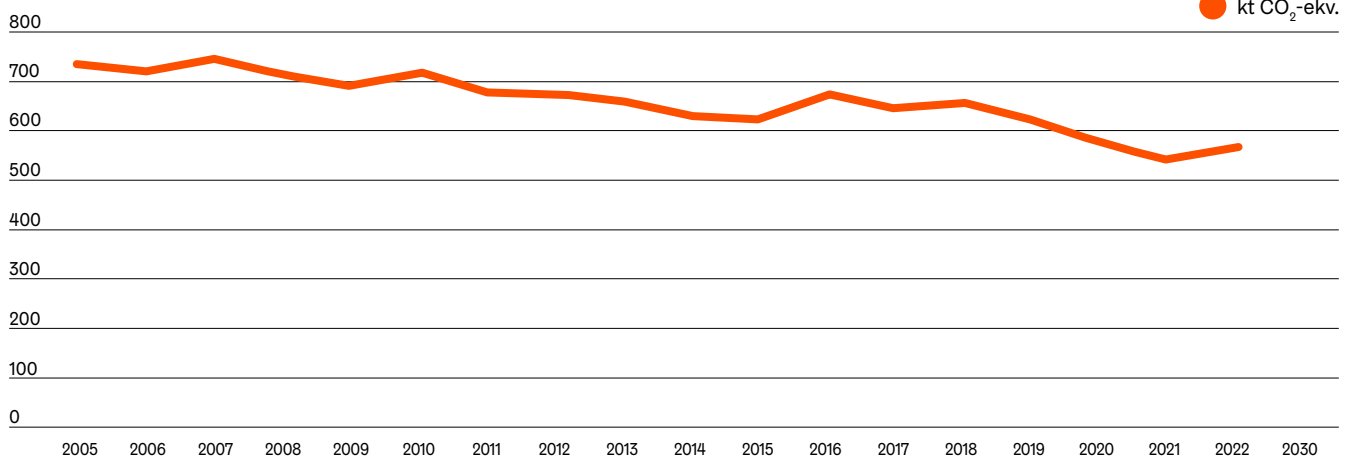


Figure 5. The emissions from transport (kt CO₂e) in 2005–2022 (HSY 2023)

Electricity

Of the direct emissions in Helsinki, 13% come from the consumption of electricity. The emissions from electricity consumption are influenced by the amount of electricity and also the emission factor for electricity production. The emission factor for electricity production is currently decreasing rapidly (Figure 6); even now, as much as 72% of electricity produced in Finland is CO₂-free. However, electricity consumption will likely increase over time as vehicles and heating are being increasingly powered by electricity, but this increase in consumption will be compensated by the rapidly developing cleanness of electricity production.

Development and monitoring of emissions

An essential indicator to follow is the development of total direct emissions in Helsinki (Figure 7). Emissions are being monitored by using a verifiable calculation model. To ensure the availability of up-to-date information, our aim is to accelerate the assessment cycle. At the moment, the realisation of direct emissions (Scopes 1 and 2) is being monitored through the shared GHG emission calculation system of the Metropolitan Area, produced by the Helsinki Region Environmental Services Authority (HSY). The monitoring is based on the Global Protocol for Community-Scale Greenhouse Gas Emission Inventories (GPC) and built on the framework of the IPCC's calculation methods and parameters for national emission inventories and emission factors for fuel classifications as defined by Statistics Finland (more information on the method: HSY 2022A).

Emission development of electricity consumption 1990 and 2000–2022

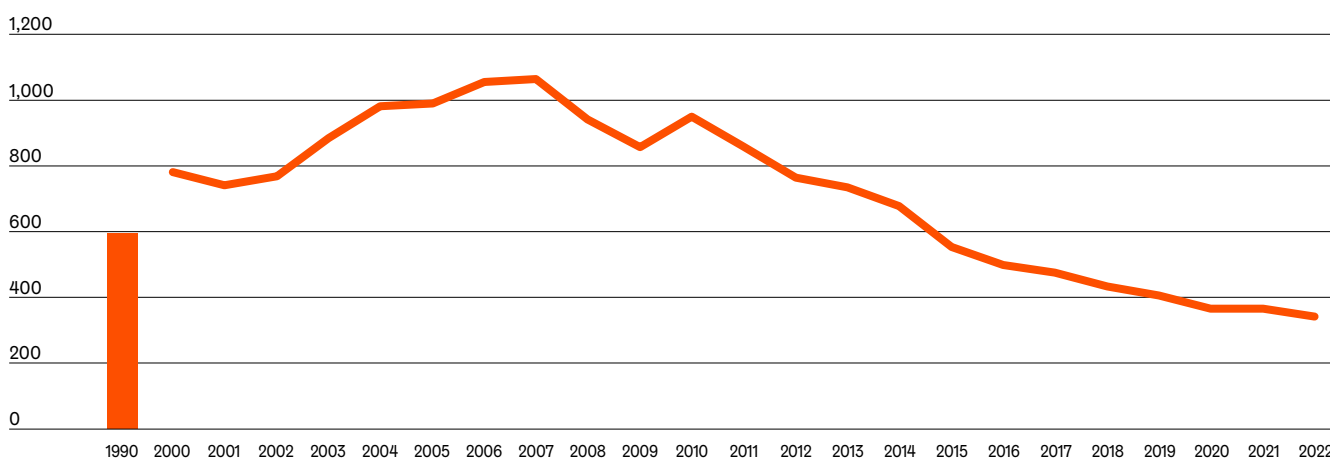


Figure 6. The emissions from electricity consumption (kt CO₂e) in 1990 and 2000–2022 (HSY 2023)

Toteutunut päästökehitys 1990–2022

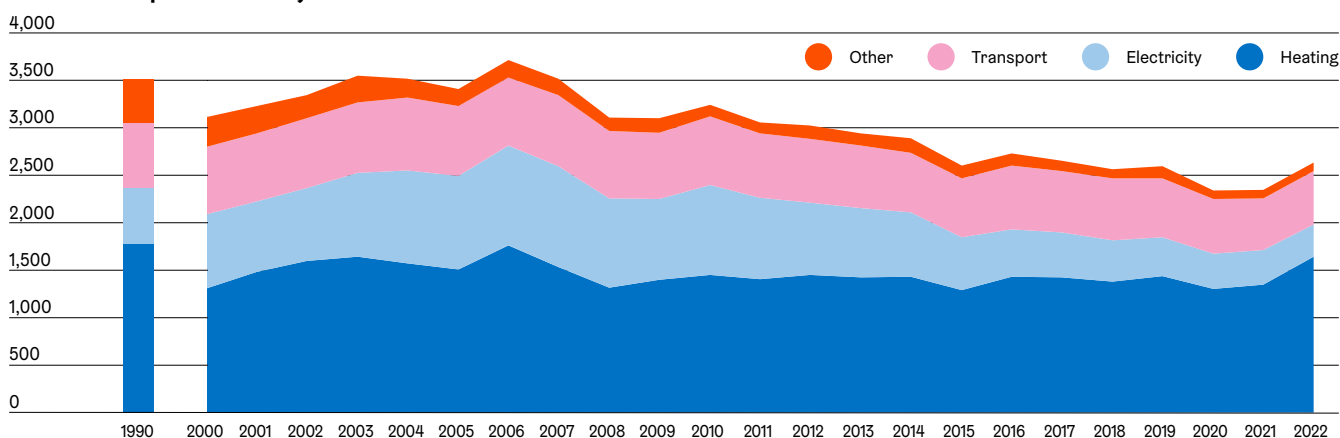


Figure 7. Development of total direct emissions (kt CO₂e) in Helsinki by sector in 1990 and 2000–2022 (HSY 2023)

Principles of the emissions reduction plan

Definitions for the actions

The purpose of the actions is to realise the objective in question. When operating on a tight schedule and with limited resources, the impact of the actions to be selected into the plan is emphasised. To ensure sufficient impact, most actions will be directed so that, instead of short-term pilots, the operations' continuous change towards the target will be ensured. For example, cooperation on projects and networks will only occur when they significantly support the achievement of strategic objectives. In the action preparation phase, we will ensure that the actions' additionality, impact on emissions reductions, indicators, cost effects and parties responsible will be defined clearly and that the actions are justified.

The additions ensure that resources in the plan are allocated primarily to actions that are not already con-

nected to policy work or actions that have been defined elsewhere. This plan will only include such actions that would not be realised without the support from the plan and that are essential for the achievement of the emissions reduction target. The definition of the actions is tied to sector-specific scenarios for direct emissions. With them, we can ensure that the gap between the BAU development and emissions reduction target is bridged. The impact on emissions reductions will be defined for class 1 actions that promote direct emissions reductions. For class 2 and 3 actions, the impact is not calculated, as they have an indirect impact on the emissions reductions, they are difficult to verify, and they are strongly dependent on the premise selected.

As for previous and currently proposed actions, 50% of the actions will reduce emissions directly, 31% will facilitate emissions reductions, and 19% involve surveys to determine new emissions reduction actions (Figure 8).

The actions are divided into three classes based on their impact on the emissions reductions. The distribution of the classes will be monitored annually:

1. Actions that reduce emissions: the action has a direct impact on the sectors selected as focal areas; moving forward, most new actions will be in this class.
2. Required actions that facilitate emissions reduction: the action is a prerequisite for implementing the class 1 actions, even though the action itself does not involve a direct impact on the emissions reductions.
3. Surveys to determine new emissions reduction actions: the actions require additional preparation or studies with the aim of preparing class 1 and 2 actions.

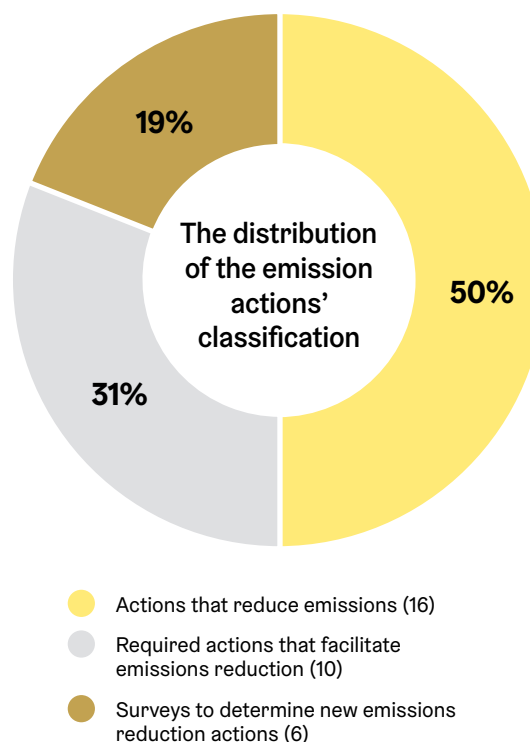


Figure 8. The distribution of the emission actions' classification



An indicator determines what is the essential aspect to monitor in terms of the action and the level at which the action can be considered to be completed. The indicators will be monitored at the same cycle as the total emissions, and they will include a target schedule whenever possible. Reviewing the cost effects is a way to ensure that an action is realisable with the resources being used or allocated separately. The party responsible is an unambiguous definition of who is responsible for implementing an action and/or the coordination of any cooperation required by it. In principle, only these operators are involved in the work on the plan.

Target monitoring and updates to the actions

There are about two council terms left to achieve the carbon neutrality target. In order to rapidly react to factors that influence technological development, political and other types of guidance and other emissions, the actions will be updated annually, moving forward. Sets of actions that extend over a council term are no longer suitable. With carefully targeted monitoring, we can ensure that we are making progress towards the emissions reduction

target. Monitoring will be carried out annually to define the sufficient additional actions. Based on the monitoring, necessary actions based on the latest information may be added to the plan regularly. The Ambitious Climate Responsibility programme group will report on the target monitoring to the City Board every autumn, about 6 months before the closing of the accounts. The reporting will pay special attention to the definition of the emissions reduction actions, the progress of the actions, and additional actions when they are needed.

Moving forward, the actions in the emissions reduction plan will be updated annually and approved as a part of the budget proposal. In connection with this, reports will also be submitted for the realised emissions development by sector and the estimated impact of new actions proposed on future emissions development. In connection with the update, we will ensure that the new additional actions will support the achievement of the emissions reduction target even when we have fallen behind from the target in the previous periods. This approach corresponds, for the relevant parts, to the programming method of the City of Oslo called the climate budget.

The key indicator for monitoring is the development of the city's total emissions. The progress on the target will also be monitored through the following sector-specific indicators:

- specific emission factor for district heating (an indicator in Helen's development programme);
- total heating consumption;
- total emissions of transport; and
- emissions of electricity consumption (including the volume of electricity consumed and the emission factor for electricity production).

In addition to this, the distribution of the actions' emission classification and the progress on individual actions will be monitored when this is necessary for seeing the strategic overview, maintaining a picture of the situation and allocating resources appropriately. The indicators for individual actions are defined when the action is established. Indirect emissions, i.e. consumption-based Scope 3 emissions, will be taken into consideration in a more goal-oriented manner. As for these indirect emissions, the focus will be on construction emissions, based on impact and the City's strategy policies so that the City will make a difference through its own actions.

A platform based on the plan's structure has been established for monitoring the emissions reduction plan.

In the future, the suitability of the existing monitoring practices and networking will be assessed in terms of their contribution to achieving the targets. Additional monitoring practices and networks will be abandoned if they do not add significant value for the work on emissions reductions. Based on this review, it has already been decided that CDP reporting will cease.

For its part, the Carbon-neutral Helsinki Action Plan supports several of the UN's sustainable development goals (SDGs), and progress is also reported in the City's VLR report.

Management

The Climate Unit within the Urban Environment Division will be in charge of the coordination, updates, monitoring and continuous development related to the CNH plan.

Ambitious climate responsibility, and the CNH plan as a part of this, is one of the City's four cross-administrative strategic programmes. The work will be directed by the plan working group chaired by the Mayor.

The steering of companies owned by the Helsinki Group is ensured through Group steering, as defined in the administration model.

Other climate-related work

Actions that influence direct emissions and that are carried out as a part of official work have not been included in the CNH plan. Actions related to indirect emissions have mainly been excluded. They will be supported and monitored through the Environment and Climate Network coordinated by the Environmental Management Team and the Climate Unit of the Urban Environment Division. The network includes experts that are responsible for environmental and climate-related work in public divisions and enterprises. HSY will be the primary operator to carry out consumption-related influencing and communication directed at residents, based on the City's strategic steering.

The first Carbon-neutral Helsinki Action Plan (City of Helsinki 2018) included many actions that focused on indirect emissions (actions #90–#128, in particular). Some actions were completed during the first period of the plan. Some actions were integrated into other operations, and their implementation will continue as a part of ordinary official work. The actions that require separate resourcing and where the implementation is still underway have been transferred to the City's other action plans where relevant (Appendix 2).

In accordance with the existing ownership strategies, most of the City's subsidiary communities have prepared or are about to prepare carbon neutrality plans, through which they can contribute to the City's carbon neutrality objectives. In the new City Strategy, A Place for Growth (City of Helsinki 2021), it is stated that the energy company Helen must update its own development programme. In addition to this, the Port (Port of Helsinki Ltd 2023), Heka (Helsingin kaupungin asunnot 2024) and Metropolitan Area Transport (Metropolitan Area Transport Ltd 2024) all have their own emissions reduction plans. The City's subsidiary communities carry out their climate work independently, and they are directed through ownership steering. The steering of subsidiary communities' climate work will be developed as needed and supported by the Climate Unit and the Environmental Management Team of the Urban Environment Division.

In the work on the Carbon-neutral Helsinki Action Plan, the indicators of key subsidiary communities will be monitored insofar as they significantly impact the City's total emissions development. An essential indicator is the specific emission factor for district heating as defined by the energy company Helen, which has a direct and significant impact on the City's heating emissions.

Sources

Helsingin kaupungin asunnot Oy. (2022). Heka's Corporate Responsibility Plan. Referenced: 30 January 2024. Available at: <https://www.hekaoy.fi/en/about-heka/responsible-heka/>.

City of Helsinki. (2018). Carbon-neutral Helsinki 2035 Action Plan. Publications of the Central Administration of the City of Helsinki 2018:4.

City of Helsinki. (2021). A Place for Growth – Helsinki City Strategy 2021–2025. Referenced: 30 January 2024. Available at: <https://www.hel.fi/en/decision-making/decision-making/strategy-and-economy/strategy>.

Port of Helsinki Ltd. (2023). Carbon-neutral Port. Referenced: 30 January 2024. Available at: <https://www.portofhelsinki.fi/en/about-us/responsibility/environmental-responsibility/a-carbon-neutral-port/>.

HSY Helsinki Region Environmental Services Authority. (2022). Development of the specific emission factor for district heating. Internal report.

HSY Helsinki Region Environmental Services Authority. (2023). Greenhouse gas emissions in the Helsinki Metropolitan Area. Referenced: 29 January 2024. Available at: <https://www.hsy.fi/en/air-quality-and-climate/greenhouse-gas-emissions/>.

Metropolitan Area Transport Ltd. (2022). Carbon-Neutral Urban Transport. Referenced: 3 May 2022. Available at: <https://kaupunkiliikenne.fi/en/responsibility/carbon-neutral-urban-transport/>.

Statistics Finland. (2023). Production of electricity and heat. Referenced: 29 January 2024. Available at: <https://stat.fi/en/publication/cl8mo29omxf8t0duky5aa8i1>.



APPENDIX 1:

Actions in the emissions reduction plan

Previous policies and their progress

CLASS 1: Actions that reduce emissions		
Theme	Action	Progress
Heating	Planning and implementing City facilities and service buildings so that the E value will be -30% of the national threshold value for the duty type class.	Well underway
Heating	Renovation projects on City facilities and service buildings will be implemented so that the E value will decrease by 34% of the buildings' original E value.	Well underway
Heating	Requiring energy class A of residential blocks of flats (high-rise class 2) in the property conveyance conditions.	Carbon footprint steering adopted
Heating	Requiring energy class A of residential blocks of flats (high-rise class 2) in detailed planning.	Carbon footprint steering adopted
Heating	In detailed planning, buildings other than residential ones will be required to be of a class that is -20% of the national norm set for that type of building.	Well underway
Heating	The main heating system selected for the City's facilities and service buildings will be a heat pump system if its repayment period is under 15 years and its implementation is technically feasible.	Well underway
Transport	Exchanging City-owned passenger cars for electric cars in 2021–2025.	Not on schedule: Delays in the construction of charging stations; cars have not been replaced as planned.

CLASS 2: Required actions that facilitate emissions reduction		
Theme	Action	Progress
Heating	Launching Energy Renaissance guidance services.	Done
Heating	Allowing the construction of geothermal heating systems in public areas.	Done
Transport	The property conveyance conditions will require that new sites' parking spaces be implemented so that they are electrified and one third of the spaces are equipped with a charging station.	Well underway
Transport	Implementing the Cycling Promotion Programme.	Not on schedule. Indicators to be monitored: Building the target network in the inner city: 50.0 km (target of 140 km); construction of the cycling network: 18.3 km (target of 150 km); proportion of cycling of all modes of transport: 9 % (target 20%).

Actions approved in 2022

CLASS 1: Actions that reduce emissions		
Theme	Action	Progress
Heating	Adjusting the ventilation in City facilities to an appropriate level.	Progressing moderately well
Heating	Lowering temperatures in City-controlled facilities	Done
Construction (Scope 3)	Low-emission concrete in infrastructure projects.	Done
Construction (Scope 3)	Reducing the emissions from the preconstruction at the Malmi Airport area by 50%.	Well underway
Electricity	Replacing outdoor lights with LED lights	Well underway

CLASS 2: Required actions that facilitate emissions reduction		
Theme	Action	Progress
Heating	Principles for low-temperature regional heating entities.	Done
Transport	Reprogramming the implementation plan for the Baana cycling network and target network up to 2030.	Well underway
Transport	Constructing charging stations for electric cars in line with the forecast on the number of electric cars.	Progressing moderately well
Heating, electricity	Establishing tendering processes for the energy solutions for City-owned facilities.	Not on schedule

CLASS 3: Surveys to determine new emissions reduction actions		
Theme	Action	Progress
Heating, construction (Scope 3)	Review on steering construction through the carbon footprint.	Done
Heating, electricity	Accelerating the energy efficiency improvements on City-owned properties outside renovation projects (Definition of the implementation process for energy surveys).	Well underway
Transport	Review of emissions reduction methods for transport.	Well underway
Transport	Promoting the definition of impactful regional emissions reduction measures on mobility.	Progressing moderately well

New actions for 2024

CLASS 1: Emission reduction measures		
Theme	Action	Responsible party
Heating	Implementing economically viable energy efficiency measures for office and service buildings managed by the City's Facilities service	Urban Environment Division
Heating	Energy management of city-owned office and service buildings	Urban Environment Division
Heating	Implementing heating method changes to city-owned office and service buildings that are heated with oil or direct electricity	Urban Environment Division
Construction (scope 3)	Discontinuing the use of lime cement as a binder in soil improvement	Urban Environment Division

CLASS 2: Necessary measures to reduce emissions		
Theme	Action	Responsible party
Transport	Building charging stations for electric cars on city-owned properties to make up the delay in the electrification of the car fleet	Urban Environment Division
Transport	Tendering for the electrification of ferries	Culture and Leisure Division

CLASS 3: Studies to define new emission reduction measures		
Theme	Action	Responsible party
Construction (scope 3)	Study on steering the procurement of natural stones used in public areas by introducing emission criteria	Urban Environment Division
Construction (scope 3)	Experiments reducing emissions during the construction phase in the city's own office and service building production	Urban Environment Division



CLASS 1: Emission reduction measures

ACTION: Implementing economically viable energy efficiency measures for office and service buildings managed by the City's Facilities service

The energy efficiency of the city's office and service buildings can be improved by implementing energy efficiency investments. Energy investments are mapped out in connection with energy audits that are carried out on the properties by consultants and internally by property managers and energy experts. Economically viable energy efficiency measures will be identified for each property during 2024–2026. The implementation and deployment of these measures will be streamlined and accelerated.

- Indicator: calculated energy savings of the implemented measures
- Emission reduction effect: in terms of energy savings, about half of the savings come from district heating and about half from electricity
- Energy saving effect: on average, the property's total energy consumption reduces by 5–30 per cent
- Cost effect: EUR 1,750,000; cost positive, as the savings achieved cover the operating costs and start to pay for themselves within 1–5 years, depending on the action
- Responsible party: Urban Environment Division

ACTION: Energy management of city-owned office and service buildings

The energy management of city-run office and service buildings helps to monitor, manage and optimise the energy consumption of properties. This is an outsourced service that involves using the property's remote control room, data and automation to analyse the functioning of the property's building technology and optimise it so that energy is not used

unnecessarily. The detected problems are addressed either through remote connections or by making a service request to the property maintenance to repair the fault. The service aims at good indoor air and energy efficiency, which means that the property would use only the amount of energy needed to maintain good conditions. Energy management services were piloted in autumn 2023, and the results are promising.

- Indicator: the service is in use and savings effects have been achieved Q4/2024
- Emission reduction effect: in terms of energy savings, applies to both electricity and district heating
- Energy saving effect: on average, each property covered by energy management reduces its total energy consumption by 5 per cent
- Cost effect: EUR 400,000; cost positive, as the savings cover at least the operating costs
- Responsible party: Urban Environment Division

ACTION: Implementing heating method changes to city-owned office and service buildings that are heated with oil or direct electricity

Energy transition projects will be implemented for one oil heated property and a few properties heated with direct electricity during 2024–2025.

- Indicator: calculated energy savings of the implemented measures
- Emission reduction effect: depending on the property's initial situation; significant in the case of oil heating
- Cost effect: EUR 600,000; cost positive
- Responsible party: Urban Environment Division

ACTION: Discontinuing the use of lime cement as a binder in soil improvement

The typical soil improvement method used on soft soil areas is deep stabilisation, which reduces settlements during use and improves stability. For several decades, a mixture of burnt lime and cement has been used as a binder in soil improvement, and it is still common on the market. However, the manufacture of lime cement generates heavy carbon dioxide emissions, both because of the fossil energy used in the process and as a reaction product. The emissions from binder manufacturing account for around 95 per cent of the total emissions from deep stabilisation when lime cement is used, so reducing the emissions from binder manufacturing can significantly reduce the scope 3 emissions from soil improvement. In recent years, several binders replacing lime cement have appeared on the market, containing recycled products as part

of the binder mixture. These recycled binder mixtures have a significantly lower emission impact than the traditionally used lime cement and have been found to perform at least as well as and, in some cases, even better than lime cement, both in the laboratory and in the field.

- Indicator: lime cement is not used as a binder in soil improvement, the design documents propose the use of a recycled binder mixture
- Emission reduction effect: -50–60 per cent of deep stabilisation emissions resulting from the use of lime cement as a binder
- Cost effect: cost positive, due to emissions trading estimated at -30 per cent compared to the use of lime cement as a binder
- Responsible party: Urban Environment Division

CLASS 2: Necessary measures to reduce emissions

ACTION: Building charging stations for electric cars on city-owned properties to make up the delay in the electrification of the car fleet

The Act on Consideration for the Energy and Environmental Impact of Vehicles in Public Procurement requires the city to gradually switch to emission-free purchases in its vehicle and transport service procurement. For this reason, the city has outlined in the Carbon Neutral Helsinki 2030 emissions reduction programme that the city's own passenger cars will be electrified at the end of their service life, which means that the car fleet will become fully electric between 2021 and 2025. Electrification has not progressed as quickly as planned due to challenges related to the construction of electric car charging points. In order to achieve the electrification within schedule, the construction of charging points for electric cars will focus on the city's properties that have passenger cars in work use.

- Indicator: number of installed charging points
- Emission reduction effect: enables emission reduction measures, no direct emission reduction effect
- Cost effect: EUR 600,000
- Responsible party: Urban Environment Division

ACTION: Tendering for the electrification of ferries

At its meeting on 27 June 2022, the City Board decided to prepare measures to accelerate the electrification of waterborne transport, which will guide the operators on the market towards emission-free solutions. The aim is to make half of the ferry traffic in Helsinki emission-free by 2030. In order to achieve this goal, the competitive tendering will start with the Pihlajasaari line (a total of three vessels), and the experiences gained from the procurement will be used in the tendering of the other ferry lines of the city.

Indicator: competitive tendering has been implemented, including a criterion for a zero-emission fully electric vessel

Emission reduction effect: enables emission reduction measures, no direct emission reduction effect

Cost effect: cost of the tendering work, the cost will be specified during the tendering, but the estimate is about EUR 40,000/year/vessel/7 years

Responsible party: Culture and Leisure Division

CLASS 3: Studies to define new emission reduction measures

ACTION: Study on steering the procurement of natural stones used in public areas by introducing emission criteria

Comparative studies have shown that the CO₂ emissions of natural stones imported from the Far East (life cycle stages A1–A4) are many times higher compared to Finnish natural stones. The utilisation of the City of Helsinki’s own recycled stone material also reduces the emissions caused by the procurement of natural stones. The Finnish Transport Infrastructure Agency’s low-carbon assessment method for infrastructure construction is applied in the calculation of emissions from reusable natural stone (recycled stone). In determining the emission value of recycled stones, the carbon footprint of the procurement, transport and manufacturing of the raw materials (life cycle product phase A1–A3) can be considered to be insignificant and can be excluded from the assessment. Therefore, the emissions of recycled stones arise only from the transportation to the construction site and site operations (life cycle construction phase A4–A5). The City of Helsinki updates the emission values of natural stones and assesses the emission impacts of natural stone procurement in terms of natural stone purchased from the Far East, Finnish natural stone and recycled stone from Helsinki.

- Indicator: climate emissions caused by stones are added as a procurement criterion for natural stones used in public areas
- Emission reduction effect: supports the specification of emission reduction measures, no direct emission reduction effect
- Cost effect: cost of the investigation work, based on the experiences of other cities, there is no price difference in a large-scale procurement
- Responsible party: Urban Environment Division

ACTION: Experiments reducing emissions during the construction phase in the city’s own office and service building production

During 2024, the city’s office and service building production will carry out pilot projects on emission-free construction sites and low-emission concrete, and the best practices from these may be implemented in basic operations.

- Indicator: enough pilots have been implemented to identify best practices
- Emission reduction effect: supports the specification of emission reduction measures, the direct emission reduction effect during the pilot phase is low
- Cost effect: EUR 150,000
- Responsible party: Urban Environment Division

APPENDIX 2:

Actions in the Carbon-neutral Helsinki 2035 Emissions Reduction Plan

No	Action	After the CNH update
1	Services offered at traffic nodes and improved smoothness of transfers	Action plan for Helsinki Region Transport's (HSL's) 'Solmu' node project and park-and-ride services in the Helsinki region
2	Target network of cycling routes in the inner city	Cycling Promotion Programme 2020–2025
3	Cycling traffic network	Cycling Promotion Programme 2020–2025
4	High-quality winter maintenance on the cycling network	Cycling Promotion Programme 2020–2025
5	A pleasant and safe environment for pedestrians	Development Programme for Traffic Safety 2022–2026
6	Services related to cycling	Cycling Promotion Programme 2020–2025
7	Development Programme for Light Rail Transport	Development Programme for Light Rail Transport
8	Sustainable transport and land use planning	Part of the official work of KYMP/Maka, Metropolitan Area Transport Ltd and HSL
9	Cycling Promotion Programme and Bicycle Parking Development Programme	Cycling Promotion Programme 2020–2025 and General Plan and Implementation Programme for Bicycle Parking 2021–2025
10	A pricing system for vehicle traffic	Part of the regional cooperation related to the MAL agreements (HSL, KYMP/Maka/Like, the central government)
11	Parking policy and pricing	Helsinki Parking Policy 2022
12	Staggered parking fees	Helsinki Parking Policy 2022
13	Parking fee zones	Helsinki Parking Policy 2022
14	Urban structure and sustainable modes of transport	Part of KYMP'S/Maka's official work
15	Updating the parking norms	Helsinki Parking Policy 2022
16	City planning and sustainable modes of transport	Part of KYMP'S/Maka's official work
17	Developing an environmental zone	Part of the official work of KYMP/Maka/Like and KYMP/Palu/Ympa; City of Helsinki Air Protection Plan 2017–2024
18	Construction of public charging infrastructure for electric cars	Part of the official work of KYMP/Maka/Like and KYMP/Rya/Yla
19	Procurement criteria for freight transportation and machinery projects	Part of the official work of KYMP/Rya/Yla, KYMP/Palu/Ympa and Stara
20	Procurement criteria for the freight transportation fleet and driving powers	Part of KYMP's and Stara's official work
21	City logistics and distribution traffic	City Logistics Action Plan

No	Action	After the CNH update
22	Promoting a zero-emission bus fleet	Part of HSL's sustainability work
23	Charging infrastructure for buses	Part of the official work of KYMP/Maka/Like and Metropolitan Area Transport Ltd
24	Carbon-neutral Port 2035 Action Plan	Carbon-neutral Port 2035 Action Plan
25	Streamlining traffic in the West Harbour	Master plan and Environmental Impact Assessment (EIA) for the harbour tunnel (a project of the Port of Helsinki)
26	Smart mobility services	Situational awareness and statistical system for traffic data (LIDO-TIKU); partially, the Jätkäsaari Mobility Lab project
27	New mobility services	Situational awareness and statistical system for traffic data (LIDO-TIKU); partially, the Jätkäsaari Mobility Lab project
28	Smart Mobility in Helsinki Action Plan	Helsinki Smart Mobility Development Programme 2030 and Action Plan 2020–2024
29	Promoting sustainable modes of transport through communication	Part of the official work of KYMP/Maka/Like, KYMP/Palu/Ympa, Metropolitan Area Transport Ltd, HSL and HSY; also included in many action plans
30	Mobility plans	Part of the official work of HSL and KYMP/Palu/Ympa
31	Energy surveys	Part of the official work of KYMP/Rya/Facility Services and Helsingin kaupungin asunnot Oy
32	Recovery of waste heat	Binding energy criteria for City facilities
33	Allocating energy and waste treatment costs to end users	Not to be implemented (input-output ratio not feasible)
34	Monitoring the energy efficiency of facilities	The system is in use; part of the official work of KYMP/Rya/Facility Services
35	Piloting a demand response system	Part of the official work of KYMP/Rya/Facility Services
36	Opportunities for energy storage	Part of the official work of Helen and KYMP/Rya/Facility Services
37	Preparing a target programme for renewable energy for the City's buildings	Binding energy criteria for City facilities
38	Procurement criteria for construction and maintenance	Binding energy criteria for City facilities
39	Increasing competencies in construction	Part of the official work of KYMP/Rya, KYMP/Palu/Ympa and Stara
40	Procedures for prioritising interests	Part of the official work of KYMP/Rya/Facility Services, KYMP/Palu/Rava, other divisions, Executive Office and City Museum
41	Developing project planning	Binding energy criteria for City facilities
42	Minimising lifecycle emissions	Partial energy criteria for City facilities
43	Energy-plus construction	Part of the official work of KYMP/Rya/Facility Services and KYMP/Rya/Att
44	Increasing the proportion of recycled materials in construction	Roadmap for Circular and Sharing Economy
45	Principles of earthworks	Action plan on utilising excavated earth, rock materials and demolished materials in earthworks
46	Zero-emission worksite machinery	Green Deal

No	Action	After the CNH update
47	Improving heat recovery in renovation projects	Binding energy criteria for City facilities
48	Energy efficiency in the City's renovation projects	Binding energy criteria for City facilities
49	Long-term plans and renovation projects	Binding objectives for City facilities
50	Upgrading the property automation systems of Helsingin kaupungin asunnot Oy, Auroranlinna and Haso	Part of the official work of Helsingin kaupungin asunnot Oy, KOy Auroranlinna and Helsingin asumisoikeus Oy
51	Renewable energy in City-owned residential buildings	Part of the official work of Helsingin kaupungin asunnot Oy
52	Geothermal/sea thermal energy pilot	Part of Helen's official work
53	Promoting renovation projects through conceptual solutions	ELENA project
54	LED street lights	Helsinki LED project
55	Taking renewable energy production into account in land use	Part of the official work of KYMP/Maka/Aska
56	Energy-efficient infill and renovation construction	Part of the official work of KYMP/Maka/Aska
57	Guidance for residents' energy consumption	Part of the official work of KYMP/Maka/Aska
58	Developing regulations for detailed plans	Part of the official work of KYMP/Maka/Aska
59	Energy efficiency conditions for property conveyance	Part of the official work of KYMP/Maka/Make
60	Smart energy solutions in property conveyance conditions	Part of the official work of KYMP/Maka/Make
61	Plot conveyance competition based on the carbon footprint	Part of the official work of KYMP/Maka/Make
62	Property conveyance conditions focused on carbon neutrality and S&C growth	Part of the official work of KYMP/Maka/Make
63	Proactive guidance provided by the building control services	Part of the official work of KYMP/Palu/Rava
64	Renovations of protected buildings	Part of the official work of KYMP/Palu/Rava
65	Building regulation and climate objectives	Part of the official work of KYMP/Palu/Rava
66	Developing guidance for construction	Part of the official work of KYMP/Palu/Rava
67	Energy Renaissance Programme	The Energy Renaissance model is in use
68	Abandoning oil heating and replacing electric heating with renewable sources	State programme
69	3D Energy and Climate Atlas	Part of the Executive Office's official work
70	Improving energy competencies among decision-makers in housing companies	Part of HSY's official work
71	Helen achieving carbon neutrality by 2035	Helen Development Programme

No	Action	After the CNH update
72	Purchasing renewable district heating	Not to be implemented
73	Purchasing renewable electricity	Not to be implemented
74	Key measurements of water consumption	Not to be implemented
75	Assessment tool for buildings' energy efficiency (as a part of the 3D Atlas)	Part of the Executive Office's official work
76	Two-way district heating	Helen Development Programme
77	Promoting hybrid heating	Helen Development Programme
78	Taking renewable energy production into account in land use	Part of KYMP'S/Maka's official work
79	Utilising waste heat	Binding energy criteria for City facilities
80	Utilising local renewable energy (e.g. geothermal)	Part of KYMP'S/Maka's official work
81	Surveying areas suitable for geo-energy (survey for geothermal heating potential)	Land use planning and survey on geothermal heating
82	Utilisation of landfill gases	Part of HSY's official work
83	Promoting funding for energy renovations	Not to be implemented
84	Financial obstacles to energy efficiency	Part of the official work of KYMP/Rya/Facility Services
85	New financing and procurement models	Part of the official work of KYMP/Rya/Facility Services
86	ESCO piloting	Part of the official work of KYMP/Rya/Facility Services
87	Supporting energy renovations	Part of the Executive Office's official work
88	Promoting timber construction through detailed planning	Part of the official work of KYMP/Maka/Aska
89	The City will promote wooden construction in its own projects.	Part of the official work of KYMP/Rya/Facility Services and Att, Helsingin kaupungin asunnot Oy, KOy Auroranlinna and Helsingin asumisoikeus Oy
90	Climate change in schoolwork	Part of the Education Division's official work
91	Cooperation with schools and other educational institutions	Part of the Economic Development Department's official work
92	Environmental education	Part of the Education Division's official work
93	Climate change education	Roadmap for Circular and Sharing Economy (update)
94	Promoting urban cultivation	Complete; guide for urban cultivation
95	Adding climate-friendly dishes in menus	Part of the official work of Helsinki Service Centre and the Education + Social Services and Healthcare Divisions

No	Action	After the CNH update
96	Increasing the proportion of plant-based food in schools, daycare centres, healthcare facilities, home meal services and personnel lunches	Part of the official work of Helsinki Service Centre and the Education + Social Services and Healthcare Divisions
97	Reducing food waste in the City's food services	Roadmap for Circular and Sharing Economy (update)
98	Climate emissions of food transport	Completed; emission criteria, optimising order and delivery occasions and routes
99	Utilising surplus food in the City's operations	Roadmap for Circular and Sharing Economy (update)
100	Reducing the environmental impact of events	Helsinki Tourism and Event Operating Plan 2022–2026
101	Personal emission trading	Not to be implemented (emissions trading is not a feasible model)
102	Maritime Strategy	Completed; Helsinki Maritime Strategy 2030
103	Waste sorting at source	Part of the City's official work; required by law
104	Optimisation of waste transport	Completed; piloted with HSY
105	Allocating the costs of waste management	Not to be implemented (input-output ratio not feasible)
106	Increasing the number of customers at Pakila Work Centre, Uusix workshops, Stara Reuse Centre and Metropolitan Area Reuse Centre	Roadmap for Circular and Sharing Economy (update)
107	Developing climate criteria for procurements	Procurement Strategy 2020
108	Identifying and assessing the climate emissions from procurements	Part of the City's official work; work is also carried out within the Canemure project
109	Innovative procurements, pilots and business cooperation	Part of the City's official work
110	Updating the objectives related to the procurement strategy	Completed; Procurement Strategy 2020
111	Cooperation between public operators on sustainable procurements	Part of the City's official work
112	Developing guidelines and reporting for procurements	Part of the Executive Office's and KYMP's official work; Procurement Strategy 2020
113	Climate criteria for food and meal service procurements	Environmental policy (update)
114	Roadmap for Circular and Sharing Economy	Completed
115	Facility and resource booking system	Roadmap for Circular and Sharing Economy (update)
116	The library network as a pioneer in sharing economy	Roadmap for Circular and Sharing Economy (update)
117	Recycling of furniture within the City organisation	Roadmap for Circular and Sharing Economy (update)
118	Use of surplus food or food waste	Roadmap for Circular and Sharing Economy (update)
119	Utilisation of green waste	Roadmap for Circular and Sharing Economy (update)
120	Sharing economy in the Property Strategy	Completed, Property Strategy

No	Action	After the CNH update
121	Cooperation on circular economy	Circular economy cluster
122	Participatory budgeting	Part of the City's official work
123	Increasing Smart & Clean business	Part of the Economic Development Department's official work
124	Promoting the S&C market	Part of the Economic Development Department's official work
125	Residents' opportunities to participate in the development of Smart & Clean solutions	Part of the Economic Development Department's official work
126	Economic development policy and emissions reductions	Part of the Economic Development Department's official work
127	Company participation	Part of the Economic Development Department's official work
128	Co-development of Smart & Clean business	Part of the Economic Development Department's official work
129	Carbon neutrality plans of the City's subsidiary communities	Completed; the ownership strategy requires that relevant subsidiaries have a plan in place
130	Maintaining carbon storage in green areas and the urban environment	Climate change adaptation policies for 2019–2025
131	Network of urban forests and wooded areas	Climate change adaptation policies for 2019–2025
132	Viable forests	Climate change adaptation policies for 2019–2025
133	Vegetation on plots	Complete; guide for urban cultivation
134	Green factor	Climate change adaptation policies for 2019–2025
135	Information about carbon storage and carbon sinks	Completed; review in 2020
136	Assessing emissions compensation methods	Part of the Executive Office's and KYMP's official work
137	Finishing the preparation of the adaptation policies and bringing them into decision-making	Completed; approved by the City Board on 27 May 2019
138	Communication strategy for the action plan	Completed
139	Using inclusion and interaction models	Completed
140	Borough liaisons	Part of the Borough Liaison's official work
141	Carbon-neutral Helsinki 2035 steering group	Completed
142	Division-specific objectives in the City	Part of the City's budget process
143	Business forum	Not to be implemented; there are several other networks
144	Open decision-making policy	Completed
145	Assessment tools for the action plan	Completed
146	Reporting emissions reductions	Completed
147	Assessment of the action plan	Completed

APPENDIX 3: Cost effects of emissions reductions

CLASS 1: Actions that reduce emissions		
Action	Emissions reduction	Cost of the emissions reduction
Implementing economically viable energy efficiency measures for office and service buildings managed by the City's Facilities service	In terms of energy savings, about half of the savings come from district heating and about half from electricity. On average, the property's total energy consumption reduces by 5–30%.	EUR 1,750,000; cost positive, as the savings achieved cover the operating costs and start to pay for themselves within 1–5 years, depending on the action.
Energy management of city-owned office and service buildings	In terms of energy savings, applies to both electricity and district heating. On average, each property covered by energy management reduces its total energy consumption by 5%.	EUR 400,000; cost positive, as the savings cover at least the operating costs.
Implementing heating method changes to city-owned office and service buildings that are heated with oil or direct electricity	Depending on the property's initial situation; significant in the case of oil heating.	EUR 600,000; cost positive.
Discontinuing the use of lime cement as a binder in soil improvement	-50–60% of deep stabilisation emissions resulting from the use of lime cement as a binder.	Cost positive, due to emissions trading estimated at -30% compared to the use of lime cement as a binder.



Helsinki