



Climate Programme of the City of Porvoo for 2019–2030

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1 Introduction

Since the Global Warming of 1.5°C special report, aimed at decision-makers, was published by the Intergovernmental Panel on Climate Change (IPCC) in October 2018, climate change has been a constant topic both in politics and in the media at a national and international level – deservedly so. In the above-mentioned report, the IPCC presents the differences between an increase of 1.5 degrees and an increase of 2 degrees in the average global temperature, compared to pre-industrial times. The impacts are significant.

Efforts to restrict the progress of climate change and the increase in average temperature have been made through the goals of international climate policies even before the IPCC's report. The most important agreement regarding climate matters is the United Nations Framework Convention on Climate Change, which came into force in 1994. The goal of the Convention is to stabilise greenhouse gas concentrations at a non-dangerous level.

The Convention was complemented by developed countries with the Kyoto Protocol, which came into force in 1997. The first commitment period of the Protocol started in 2008 and ended in 2012, and its goal was an emissions reduction of 5.2 per cent. Finland's participation in the Protocol involved maintaining its emissions at the 1990 level for the duration of the commitment period. For the second commitment period (2013–2020) to enter into force, the commitment of 75 per cent of the parties is required. This has not yet been realised.

The UN's 2030 Agenda for Sustainable Development (2030 Agenda) was approved in 2015, and it came into force at the start of 2016. 2030 Agenda is binding for all UN member states. It sets shared objectives for all member states for 2030. 2030 Agenda consists of 17 ambitious objectives (Sustainable Development Goals, SDGs) which take ecological, economic and social sustainability into account.

In addition to the Convention and the Kyoto Protocol, the countries of the world are committed to the Paris Agreement, which complements the Convention made in 1992. The Paris Agreement came into force in 2016. The goal of the Agreement is to maintain the global temperature rise well below 2 degrees Celsius compared to pre-industrial levels and to pursue efforts to limit the temperature increase even further to 1.5 degrees Celsius.

Global climate policy is moving to a national level, while the implementation at the national level encourages municipalities and cities to take climate policy into account in their operations. In its City Strategy approved in autumn 2018, the City of Porvoo has set itself the role of a forerunner in climate matters.

2 Porvoo – City of Dreams 2030

The City Council approved the 'Porvoo – City of Dreams 2030' strategy unanimously in its meeting on 26 September 2018. The strategy defines the City's vision, values and development goals up to 2030. This climate programme corresponds to the fourth spearhead goal of the City Strategy: 'A forerunner in climate work.'

A forerunner in climate work

Porvoo will be known for carbon neutral housing, sustainable solutions in the sectors of urban planning, energy, public transport, and commuting, and the bio-economy and circular economy cluster in Kilpilahti. Porvoo schools, day care centres, households and businesses will live

sustainably every day and actively participate in the progress of environmental and climate-related goals. The City's climate work will create well-being, an urban environment that promotes health, and appealing services for residents and tourists.

A carbon neutral city

Porvoo will evolve to become a forerunner in carbon neutral housing. We will use land use planning to create dense and energy-efficient urban areas, as well as conditions for areas that are not dependent on private cars. We will densify the city through complementary construction while maintaining connections to green zones and nature. We will promote the lifecycle efficiency and energy production of buildings, as well as the use of renewable energy. We will take goals related to climate, the environment and the diversity of nature into account in the City's procurements, decisions and service production. We will seek new ideas for our climate work from our international partners and networks. We will actively share our know-how.

Sustainable everyday living

We will support our residents' sustainable habits and actively encourage them to make environmentally-friendly choices. We will have the profile of a city with sustainable transport, utilising functional feeder traffic and public transport, ride-sharing and mobility as a service.

A city of circular economy

Porvoo will be a city that promotes circular economy. Circular economy opens up both new business opportunities for companies and opportunities to make sustainable choices for residents.

3 Development of greenhouse gas emissions

3.1 Climate-friendly Porvoo

The 'Energy-efficient Skaftkärr' project started Porvoo's determined development towards carbon neutral housing. This development has been ongoing for nearly 10 years. The experiences from the project have also been widely used elsewhere in Finland. The project has even attracted international attention.

Another measure that has strongly directed the climate work of the City of Porvoo is joining the Towards Carbon Neutral Municipalities (HINKU) network in 2014. HINKU is a network for pioneers in climate change mitigation which brings together municipalities that have committed to ambitious reductions in emissions, companies producing climate-friendly products and services and experts in energy and climate issues. The network is coordinated by SYKE, the Finnish Environment Institute.

In addition to these two important decisions, the City has also carried out many other climate actions. A climate change work group consisting of experts in various sectors, assembled by the decision of the Deputy Mayor, has been operating in Porvoo since 2010. The work group has involved those essential operators in the administration of the City Group whose work significantly influences the impact of the climate change actions. The climate change work group will continue to operate in the future, as well.

The City has also continued its successful networking: it is participating in the development of circular economy (Circwaste – Towards circular economy) and practical measures to mitigate climate change (CANMURE – Towards carbon neutral municipalities and regions) as a part of

national networks. Since 2018, the City of Porvoo has also been a member of the Climate Leadership Council (CLC). Through these networks, the City receives information and support to help with its own work while also sharing information with others.

The climate-related networking and projects have also created several other work groups in the City organisation, in addition to the climate change work group. Coordinating these groups with the climate change work group is necessary to ensure progress on the goals set.

With the years, focus on energy efficiency and other types of climate work have expanded to involve practical measures and implementation through the various projects. The entire City organisation is constantly implementing actions and projects to improve energy efficiency and the mitigation of climate change. We also aim to publicise and share the solutions and actions created as a result of our continuous climate work.

3.2 Current greenhouse gas emissions

The greenhouse gas emissions in the Porvoo area are calculated annually by SYKE. SYKE receives the data required for emissions calculations from background sources. The calculations do not include the emissions trading industry, such as the Kilpilahti area in Porvoo. The calculations include some sectors which the City can scarcely influence (such as traffic passing through), and some local actions of the City may not be included in the calculations (such as local changes to street arrangements). However, the goal is to make the emissions calculation model more just in the future and introduce other indicators to complement it.

According to the latest emissions calculation results (2016), the greenhouse gas emissions in the Porvoo area amounted to 291,300 tonnes of carbon dioxide equivalents (CO₂e). Porvoo has succeeded in reducing its emissions by 30 per cent since 2007. This means that Porvoo is on the right track, but there is no room for inaction if we want to meet the set goals (Figure 1).

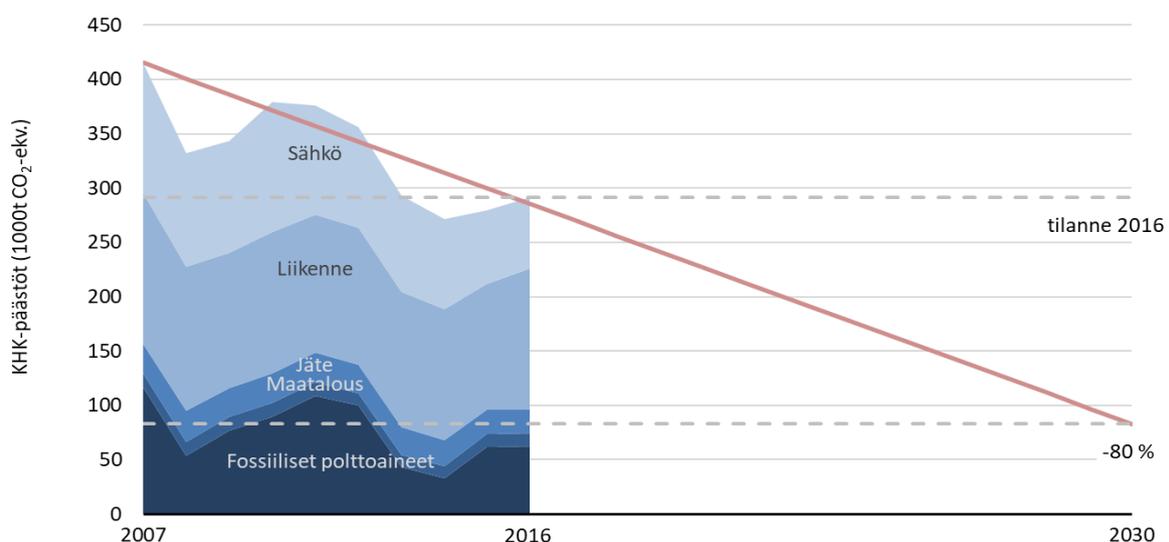


Figure 1. Greenhouse gas emissions by sector in the Porvoo area in 2007–2016. The red line on the graph presents the goal to which the HINKU municipalities have committed: an 80% reduction in emissions from the 2007 level by 2030.

Greenhouse gas emissions per capita in the Porvoo area have decreased by 33 per cent from the 2007 level, amounting to 5.8 tonnes in 2016 (Figure 2). The emissions have decreased by over 60 per cent from the 1990 level.

When looking at total emissions, the greenhouse gas emissions in the Porvoo area are the fifth highest among the HINKU municipalities. There are 34 HINKU municipalities in the 2016 comparison. However, when comparing emissions per capita, the emissions in the Porvoo area are the sixth lowest. If we look at emissions reductions per capita in 2007–2016, Porvoo is in shared third place.

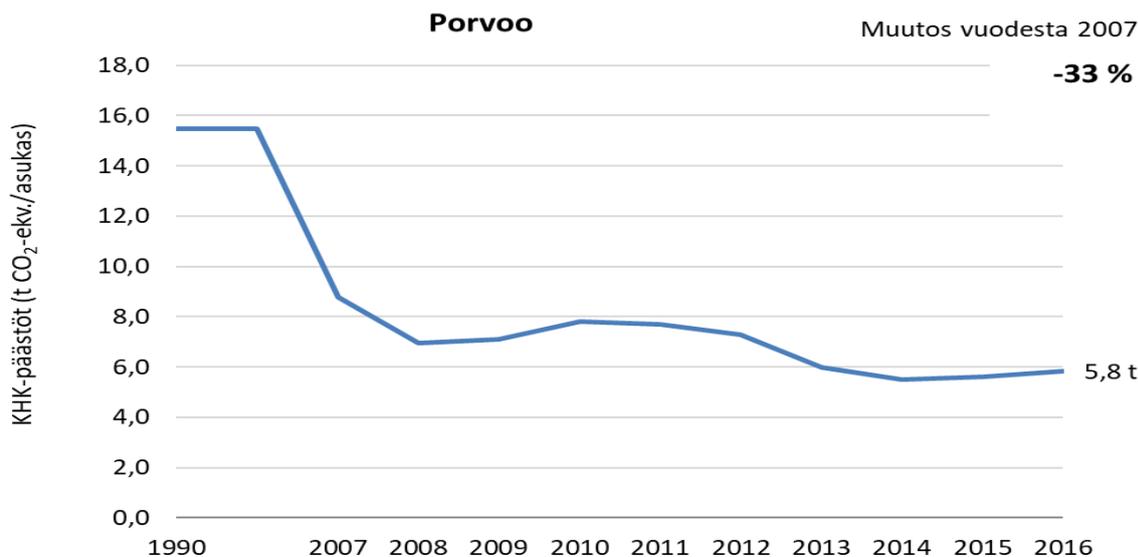


Figure 2. Greenhouse gas emissions per capita.

When interpreting the calculations, it should be noted that electricity consumption is calculated using the national electricity emission factor, and wind power is the only available compensation mechanism. For electricity consumption, this means that the green electricity sold by Porvoon Energia is not present in the calculations.

Action	Resources and parties responsible	Indicator	Implementation in
We will promote the development of a calculation model for greenhouse gas emissions that takes the local actions in the Porvoo area into account.	Resources: Additional resources not required Responsible party: Management of Urban Development	Development of emissions calculations: yes/no.	2019–2022

3.3 Actions of the government and impact thereof

Municipalities and cities are the forerunners in climate work, and many Finnish municipalities/cities have set emissions reduction goals that are more ambitious than those of the Finnish government. This is also the case in Porvoo. While the government’s goal is to reach carbon neutrality by 2045, the Porvoo area aims to be carbon neutral by 2030. For the municipalities and cities to reach their goals, they need the support of nationwide climate work, for example in terms of emissions reductions in traffic and electricity.

The actions of the government and the impact thereof are not taken into account in the Climate Programme of the City of Porvoo. The energy industry has estimated that the national emission factor for electricity will be reduced by 40 per cent. As for traffic, Finland is committed to a 20-per-cent biocomponent blending obligation. SYKE assumes that the proportion will increase up to 25 per cent by 2030. SYKE has also estimated that the use of fossil fuels in industry and machinery will decrease by 50 per cent, but this requires extensive measures from the industrial operators in Porvoo which are not participating in emissions trading.

The Climate Programme takes the national goals and the related obligations for municipalities and cities into account. These obligations have been compiled from the Finnish government's report on the Medium-term Climate Change Policy Plan up to 2030 (KAISU) and the National Waste Plan up to 2023 (VALTSU).

4 Preparing the Climate Programme

The preparation of the Climate Programme started with an analysis of the current status and a survey on the actions already taken by the City. The preparation of the Programme proper has involved the divisions and units of the City, as well as the climate change work group which has been operating for years. The role of the divisions and units has involved representing their respective expertise in the discussions on the contents and actions included in the Programme. The members of the climate change work group have formed a work group of their own, which has participated in the discussions and also worked on ideas and materials created in workshops.

The City also wanted to engage residents in the preparation of the Programme. This was done by carrying out a targeted Team Porvoo survey regarding sustainable development and climate change. In the survey, residents were able to present their opinions on the contents of the Climate Programme. A second survey was also opened before the Programme moved on to the decision-making phase, providing residents with the opportunity to comment on the programme draft.

In addition to the City organisation and residents, persons elected to a position of trust have also been able to participate in the preparation of the plan.

5 Strengthening the commitment of public enterprises and companies

The City organisation and the companies, communities and public enterprises of the City Group must act as forerunners in sustainable and responsible operations and make it easy for residents to make sustainable choices. This requires that the operations of the companies, communities and public enterprises are directed by similar strategic objectives and plans as the City of Porvoo.

The City of Porvoo requires that the companies, communities and public enterprises under its control are committed to the City's objective of making Porvoo a forerunner in climate work and a carbon neutral city by 2030. Companies, communities and public enterprises will apply the City's Climate Programme in their operations and include the applicable actions in their own programmes. The companies and public enterprises of the City Group will also participate in and contribute to the communications and marketing co-operation.

6 Actions

The preparation of the actions has been supported by the emissions reduction roadmap tool of SYKE, which can be used to see the impact that different actions have on emissions. The roadmap, prepared together with the units, companies and public enterprises of the City, can be seen in Appendix 1.

In addition to the action itself, the description for each action includes the required additional resources and the responsible party that will manage the implementation of the action. If there are multiple responsible parties, the managing party has been underlined. To monitor the implementation of the actions, each action has its own indicator and schedule for either its implementation or an impact assessment milestone. The description of each action also includes the UN Sustainable Development Goals which the action supports. The UN goals mentioned in the Programme and the sub-goals affected by the actions are specified in Appendix 2.

6.1 Procurements

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
We will set procurement goals that support sustainable development and innovation. We will have procurements support the goal of carbon neutrality. We will test and apply a Green Deal model between the City and the State.	Resources: Depending on each agreement Responsible party: City of Porvoo, Funding Management	Green Deal made: yes/no.	2020–2025	
We will avoid machines that contain fluorinated greenhouse gases (F gases) in new procurements. Separate instructions will be prepared for this matter, and the goal will be added to the procurement instructions.	Resources: Depending on each procurement Responsible party: City of Porvoo, <u>Sustainable Development, Funding management</u>	Instructions prepared: yes/no. Procurement instructions updated: yes/no.	2019–2021	

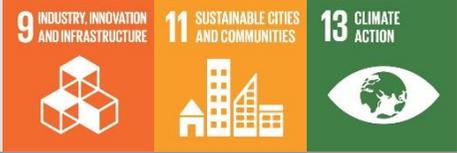
6.2 Buildings and energy efficiency

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
We will commit to the energy efficiency agreements of the municipal sector. We will achieve minimum energy savings of 7.5% compared to 2008 in the City's premises. We will pilot smart energy monitoring systems.	Resources: 1 person-workyear/year Responsible party: <u>Facility Management</u> , Porvoo Energia, rental companies of the City	Energy savings achieved in the City's premises compared to 2008.	2019–2025	
We will develop energy competences in co-operation with other operators. We will open the City's infrastructure, properties and data reserves to enable the operations. We will present essential information on properties on the City's website, such as the energy consumption	Resources: To be specified Responsible party: <u>Posintra, Digital Services Development Unit</u> , Facility Management	Energy consumption information and other essential information related to the building stock on the City's website: yes/no.	2019–2022	

information of the City-owned building stock.				
Land use planning will use the methods of energy-efficient planning and promote district heating and renewable energy.	Resources: €5,000/year (training) Responsible party: Urban Planning	Methods included in the plan descriptions.	2019–2030	
Community structure will be developed by densifying/restoring in urban areas and by directing construction to areas named in the rural structure plan in rural areas.	Resources: Additional resources not required Responsible party: Urban Planning	Number of apartments to be built in the city centre as stated annually in the building permits.	2019–2030	
We will promote the use of renewable energy by installing solar panels and starting the use of geothermal heating in new buildings and modernised buildings in areas that are located outside the district heating network and that are suitable for geothermal heating.	Resources: Additional resources not required Responsible party: Facility Management	Percentage of energy produced by solar panels and geothermal heating of the total energy consumption.	2019–2030	
The guidance for builders of single-family houses will use a method of anticipatory quality control and promote energy efficiency. Energy efficiency will be taken into consideration in plot conveyance competitions.	Resources: Additional resources not required Responsible party: <u>Building Control, Land Policy</u>	Percentage of plot conveyance competitions which have included energy efficiency as a quality criterion.	2019–2030	
We will stop using oil heating in our own building stock by 2025. We will introduce alternative means of heating to complement electrical heating.	Resources: Additional resources not required Responsible party: Facility Management	Number of oil-heated properties among the City-owned properties.	2019–2025	

6.3 Traffic

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
We will constantly develop the cycling path network and improve the accessibility of the city centre. During winter maintenance, we will first take care of the quality paths for cycling and pedestrian traffic, as well as the routes leading to public transport stations/park-and-ride locations. We will define the main network of cycling paths and start a systematic renovation process, the progress of which will be monitored. The quality and number of cycling and pedestrian routes will be increased. 2 km/year.	Resources: €300,000/year Responsible party: Municipal Engineering	Total length (km) of new or renovated cycling and pedestrian routes.	2019–2030	   
In land use planning projects, we will assess the future distribution of transport modes in the areas and aim to reduce vehicle traffic and improve the appeal of sustainable transport.	Resources: €50,000/year Responsible party: Urban Planning	The impact on vehicle traffic and sustainable transport will be described in the impact assessment for the plan	2019–2030	   
We will use land use planning, as well as the planning of streets and other public areas, to promote the formation of neighbourhoods focusing on cycling and walking. The transport system in the city centre will be developed primarily to slow traffic, cycling and walking.	Resources: €50,000/year (planning) Responsible party: <u>Municipal Engineering</u> , Urban Planning	Annual number of sites.	2019–2030	   
We will develop park-and-ride systems to be more appealing. We will offer a sufficient number of lockable bicycle parks protected against weather and vandalism. The parking situation at the park-and-ride locations will be presented on the City's website.	Resources: 30 person-workdays, €10,000/year (structures) Responsible party: <u>Municipal Engineering</u> , Urban Planning, <u>Digital Services Development Unit</u>	Parking situation at the park-and-ride locations presented on the City's website: yes/no. Number of car and bicycle parking spaces	2019–2023	   

		at the park-and-ride locations.		
We will invest on MaaS solutions to free residents from having to own and use their own cars. We will reconcile the start and end times of schooldays with public transport schedules.	Resources: 30 person-workdays Responsible party: <u>Municipal Engineering, Urban Planning, Education Division</u>	Start and end times of schooldays reconciled with public transport schedules: yes/no. Number of detailed plans promoting the use of alternating parking and shared cars; number of MaaS solutions.	2019–2030	
Shared electric cars will be procured for the purpose of performing work tasks. Outside office hours, the electric cars will be available for residents. We will reduce the staff's need to travel by favouring remote work and teleconferences. We will prepare instructions on sustainable modes of transport for the staff.	Resources: €100,000 (infrastructure), €85,000/year (leasing) Responsible party: <u>Municipal Engineering, Digital Services Development Unit, Sustainable Development</u>	Number and utilisation rate of shared cars. Instructions prepared: yes/no.	2019–2021	
We will launch discussions and cooperation with the third sector on the possibilities of organising recreational activities at schools to reduce the transportation needs of children.	Resources: Additional resources not required. Responsible party: Education Division	Number of schools at which activities are organised.	2020–2025	
The average CO ₂ emissions of the passenger cars used by the City will be below 100 g/km by 2025.	Resources: Cannot be specified Responsible party: City of Porvoo	Average CO ₂ emissions of the passenger cars used by the City.	2019–2025	
The City will improve charging opportunities for electric cars and offer electric cars free parking spaces with charging access at central parking areas.	Resources: 10 person-workdays Responsible party: Municipal Engineering	Number of parking spaces with charging access.	2019–2030	

We will introduce a city bike system. We will study year-round use of city bikes.	Resources: 20 person-workdays, €60,000/year Responsible party: Municipal Engineering	Number and utilisation rate of city bikes.	2019–2030	 
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6.4 Municipal waste and circular economy

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
We will follow the circular economy roadmap for 2030 prepared for the City of Porvoo.	Resources: Included in other actions Responsible party: City of Porvoo	Indicators in the circular economy roadmap.	2019–2030	 
We will commit to reducing the volume and hazards of waste in our own operations. We will prepare separate instructions for reducing the volume of waste.	Resources: Additional resources not required Responsible party: City of Porvoo, <u>Sustainable Development</u>	Instructions prepared: yes/no. Volume emptied from mixed waste containers (m ³ /year).	2019–2030	 
We will enable efficient source separation of separately collected waste in all of the City's premises.	Resources: Cannot be specified Responsible party: City of Porvoo, <u>Sustainable Development</u>	Number of City-owned properties that have joined in the separate collection system.	2019–2021	 
We will promote the expansion of waste sorting obligation limits and offer properties the services needed to implement the sorting system. We will also develop our communications and guidance according to the actions in the circular economy roadmap. The recycling rate of municipal waste will reach 60% in 2030, and that of organic waste in 2023.	Resources: Additional resources not required Responsible party: Rosk'n Roll	Recycling rate for municipal waste and the included organic waste.	2019–2023	   

<p>We will make the recovery of landfill gases produced at disposal sites more efficient.</p>	<p>Resources: Additional resources not required Responsible party: Rosk'n Roll</p>	<p>Recovery rate for landfill gases.</p>	<p>2019–2030</p>	
<p>We will develop the content requirements and monitoring for demolition reports and permit applications. We will include the management and re-utilisation of construction waste in the anticipatory quality control system.</p>	<p>Resources: 25 person-workdays Responsible party: <u>Building Control</u>, Environmental Protection</p>	<p>Completed development of content requirements for waste plans: yes/no. Percentage of constructors who have participated in the guidance.</p>	<p>2019–2023</p>	
<p>We will add the promoting and reporting of waste re-use as criteria in the bidding competitions for construction and demolition projects. Re-use rate of construction and demolition waste will be 70%, at the minimum, in 2030.</p>	<p>Resources: Additional resources not required Responsible party: Facility Management, Municipal Engineering</p>	<p>Promotion of re-use of construction waste added to competitions: yes/no.</p>	<p>2019–2023</p>	
<p>We will start pilot projects and areas that use more material-efficient operating models, seek a high recycling rate, use eco-labelled products and study the recycling and energy consumption information of materials based on the lifecycle model.</p>	<p>Resources: Depending on each project Responsible party: <u>Municipal Engineering</u>, <u>Facility Management</u></p>	<p>Number of pilot projects and areas started.</p>	<p>2019–2030</p>	
<p>We will implement a landmass and recycled material bank to promote the use of landmasses and recycled materials. We will increase the use of recycled materials in earthworks and foundation engineering.</p>	<p>Resources: See the next action Responsible party: <u>Municipal Engineering</u>, <u>Urban Planning</u>, <u>Rosk'n Roll</u>, <u>Building Control</u></p>	<p>Volume of uncontaminated landmasses transported to disposal sites (m³/year).</p>	<p>2019–2023</p>	
<p>The City of Porvoo will appoint a coordinator to manage the re-use of leftover landmasses and construction waste.</p>	<p>Resources: 1 person-workyear/year Responsible party: Municipal Engineering</p>	<p>Coordinator appointed: yes/no.</p>	<p>2019–2021</p>	

We will develop a customer-oriented system for the City to lend/rent out City spaces to residents.	Resources: 30 person-workdays Responsible party: <u>Digital Services Development Unit</u> , Facility Management	Customer-oriented system in use: yes/no.	2019–2021	  
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6.5 Nutrition

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
We will favour domestic and sustainably produced food in our food procurements. We will also use local and seasonal food when possible.	Resources: Additional resources not required Responsible party: Public enterprise, Facility Services	Percentage of domestic, local and seasonal food.	2019–2030	 
We will develop and adopt climate-friendly recipes. We will increase the proportion of climate-friendly food in day care centres, schools and City catering.	Resources: Additional resources not required Responsible party: Public enterprise, Facility Services	Percentage of climate-friendly meals.	2019–2022	  
We will prepare all food to order and avoid overproduction. We will actively monitor and reduce food waste.	Resources: Additional resources not required Responsible party: Public enterprise, Facility Services	Percentage of food waste in preparation and from plates, out of the volume prepared.	2019–2030	 
We will strengthen the idea of avoiding food waste in primary education and day care centres.	Resources: Additional resources not required Responsible party: Education Division	Volume of food waste in primary and early childhood education.	2019–2030	  

6.6 Raising awareness; communications and tourism

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
We will develop awareness and the ability to apply theory to practice regarding climate change, sustainable development and the basics of circular economy in primary and secondary schools and early childhood education.	Resources: Additional resources not required Responsible party: Education Division	Curricula for primary and secondary education updated: yes/no.	2019–2022	 
We will develop teachers' competencies regarding climate change, sustainable development and circular economy.	Resources: Additional resources not required Responsible party: Education Division	Percentage of trained teachers of all teachers.	2019–2022	 
We will organise an annual Eco Event, during which fifth-graders will be challenged to perform eco-friendly actions for a week and record them into an Eco-friendly Habit Pass.	Resources: Additional resources not required Responsible party: <u>Posintra</u> , Education Division	Number of participating classes and submitted passes.	2019–2030	 
We will implement an annual communications and marketing campaign under the theme 'Climate-friendly Porvoo'. We will also highlight these themes in daily communications.	Resources: Additional resources not required Responsible party: <u>Sustainable Development</u> , Communications, Tourism and Marketing	Number of City announcements tagged 'sustainable development' in a year. Climate-friendly Porvoo campaign implemented: yes/no.	2019–2030	 
We will take environmental sustainability and ethicality into consideration in business gifts. We will prepare separate instructions for improving the sustainability of business gifts.	Resources: Additional resources not required Responsible party: City of Porvoo, <u>Sustainable Development</u>	Instructions prepared: yes/no.	2019–2030	 
We will increase tourism operators' awareness regarding the importance of sustainable tourism. We will develop tourism sustainably.	Resources: Additional resources not required Responsible party: Tourism and Marketing	Number of tourism companies that have completed the	2019–2030	 

		Sustainable Finland training.		
The City will launch a 'We Support Climate-friendly Porvoo' award. The award may be granted to a local company, community or another type of organisation.	Resources: Additional resources not required Responsible party: <u>Sustainable Development</u> , Tourism and Marketing, Communications	Award granted: yes/no.	2020–2030	

7 Carbon sinks and storage and emissions compensation

Action	Resources and parties responsible	Indicator	Implementation	2030 Agenda SDG
The City's forest management plan will take carbon storage/sinks into account, continuous growth will be applied, the cycles will be prolonged and clear felling reduced.	Resources: Additional resources not required Responsible party: Municipal Engineering	An estimate on the carbon storage/sinks owned by the City of Porvoo.	2019–2030	
The City will increase the conservation of forests at sites that are deemed valuable in accordance with the Forest Biodiversity Programme for Southern Finland (METSU).	Resources: 10 person-workdays, €15,000/additional % of protected forest (consultation services) Responsible party: Environmental Protection	Percentage of protected forests.	2019–2030	
The costs of compensating for lost carbon storage/sinks (biomass) will be tied to the costs of the projects.	Resources: Depending on each project Responsible party: Urban Development	Annual costs of compensation.	2025–2030	
We will plan public green zones by increasing the number of carbon sinks and using existing substrate and nature. The green zone plans will include a maintenance plan which takes lifecycle impact into account.	Resources: Additional resources not required Responsible party: Municipal Engineering	Percentage of maintenance plans which take lifecycle impact into account out of all plans.	2019–2030	

<p>We will avoid digging new ditches in virgin forest and marsh areas owned by the City. We will study the need for ditch cleaning and supplementary ditching, which will take carbon-sequestering capacity into account.</p>	<p>Resources: €30,000/ditching consortium Responsible party: Municipal Engineering</p>	<p>Number of ditch cleaning and supplementary ditching projects in field areas.</p>	<p>2019–2030</p>	
<p>We will increase the volume of carbon storage by increasing the proportion of wooden construction through land use planning and plot conveyance competitions.</p>	<p>Resources: Additional resources not required Responsible party: <u>Urban Planning, Land Policies</u></p>	<p>Floor square metres of wooden construction in new detailed plans.</p>	<p>2019–2030</p>	
<p>We will study opportunities to compensate for the remaining emissions.</p>	<p>Resources: The resources required for compensation will be specified later Responsible party: Management of Urban Development</p>	<p>Compensation opportunities studied: yes/no.</p>	<p>2019–2030</p>	

8 Adaptation to climate change

Due to climate change, many aspects of our environment will change, and the City must be well-prepared to adapt to climate change.

The City of Helsinki commissioned a study from the Finnish Meteorological Institute in 2018 regarding the risks Helsinki faces due to weather conditions and climate change. The study deals with restrictions for the City's operations, extreme weather phenomena, diseases and ecological changes, repercussions, cost-efficiency and the acceptable level of risk which directs decision-making. In 2017, the joint municipal authority HSY prepared a report on the new challenges faced by the Helsinki Metropolitan Area in terms of adapting to climate change. The results of the study are also applicable in Porvoo.

The urban planning, construction and planning of streets and other public areas in Porvoo are already taking the flood risk posed by seawater, riverwater and stormwater, as well as an increase in heavy rainfall, into consideration. Stormwater studies are an essential aspect of urban planning, and the vegetation plans for parks also take the increasingly frequent extreme weather phenomena into account. The City of Porvoo also has a flood risk work group which has carried out a study on flood risks in Porvoo. The water utility company Porvoon vesi has also commissioned studies on the effect floods may have on water intake plants, the sewage network and the treatment of sewage.

The impacts of climate change have been identified effectively at the city level. However, further raising awareness on the impacts of climate change and the adaptation to them is important. The City of Porvoo uses the above-mentioned research results in its operations and also follows the results of new studies and new estimates on the impacts of climate change closely.

Action	Resources and parties responsible	Indicator	2030 Agenda SDG
We will prepare for extreme weather phenomena (floods, heavy rainfall, drought, wind) becoming stronger when planning and implementing projects.	Resources: 20 person-workdays, €100,000/year Responsible party: Urban Development	Climate change risk and adaptation policy.	 
We will repel harmful invasive species and plant diseases in our area.	Resources: 35 person-workdays, €15,000/year Responsible party: Municipal Engineering, Environmental Protection	Percentage of reports we have acted on.	 

9 Resources required by the actions

Sector	Required resources
Procurements	Depending on each agreement/procurement
Buildings and energy efficiency	1 person-workyear/year, €5,000/year

Traffic	90 person-workdays, €100,000, €555,000/year
Municipal waste and circular economy	1 person-workyear/year, 55 person-workdays, also project-specific requirements
Nutrition	Additional resources not required
Raising awareness; communications and tourism	Additional resources not required
Carbon sinks and storage; emissions compensation	10 person-workdays; €15,000/% of protected forest, €30,000/ditching consortium, also project-specific requirements
Adaptation to climate change	55 person-workdays, €115,000/year.
Total:	2 person-workyears/year, 210 person-workdays, €100,000, €675,000/year, €15,000/% of protected forest, €30,000/ditching consortium, also project-specific requirements and resources to be specified later

The calculations do not include resources that cannot be defined at the moment.

10 Maintaining and updating the Programme

The Climate Programme is a dynamic entity that changes with the City's operations. To achieve the goals set, the impact of the actions needs to be actively monitored, and the direction of the operations must be changed as rapidly as possible should the actions prove insufficient. The Programme is constantly maintained and updated whenever there is need to make changes or updates that require the approval of the City Board or if the amount of available information has increased significantly.

11 Monitoring and reporting

To achieve the goals set in the City Strategy, the impact that the actions in the Climate Programme have on greenhouse gas emissions, residents' sustainable living and circular economy is actively monitored. The monitoring is constantly ongoing with the help of the actions and indicators presented in the Programme and the emissions calculations provided by SYKE. The results of the previous year are reported to the City Board annually by the end of March.

12 Sources

IPCC tukee ilmastopoliittista päätöksentekoa: <https://ilmatiiteenlaitos.fi/ipcc-ilmastopaneeli>

Agenda 2030 for Sustainable Development: <https://kestavakehitys.fi/en/agenda2030>

The actions of the City of Porvoo to mitigate climate change, 3 March 2016.

Sopimukset ohjaavat kansainvälistä ilmastopoliittikkaa: <https://ilmasto-opas.fi/fi/ilmastonmuutos/hillinta/-/artikkeli/f65a78bb-dc8e-41a5-b09a-6fa36661880b/sopimukset-ohjaavat-kansainvalista-ilmastopoliittikkaa.html>

UN Association of Finland: <https://www.ykliitto.fi/un-association-of-finland>

13 Appendices

Appendix 1: Roadmap for emissions reductions (only in Finnish)

Appendix 2: Sustainable Development Goals

Appendix 1: Roadmap for emissions reductions

Valitse tavoitteen:	2030
Valitse alue:	Päästövähennys tässä skenaariossa 2007-2030 yhteensä:
Porvoo	-76 %

Valitse yläpuolisesta solusta (klikkaus ja pudotusvalikko) tarkasteltava alue. Muokkaa vähennyskennariota liukusäätimillä ja vaaleansinisillä numerokentillä. Taulukon yläosa esittää skenaarion tuloksena päästötulvat ja -vähennysprosentit.

	Sektorikohtainen vähennys-% 2007-2030:														Yhteensä (ktCO2e)	
	Sähkö	Fossiiliset polttoaineet					Tieliikenne	Jätteiden käsittely		Maatalous						
	-82,9 %	-69,6 %	-77,2 %	-83,8 %	-95,0 %	-70,6 %	-79,0 %	-72,7 %	-39,4 %	-77,6 %	-36,6 %	-16,4 %	-19,9 %	-18,0 %		
	Sähkölämmitys	Kulutus-sähkö	Teoll. sähkö	Öljylämmitys	Kauko-lämpö	Muut fossiiliset	Kadut	Tiet	Moottori-pyörät	Kiinteä jäte	Jätevesi	Peltoviljely	Eläinten ruoansul.	Lannan-käsittely	Kompensaatit	
2007	58,9	43,6	17,6	20,3	21,6	74,7	42,7	94,4	1,2	25,7	2,1	9,5	2,4	0,7	0,0	415
2016	30,7	25,5	9,2	12,4	6,4	43,9	33,3	95,9	1,1	19,1	2,2	8,8	2,1	0,6	0,0	291
2030 skenario	10,0	13,2	4,0	3,3	1,1	21,9	8,9	25,7	0,7	5,7	1,3	8,0	1,9	0,6	-5,3	101

Vähennys eriteltynä päästösektoreittain:

Toimia päästöjen vähentämiseksi vuoden 2016 jälkeen vuoteen 2030 mennessä:	%	Vähennys (tCO2e/a)	Sähkölämmitys	Kulutus-sähkö	Teollisuus-sähkö	Öljylämmitys	Kaukolämpö	Muut fossiiliset polttoaineet	Kadut	Tiet	Mopot ja moottoripyörät	Kiinteä jäte	Jätevesi	Peltoviljely	Eläinten ruoansulatus	Lannankäsittely	Kompensaatit
1) Energiatehokkuus																	
1a) Pientalojen energiatehokkuuden parannus keskimäärin	< >	20 %	6 287	4 392		1 808	86										
1b) Kerros- ja rivitalojen energiatehokkuuden parannus keskimäärin	< >	20 %	1 221	360		295	566										
1c) Muiden rakennusten energiatehokkuuden parannus keskimäärin	< >	20 %	1 278	908		68	302										
2) Kaukolämmön päästövähennys	< >	80 %	4 342				4 342										
3a) Öljylämmitteiset pientalot, lämmityksen vaihto																	
Pelletti / puu / hake	< >	20 %	1 446			1 446											
Maalämpö	< >	45 %	3 254			3 254											
Ilma-vesilämpöpumppu	< >	15 %	1 085			1 085											
Öljy->lämpöpumput lisääntynyt sähkönkäyttö				-435													
Öljylämmitteisten pientalojen vähennykset yhteensä			5 351														
3b) Sähkölämm. pientalot, lämmityksen vaihto																	
Pelletti / puu / hake	< >	5 %	878	878													
Maalämpöpumppu	< >	10 %	1 225	1 225													
Ilmalämpöpumppu	< >	70 %	5 466	5 466													
Ilma-vesilämpöpumppu	< >	5 %	527	527													
Sähkölämmitteisten pientalojen vähennykset yhteensä			8 096														
4a) Muut öljylämmitteiset kiinteistöt, lämmityksen vaihto hake/pelletti																	
Öljylämmitteiset rivitalot	< >	80 %	348			348											
Öljylämmitteiset kerrostalot	< >	80 %	597			597											
Öljylämmitteiset liikehuoneistot	< >	80 %	180			180											
Öljylämmitteiset teollisuuskiinteistöt	< >	80 %	38			38											
Muiden öljylämm. kiinteistöjen vähennykset yhteensä			1 163														
4b) Muut sähkölämmitteiset kiinteistöt, lämmityksen vaihto hake/pelletti																	
Sähkölämmitteiset rivitalot	< >	30 %	289	289													
Sähkölämmitteiset kerrostalot	< >	30 %	143	143													
Sähkölämmitteiset liikehuoneistot	< >	30 %	184	184													
Sähkölämmitteiset teollisuuskiinteistöt	< >	30 %	906			906											
Muiden sähkölämm. kiinteistöjen vähennykset yhteensä			1 522														
5) Teollisuuden ja työkaluiden fossiilisten polttoaineiden vähentäminen	< >	50 %	21 926					21 926									
6) Sähkönkulutus																	
6a) Teollisuuden sähkönkulutuksen vähennys	< >	10 %	923			923											
6b) Valaistussähkön kulutuksen vähentyminen LEDien myötä	< >		1 389		694	694											
6c) Katuväläytin uusimista (LED) 125 -> 50 W, 10000 kpl	< >	10000 kpl			243	243											
6d) Palvelusektorin ja kotitalouksien sähkönkulutuksen vähennys	< >	10 %	2 436		2 436												
6e) Aurinkosähkö																	
Julkisiin rakennuksiin 60 kpl 10kW aurinkosähköjärjestelmiä	< >	60 kpl	43		43												
5 kW aurinkosähköjärjestelmä, %-osuus pientaloista:	< >	40 %	1 667		1 667												
Alueelle 1,4 MW suuren mittakaavan aurinkovoimaa	< >	1,4 MW	99		99												
6f) Valtakunnallisen sähkön päästökertoimen pieneneminen	< >	40 %	17 541	6 697	8 161	2 683											
7) Liikenne																	
Osuus henkilöautoista biokaasuun	< >	15 %	10 792														
Osuus henkilöautoista sähköautoiksi	< >	20 %	13 470		-919				2 782	8 010							
Osuus raskaasta liikenteestä biokaasuun	< >	30 %	14 620						3 710	10 680							
Osuus raskaasta liikenteestä sähköiseksi	< >	5 %	2 570		-174				4 244	12 218							
Polttoainetehokkuuden lisäys	< >	25 %	21 756						707	2 036							
Liikennepolttoaineen biokomponentti 6 -> 25 %	< >		13 184						5 560	16 006		191					
									3 369	9 699		116					
7a) Keskimääräisen ajosuorituksen vähentäminen	< >	30 %	15 625						3 993	11 495	137						
8) Maatalous																	
Peltoviljelyn päästövähennys	< >	10 %	885										885				
Eläinten ruoansulatuksen päästövähennys	< >	10 %	215											215			
Lannankäsittelyn päästövähennys	< >	10 %	63													63	
9) Jätteiden käsittely																	
Kiinteän jätteen päästövähennys	< >	70 %	13 396									13 396					
Jätevesien päästövähennys	< >	40 %	867										867				
10) Päästökompensaatit																	
Tuulipuiston mitat:																	
Tuulipuisto(t): 5 kpl 5 MW voimaloita (nimellisteho yht. 25 MW)			5 322														5 322

Päästövähennykset 2016-2030 yhteensä:	190 134	20 635	12 251	5 206	9 120	5 296	21 926	24 365	70 143	444	13 396	867	885	215	63	5 322
Päästövähennykset 2007-2016 yhteensä:	123 964	28 211	18 103	8 388	7 876	15 222	30 832	9 353	-1 463	10	6 543	-117	677	266	62	0
Päästövähennykset 2007-2030 yhteensä:	314 097	48 846	30 354	13 594	16 996	20 517	52 758	33 719	68 681	454	19 939	750	1 562	481	125	5 322

Appendix 2: Sustainable Development Goals



Ensuring healthy lives and promoting well-being at all ages. Even though life expectancy has increased and child and maternal mortality has decreased in some parts of the world, the work for health and well-being continues. At the end of 2013, 35 million people were living with HIV globally, and 6 million children die before their 5th birthday each year.

Target 3.4: By 2030, reduce by one third premature mortality from non-communicable diseases, such as cardiovascular disease, diabetes and asthma, through prevention and treatment and promote mental health and well-being.



Ensure open, equitable and high-quality education and lifelong learning opportunities for everyone. Everyone has the right to receive high-quality primary and secondary education. Educating the population also ensures a better quality of life for future generations. At the moment, 57 million children remain outside the school system in developing countries, and 103 million young people worldwide lack basic literacy

skills.

Target 4.7: By 2030, ensure that all learners acquire the knowledge and skills needed to promote sustainable development, including, among others, through education for sustainable development and sustainable lifestyles, human rights, gender equality, promotion of a culture of peace and non-violence, global citizenship and appreciation of cultural diversity and of culture's contribution to sustainable development.



Ensure universal access to affordable, reliable and modern energy services. One fifth of the global population still lacks access to modern electricity. In addition to enabling easy everyday living, energy is the dominant contributor to climate change, accounting for around 60 per cent of total global greenhouse gas emissions. Efficient, new and renewable energy sources are needed to create a sustainable economy,

jobs and food production.

Target 7.2: By 2030, increase substantially the share of renewable energy in the global energy mix.

Target 7.3: By 2030, double the global rate of improvement in energy efficiency.



Build sustainable infrastructure and promote sustainable industry and innovation. The sustainable development and living standards of all societies can be supported through the development of new and accessible innovations and investments in traffic, irrigation systems, energy production and communication.

Target 9.1: Develop high-quality, reliable, sustainable and resilient infrastructure, including regional and transborder infrastructure, to support economic development and human well-being, with a focus on affordable and equitable access for all.



Ensure safe and sustainable cities and residential communities. Half of humanity – 3.5 billion people – lives in cities today. A sustainable urban environment creates opportunities for its population while also ensuring basic services, access to energy, good living conditions and good transport opportunities without straining or polluting the environment.

Target 11.2: By 2030, provide access to safe, affordable, accessible and sustainable transport systems for all, improving road safety, notably by expanding public transport, with special attention to the needs of those in vulnerable situations, women, children, persons with disabilities and older persons.

Target 11.3: By 2030, enhance inclusive and sustainable urbanisation and capacity for participatory, integrated and sustainable human settlement planning and management in all countries.



Ensure the sustainability of consumption and production. The global population is predicted to reach 9.6 billion by 2050. Should this happen, the equivalent of almost three planets would be required to provide the natural resources needed to sustain current lifestyles. The goal is that commercial operations would produce as much well-being as possible while reducing pollution and the use of natural resources.

Target 12.2: By 2030, achieve the sustainable management and efficient use of natural resources.

Target 12.3: By 2030, halve per capita global food waste at the retail and consumer levels and reduce food losses along production and supply chains, including post-harvest losses.

Target 12.5: By 2030, substantially reduce waste generation through prevention, reduction, recycling and reuse.

Target 12.7: Promote public procurement practices that are sustainable, in accordance with national policies and priorities.

Target 12.8: By 2030, ensure that people everywhere have the relevant information and awareness for sustainable development and lifestyles in harmony with nature.



Act urgently to mitigate climate change and its impacts. Carbon dioxide is a greenhouse gas which warms the climate as it is released into the atmosphere. Global emissions of carbon dioxide have increased by almost 50 per cent since 1990. Global warming causes floods, erosion, a rise in sea level and unpredictable weather phenomena. Because of these phenomena, living conditions become more difficult, particularly in the poorest areas, and the number of climate refugees is predicted to increase. Climate change affects everyone, and immediate action is required to prevent it. It is not possible to save the climate without global co-operation. Countries agree on climate actions primarily through a separate climate agreement. In Paris in 2015, the countries of the world committed to maintaining global warming below 2 degrees Celsius and aiming at 1.5 degrees Celsius.

Target 13.1: Strengthen resilience and adaptive capacity to climate-related hazards and natural disasters in all countries.

Target 13.2: Integrate climate change measures into national policies, strategies and planning.

Target 13.3: Improve education, awareness-raising and human and institutional capacity on climate change mitigation, adaptation, impact reduction and early warning.



Conserve and restore land ecosystems, promote sustainable use thereof and stop the nutrient-impoverishment of soil and the loss of biodiversity. Forests cover 30 per cent of the Earth's surface. They are home to more than 80 per cent of all terrestrial species of animals, plants and insects.

Target 15.2: By 2020, promote the implementation of sustainable management of all types of forests, halt deforestation, restore degraded forests and substantially increase afforestation and reforestation globally.

Target 15.5: Take urgent and significant action to reduce the degradation of natural habitats, halt the loss of biodiversity and, by 2020, protect and prevent the extinction of threatened species.

Target 15.8: By 2020, introduce measures to prevent the introduction and significantly reduce the impact of invasive alien species on land and water ecosystems and control or eradicate the priority species.

Target 15.9: By 2020, integrate ecosystem and biodiversity values into national and local planning, development processes, poverty reduction strategies and accounts.



Strengthen the implementation and global partnership of sustainable development. The sustainable development goals cannot be realised without co-operation between governments, the private sector and civil society. Co-operation should be global, national and local. The realisation of the sustainable development goals also requires long-term investments. Official development assistance reached an all-time high of 142.6 billion dollars in 2016. Even though the level of total assistance is growing, the share of developed countries has decreased.

Target 17.17: Encourage and promote effective public, public-private and civil society partnerships, building on the experience and resourcing strategies of partnerships.