



ROADMAP TO RESOURCE WISDOM



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INTRODUCTION

When populations and functions are highly concentrated in urban environments, those environments become more vulnerable and emissions are increased. Dwindling natural resources, advancing climate change and diminishing biodiversity all force cities around the world to think of new ways to operate to conserve natural resources and reduce emissions. The City of Vantaa responds to this challenge with the roadmap to resource wisdom.

Cities and urban regions are in a crucial position when it comes to controlling climate change and preventing other environmental impacts. The urban structure of cities significantly affects lifestyles and choices such as mobility needs and transport mode choices, as well as housing types and, subsequently, energy consumption. Additionally, the city has the opportunity to act as an example and pioneer, as well as share information about good practices. The proper actions must be taken in the places where the emissions are the highest: in the cities.

The Vantaa roadmap to resource wisdom guides the development of the city towards a city with no emissions and no waste, using natural resources sustainably and without overconsumption (graph 1). A city with no emissions is carbon neutral. A city with no waste does not generate waste for landfills, but the waste is recycled instead. A city that avoids overconsumption uses natural resources within the limits of what the planet can support.

At the same time, the city wants to support the well-being of citizens and the vitality of the city. Many of the solutions, such as the circular economy, also offer opportunities in e.g. developing new kinds of business and improving employment. The very definition of resource wisdom is the ability to use resources in a planned manner that promotes

well-being and sustainable development. The vision of the City of Vantaa itself states that Vantaa is a responsible growth center.

The challenges that the roadmap has been drafted to face are expansive, and their effects are not limited to any one department or industry. That is why solving them requires wide-reaching cooperation: both across sectors as well as between the city and Vantaa's companies, communities, educational institutions and citizens. Resource wisdom requires a far-reaching level of commitment and sufficient resources.



No emissions



No waste

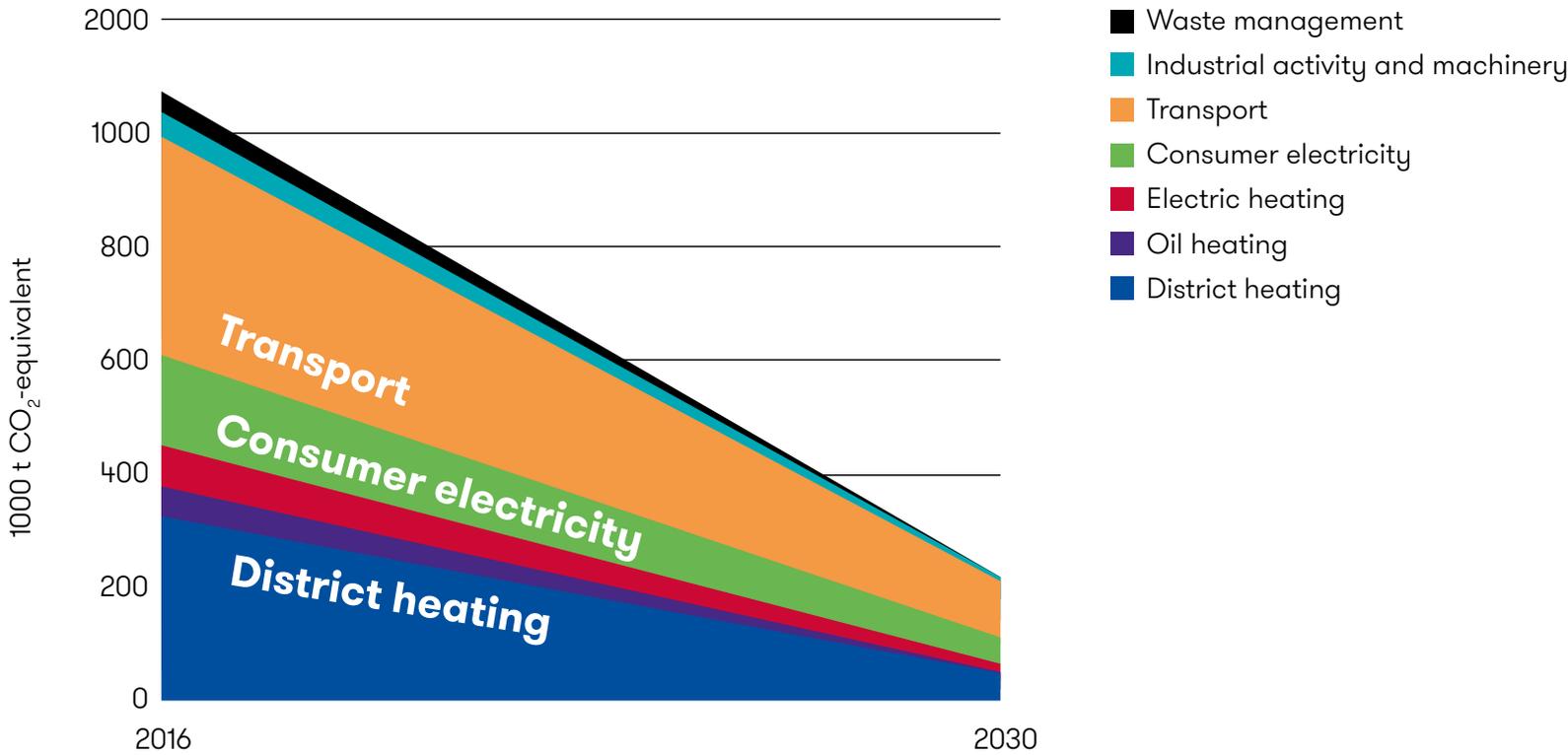


No overconsumption

The three main goals of the roadmap to resource wisdom: no emissions, no waste, no overconsumption.

The goal of a carbon neutral Vantaa by 2030

Vantaa is committed to becoming a carbon neutral city by the year 2030. This means that Vantaa must reduce its greenhouse gas emissions by 80 percent compared to the level of emissions in 1990, as well as to compensate the remaining emissions, e.g. by funding low-carbon projects elsewhere. According to HSY statistics, the greenhouse gas emissions of the City of Vantaa were the same in the year 2016 as they were in 1990 — in other words, 1078 carbon dioxide equivalent kilotonnes. Thus, the greenhouse gas emissions of the City of Vantaa must reach a level of 215 ktCO₂e by 2030.



2

BACKGROUND OF THE ROADMAP TO RESOURCE WISDOM

The City of Vantaa is committed to promoting environmental issues and accountability through several national and international programs and commitments. One of the most crucial programs is the climate network between the mayors of the six largest cities in Finland. The roadmap to resource wisdom is also connected with the UN's sustainable development goal program, Agenda 2030, set in 2015. Its goal is sustainable development that considers both the environment and the people in it.

In the strategy approved by the City Council of Vantaa on 11 December 2017, the values set for the city were openness, courage, accountability and a sense of community. One of the focus points of the strategy was defined as striving towards an integrated city structure while cherishing the nearby nature, and one of its goals was to reinforce the current urban structure in a resource-wise manner. These values and actions also guide the environmental work of the city, and this work is being promoted in Vantaa through the roadmap to resource wisdom.

Division of labor for the programs executing the strategy

We will strive at an integrated city structure while cherishing the nearby nature

Land use and housing policies

- Land use planning
- Housing
- Enterprise zones and environments
- Transfer of plots

Roadmap to resource wisdom

- Sustainable way of life: mobility, food, green areas, sense of community

We will increase the city's vitality and attractiveness

Vitality goals

- Education and competence
- Employment
- Cooperation with businesses
- Event production

We will promote our residents' well-being

Well-being program

- Healthy lifestyles
- Well-being disparity
- Integration

The roadmap to resource wisdom is one of the programs executing the city strategy, along with the program of land use and housing policies and the well-being program. Additionally, some of the city's strategic goals are executed through the city's vitality goals.

VALUES

Openness

We will ensure that our economy is balanced

- We will improve productivity to realize the financial policies
- We will stay in control of the group's economy

Courage

We will strive at an integrated city structure while cherishing the nearby nature

- We will reinforce the current urban structure in a resource-wise manner
- We will bravely make use of the development opportunities of the urban centers
- The urban environments and housing of Vantaa are internationally competitive

Accountability

We will increase the city's vitality and attractiveness

- The urban employment situation is developing the best in the capital region
- The competences of the working age population will better reflect the changing needs of working life
- Diverse and attractive employment zones will be available to businesses
- Vantaa is known as a city of events

Sense of community

Brave and relaxed Vantaa is a pioneer and a responsible growth center.

We will promote our residents' well-being

- The health and well-being of citizens will be reinforced through healthier lifestyles
- Well-being disparity will be reduced (disparity between regions/segregation and disparity between citizens)
- The most multicultural city in Finland is also at the top in integration
- The citizens' possibilities for active participation in the development of the city and their own home region will increase
- The indoor air situation of municipal spaces will improve

We are pioneers in service development

- The services in Vantaa are high-quality, cost-efficient and respond to the citizens' needs
- Digital services will be designed as the primary mode of business for citizens
- Services will be developed in a customer-centric manner in cooperation with citizens, businesses and organizations, as well as other municipalities

We will lead by reforming and participating

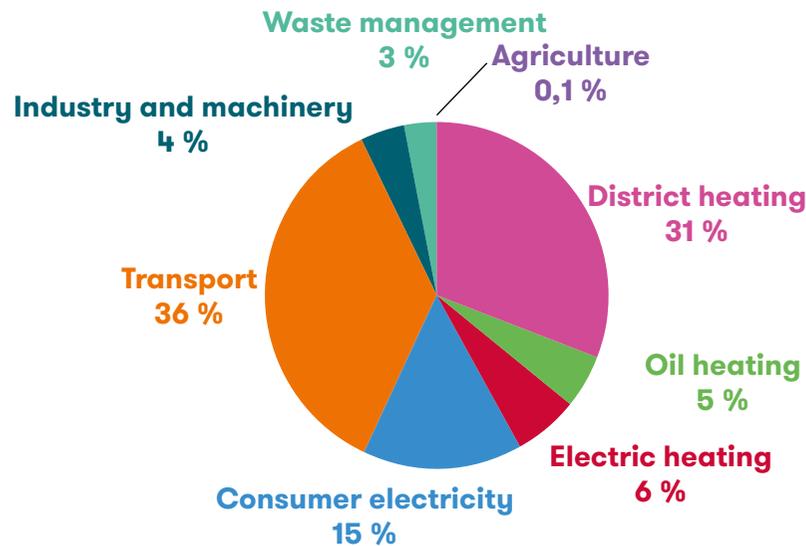
- Leading will change along with reforms
- The personnel's resources will improve

The Vantaa roadmap to resource wisdom, along with the departmental execution plans, replaces the previous environmental programs. The noise control actions, however, will be defined in a separately-drafted noise control action plan. The roadmap also updates the city's environmental policies.

2.1 The goal of a carbon neutral Vantaa by 2030

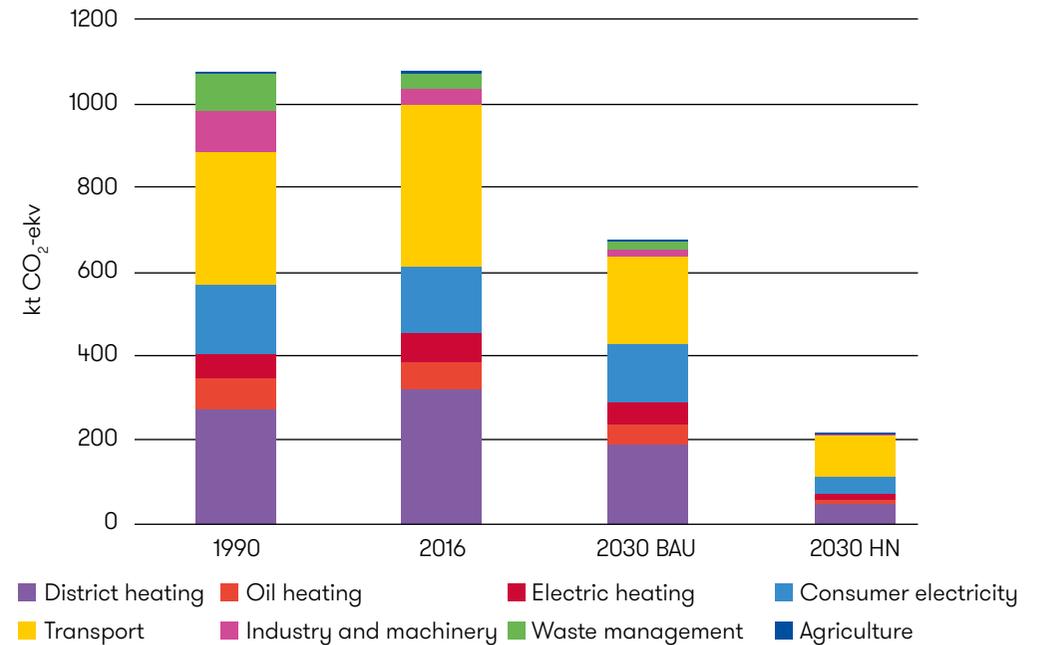
The City Council of Vantaa has stated in their city strategy that the City of Vantaa will be carbon neutral by the year 2030.

In 2016, the greenhouse gas emissions of the City of Vantaa were 1078 carbon neutral equivalent kilotonnes. The most significant emission sources were transport (36 %) and heating of buildings (42 %). The rest of the emissions consist of consumer electricity, industrial use, machinery, waste management and agriculture.



Percentage shares of the City of Vantaa emissions in 2016 by sectors.

Vantaa is committed to reducing its greenhouse gas emissions by 80 % in comparison to the emission levels in 1990, as well as compensating the remaining emissions by e.g. funding low-carbon projects elsewhere¹. The greenhouse gas emissions in Vantaa were the same in the year 2016 as they were in 1990. Thus, the greenhouse gas emissions of the City of Vantaa must reach a level of 215 ktCO₂e by 2030. On average, this means a reduction need of 7 percentage points per year between 2018–2030.



The verified emissions in Vantaa and the 2030 result scenarios in graph form. The basic scenario (BAU) examines how the emission levels would continue to change based on decisions already in place. The carbon neutral scenario (HN) examines how much each sector's emissions must decrease in order to reach the new goal.

The emissions in Vantaa have been slightly decreasing every year since 2010, and they are estimated to continue to decrease with decisions already in place². The new goal is ambitious, however, and an 80 % reduction in emissions in 12 years does not come about by itself. Achieving the goal requires determined action in every sector!

Examining the goal of carbon neutrality is limited to the emissions produced within the City of Vantaa and the emissions of purchased consumer electricity. The goal does not account for indirect emissions of goods produced outside the city limits (e.g. food, cars, appliances, building materials) or indirect emissions of services, because currently there is still no sufficiently comprehensive and reliable methodology available for calculating these indirect emissions. The roadmap to resource wisdom does, however, also discuss the goals and actions related to reducing indirect emissions.

In Vantaa, alternative scenarios and the most effective actions have been examined through the Ilmastoveivi climate swing scenario tool developed by the Helsinki Region Environmental Services Authority HSY, as well as in comprehensive workshops. HSY's Ilmastoveivi allows the user to examine, sector by sector, what actions would enable the reduction of emissions in order to achieve the goal of carbon neutrality. In a scenario drafted by experts from the different sectors of the city with the Ilmastoveivi tool, it was possible to reduce the total greenhouse gas emissions to match the goal. This scenario is called the carbon neutral scenario (HN). The graphs for the more detailed Ilmastoveivi goals can be found in appendix 2.

Necessary additional actions and their effects have also been examined in the Vantaa 2030 report conducted by the city's Environment Centre. The examination of the report has been limited to those actions that the City of Vantaa can influence. The results of the report have been considered when setting the goals of the roadmap to resource wisdom. The most effective additional actions to reduce emissions can be found mostly in the usage of electricity and heating, as well as transport.

The remaining emissions must be compensated, e.g. by funding low-carbon projects elsewhere. According to the Association of Finnish Local and Regional Authorities, the most important thing is for the compensation taking place outside of the municipality to achieve actual emission reductions that would not be achieved without the municipality's funding, or the funding or actions of other operators in the municipality. The compensation must not lead to double accounting or, in other words, of one specific action having multiple parties claiming the emission reductions as theirs.

¹ The Association of Finnish Local and Regional Authorities suggests this percentage, as it is very difficult to remove all anthropogenic greenhouse gas emissions.

² In the basic scenario drafted by HSY, the greenhouse gas emissions in Vantaa are a little short of 700 ktCO₂e in 2030 due to decisions already in place.

3

THE VANTAA ROADMAP TO RESOURCE WISDOM

The roadmap to resource wisdom of the City of Vantaa presents actions that can be taken in order to take steps toward the goals set. The roadmap to resource wisdom follows four lanes, whose goals and actions support one another. The lanes in question are titled energy consumption and production, urban structure and transport, consumption and materials, and responsible citizen. Additionally, to achieve carbon neutrality, actions are required from subsidiaries and other stakeholders that have been noted down in the section titled Other actions.

The work on resource wisdom has its goals set for the year 2030. The actions of each of the city's roadmap lanes have been scheduled based on council terms, and the term-specific actions allow us to move forward, step by step, towards the desired state. The city-wide roadmap to resource wisdom is supported by department-specific action plans.



3.1 Goals and actions of the roadmap to resource wisdom

For each lane of the roadmap to resource wisdom, a desired state for the year 2030 has been defined to help guide the direction toward a Vantaa that embraces resource wisdom.

Desired state 2030



ENERGY PRODUCTION AND CONSUMPTION

The production of electricity and heat causes no emissions.
Municipal citizens are active in producing their own electricity and as operators in energy production.
The basis of land use and building is resource and energy efficiency.
Energy consumption is smart, and the buildings are energy-efficient.



URBAN STRUCTURE AND TRANSPORT

The city structure is mixed and sustainable.
Transport is carbon neutral, well-working and reasonably priced.
The city has prepared for the effects of climate change and is using resource wise and natural solutions.
Nature capital and biodiversity is preserved and increased, also in built-up areas.
Green structure creates well-being and the green areas are easily reached.



CONSUMPTION AND MATERIALS

The city promotes circular economy.
The sharing economy is an established part of the service network.
Public procurement and investments are resource-efficient, responsible and support the circular economy.
The food production chain is sustainable.



RESPONSIBLE CITIZEN

The lifestyle of the citizens of Vantaa is sustainable and based on a good relationship with nature.
Participation and communality are part of an environmentally responsible daily life.
The city and the local companies are environmentally responsible.



ENERGY PRODUCTION AND CONSUMPTION

The production and consumption of energy cause the majority of the greenhouse gas emissions in Vantaa. The goal of the roadmap is an emission-free production of electricity and heating, increasing energy and resource efficiency, as well as smart energy consumption. The city can indirectly influence the emissions caused by energy production and consumption by e.g. land use and building guidelines as well as influencing the energy source choices of energy plants owned by the city. Additionally, the city has the opportunity to act as an example and share information about good practices.

The role of Vantaa Energy in achieving the carbon neutrality goals is significant, as district heating currently produces 31 % of the total emissions in Vantaa. The roadmap presents the actions in the existing Vantaa Energy plans. Vantaa Energy has committed to abandoning coal, and the goal of the company is for its electricity and heating production to not cause any significant greenhouse gas emissions.

So far, opportunities to make use of waste heat have largely gone unused in Vantaa. Making use of waste heat is cost-efficient, and Vantaa is conducting a municipal study for renewal energy, which examines the potential for waste heat usage, among others. The study will evaluate sites that are appropriate to the scale.

Oil heating in the decentralized heating of buildings causes 5 % of greenhouse gas emissions in Vantaa. The city currently owns 37 buildings that are fitted with oil heating, most of which are schools and day-cares. The goal for the Vantaa region is to give up the use of oil heating by 2030.



Solar panels on a green roof. Photo by Taina Suonio

Moving to use locally produced renewable energy requires citizen guidance and making the solutions easy. To support this, the plan is to open the Vantaa Portal for Renewable Energy. This web portal would allow property owners to easily check the renewable energy potential of their properties and compare different options. The city planning of new areas should take into account the local production of renewable energy, but also resource efficiency in a larger scale.

The area of floor space to be heated affects the usage of heating energy. On a trial basis, Vantaa has built small apartments connected by shared spaces, which is also a solution for the sustainable use of energy. New guidelines have been made to guide the construction of commercial premises in the city toward energy efficiency and sustainable construction. These guidelines will be kept up to date and updated to reflect the carbon neutrality goals. In the future, the city will be an exemplar of energy-efficient construction and usage of renewable energy. There are also further actions for energy savings in the municipal energy efficiency agreement that Vantaa is a part of. The agreement's goal is a reduction of 7.5 % by the year 2025. To achieve this goal, a separate action plan has been drawn up.

The management of energy efficiency and savings is also supported by the comprehensive and goal-oriented energy leadership. In goal-oriented energy leadership, the city works together with the users of the properties to set dynamic goal levels for the energy consumption of the properties. Tools such as automatic analytics and demand responses help in achieving these goals.

To support energy leadership, the consumption data of the properties will be maintained in the property management system, and they will be published as open data and made available, especially at schools and daycares. When improving the energy efficiency of the properties, attention will be paid not to endanger the indoor air quality of the properties. The challenge is developing the ventilation of the buildings so that it is not only in line with regulations, but also energy-efficient and cost-efficient.

The heating of buildings produces a large part of greenhouse gas emissions. New buildings are energy efficient. Thus, action needs to be taken

in the usage of heating energy for the existing building stock. The usage can be decreased by renovating the existing building stock to be energy-efficient, and by producing renewable energy at the properties.

The beginning of energy renovations requires unanimous decision-making in housing associations, as well as sufficient funding. Some of the actions are related to the maintenance of the buildings and can be undertaken in a cost-efficient manner. The most important measures are increasing the information available to property owners by providing energy advice, and financial incentives. The city will be looking into improving energy efficiency when renovating older neighborhoods in cooperation with various parties.

There are also new funding solutions on the way for energy renovations to improve energy efficiency, and communicating about these solutions is important. As one of the largest cities in Finland, and in cooperation with other large cities, Vantaa can also influence the state in order for financial incentives to be created for energy renovations, and for legislative obstacles to be removed.



Moving towards smart energy consumption is one of the goals of the roadmap. Photo by Pertti Raami



URBAN STRUCTURE AND TRANSPORT

Urban structure and transport have a significant effect on the resource efficiency of a city. Solutions in land use can significantly reduce the energy consumption and greenhouse gas emissions of the municipality, both for the building stock and for transport.

Vantaa is heading toward sustainable urban construction through more intensified land use with mixed functions, which also reduces transport needs. The greenhouse gas emissions of a dense urban structure are significantly lower than the emissions of a spread-out urban structure. Additionally, a denser urban structure enables better accessibility for services and conserves green areas. Air quality control is also taken into account when planning areas with a dense urban structure.

The urban planning and construction in Vantaa will be taking energy efficiency, eco-efficiency and environmental as their core values. The city considers local circumstances for the use of renewable energy and already minimizes risks related to changes caused by climate change in the planning and construction phase. This adapting has been taken into account in the risk management of the city.

The urban planning and construction also works to preserve and increase the biodiversity of nature, as well as to ensure functioning ecosystem services. Investing in green infrastructure also makes financial sense, as replacing the services provided by nature with artificial solutions would be both technically challenging and very expensive.



*Environmentally friendly transportation in Vantaa.
Photo by Pertti Raami*

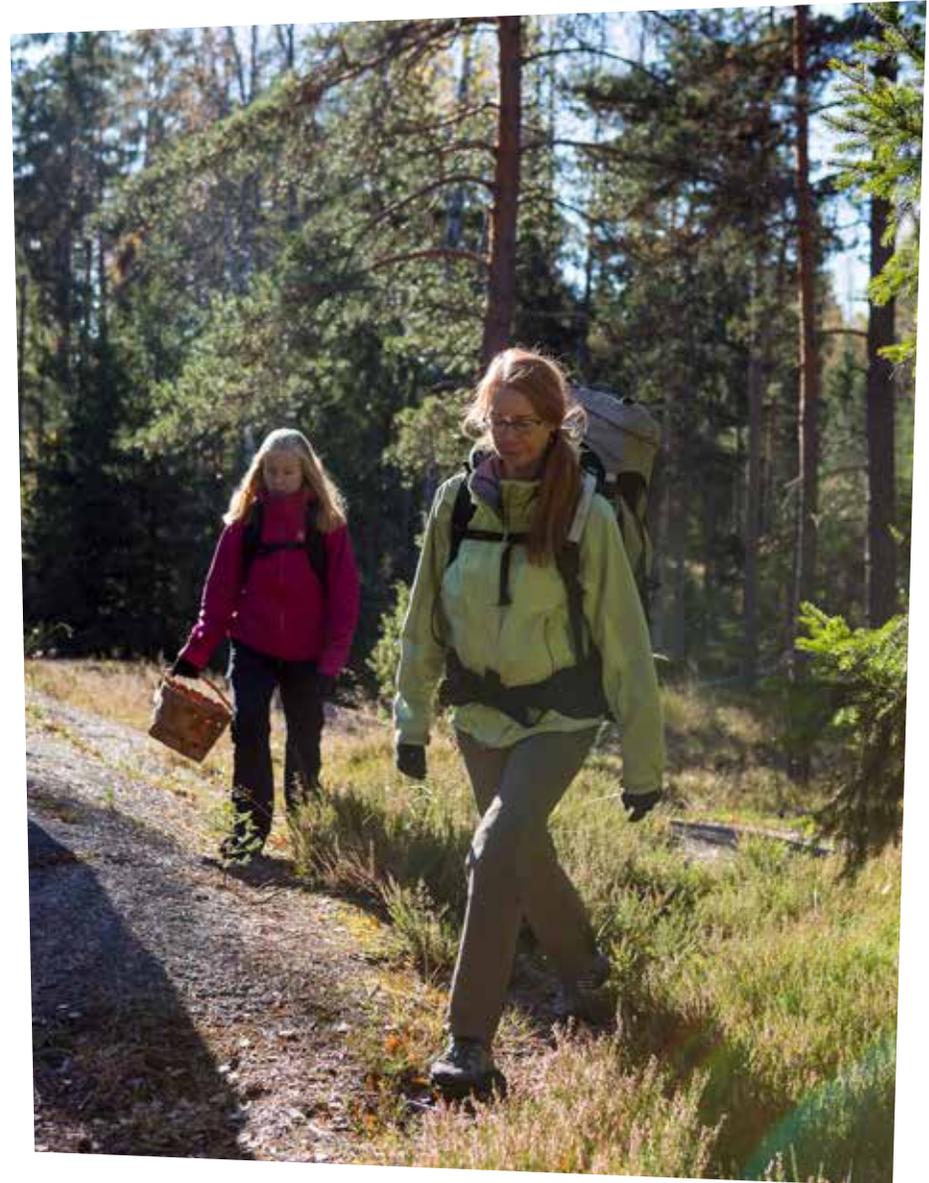
Following the construction of the Ring Rail Line, Vantaa has especially focused on developing the station neighborhoods along the line. To name a few, the city is working with HSY in the international Smart MR (Sustainable Measures for Achieving Resilient Transportation in Metropolitan Regions) project, working to realize the design concept of a Low Carbon District in the station neighborhoods.

Emissions caused by transport account for 36 % of the total greenhouse gas emissions in Vantaa. Thus, reducing the emissions caused by transport is of crucial importance to achieving the goal of carbon neutrality, as they would need to be reduced by nearly 70 % between 1990–2030. The intermunicipal MAL (land use, housing and transport) cooperation work is especially important in reducing emissions caused by transport. The largest reductions in emissions can be achieved through pricing in vehicle traffic. However, implementing a road user charge does require changes in legislation, regional cooperation and public approval of the matter. Additionally, a study needs to be conducted as to how the charges would affect different user groups.

In order to reduce transport emissions, it is crucial that vehicular consumption of gasoline and diesel can be decreased by 50–100 % depending on the vehicle, and replaced with electricity-, biogas- or bio-fuel-powered vehicles.

In addition to the goals to reduce emissions caused by transport, the Vantaa roadmap to resource wisdom aims to have traffic and transportation work smoothly and be affordably priced. The set of trunk routes in Vantaa is being developed, and the city is planning a tramway and preparing for its construction in the following council term. A prerequisite for the project is state participation in the project expenses.

The city also promotes smart transportation by taking measures to develop public transport as well as pedestrian and bicycle traffic. In the future, the planning must also better consider the need for different modes of transport, such as skating, rollerblading and electrically-assisted mobility equipment. The city also supports the implementation of city bikes.



*The green areas in Vantaa are havens of well-being, and they will continue to be easily accessible in the future, as well.
Photo by Sakari Manninen*



CONSUMPTION AND MATERIALS

Sustainable use of natural resources is one of the corner stones of resource wisdom. Doing so requires resource-wise planning, resource-efficient consumption and promotion of circular economy. At its best, embracing resource-wise use of natural resources creates new economic opportunities.

Vantaa is one of the ten forerunner municipalities in the project CIRCWASTE - towards circular economy in Finland. Through the project, the city is committed to working together with HSY to increase the recycling of municipal waste in accordance with the national waste management plan and to promote circular economy. For the project, the city must draft a roadmap to circular economy, which in Vantaa's case will not be a separate document, but will rather be included as part of the roadmap to resource wisdom. The roadmap to resource wisdom already includes measures to promote circular economy, and the goals will be followed up on when the roadmap is updated.

The City of Vantaa is one of the fastest-growing cities in Finland, and due to the rapid rate of construction, there are plenty of opportunities in the reuse of dismantled and recycled materials as well as landmasses, which can all be harnessed better than before. This does require the implementation of new assessment methods, monitoring models and calculations, as well as guidelines. In developing the reuse of dismantled and recycled materials and landmasses, Vantaa also sees the opportunity to improve entrepreneurship and employment. The city is developing an operational model for circular economy in cooperation with entrepreneurs and HSY. In accordance with the goals of resource

wisdom, the city also promotes entrepreneurship by looking into providing suitable spaces for the use of micro-operators of circular economy.

All in all, the roadmap to resource wisdom aims to move to a circular economy, where consumption is based less on new products and ownership, and more on the use of services: sharing, renting and recycling.

It is crucial for a resource-wise city to embrace a sharing economy, where the key point is availability for use instead of ownership. The city's role in promoting a sharing economy is on one hand to be an enabler — and guide the sharing economy in the correct direction with sufficient regulation — and on the other hand to ensure that the resources owned by and available to the city are efficiently harnessed and open to shared use. For example, the city owns a large amount of spaces that stand empty for most of the day, and there are also steps to be taken to improve the shared usage of the city's stock of cars and electric bikes.

By acting responsibly in procurement, the city can significantly help in achieving the goals of resource wisdom and circular economy. Vantaa has drafted a roadmap for strategic procurements, with goals of innovative and sustainable public procurement. This roadmap also complements the roadmap to resource wisdom. The roadmap to resource wisdom includes goals on e.g. development of the procurement process towards systematic lifecycle principles and making sustainable procurements.

The environmental impact of food production is significant. For example, food makes up around one fifth of the environmental impacts of private consumption. The goal, then, is to have a sustainable food production chain by 2030.

Waste food is produced at every step of the chain and, in addition to responsible procurements, reducing this waste is a significant part of reducing the environmental impacts of food. Making use of the waste can also have social effects, such as with the Yhteinen pöytä (Shared Table) project in Vantaa. Yhteinen pöytä is a network of the City of Vantaa and the Vantaa Parish Union, developing communal food aid activity and increasing the agency and communality of the recipients of food aid.

Sharing economy is defined as shared and community-based consumption. The availability for use is important in a sharing economy, instead of the ownership of goods or spaces. The term covers things like neighborly assistance, renting your car for shared use, as well as commercial services, such as car sharing companies.

Circular economy is a model where no waste is produced, but rather the goods, components and materials are recycled as long as possible in order to retain their value. Circular economy reduces the need for virgin materials by making waste into a raw material.



Wood construction in Kivistö. Photo by Sakari Manninen



RESPONSIBLE CITIZEN

Accountability is one of the values of Vantaa, and it means guaranteeing a good life for both current and future generations. A sense of community, on the other hand, includes participation, creation of trust and togetherness and a commitment to shared goals. A resource-wise Vantaa requires succeeding on both of these values. The lane titled Responsible citizen covers all citizens of Vantaa — municipal employees, residents, companies and communities. The lane includes actions related to a sustainable lifestyle, upbringing and education as well as environmental management and ways of working.

The City of Vantaa raises citizens with a good eco-social education, promotes the creation and development of a good relationship with nature and keeps the environmental understanding of the municipal employees up to date by ensuring sufficient training. The city enables environmentally positive acts in workplaces, e.g. by developing and expanding eco-support work. The goal is for the Vantaa lifestyle to be sustainable and based on a good relationship with nature.

In 2030, the city as well as companies and communities in Vantaa will be exemplary in bearing their environmental responsibilities. This requires the development of systematic environmental management, where environmental matters are integrated as a part of the workplace's everyday routines, methods, work structures, planning and decision making. Management of environmental matters and a continuous improvement are included as part of all other management.



Enjoying nature. Photo by Felix Siivonen

Environmental management is promoted by developing the tools of leadership, eco-support work and environmental training. Additionally, Vantaa supports the implementation of environmental certificates such as EcoCompass and the Vihreä Lippu program, which is focused on schools and daycares.

For a resource-wise Vantaa, participation and communality are part of an environmentally responsible daily life. The city is developing different methods of taking care of the environment with shared responsibilities and supporting the participation of citizens in e.g. resident spaces.

The primary education of Vantaa defines eco-social education as follows:

Eco-social education is ecological education: making choices in line with the principles of sustainable development. Eco-social education is also social education: the ability to take care of oneself, live in harmony with others and understand the effects of your own choices even further away from yourself.

A relationship with nature means the entirety of interaction between an individual or community and nature. The definition includes empathy towards creatures, a sense of unity with nature, sense of responsibility for the environment and enjoyment of nature.



Recycling and goods exchanges are becoming more common in the everyday life of responsible citizens of Vantaa.

Photo by Sakari Manninen

4

OTHER ACTIONS

Achieving the goals of the roadmap also requires state action, regional cooperation and action by subsidiary groups. Cities can influence national climate policies through regional and national cooperation networks.

Nearly all of the six largest cities in Finland have set strict carbon neutrality goals for the year 2030 or 2035. The goal of MAL 2019 planning is to reduce emissions caused by transport by significantly less than what the city's carbon neutrality goal would require.

The state has a significant role in the success of the carbon neutrality goal. Many new solutions to reduce transport emissions or to improve the energy efficiency of existing building stock would require incentives and support action by the state. There are also legislative obstacles that must be cleared.

The subsidiaries of Vantaa have a significant effect on the city's greenhouse gas emissions. The most important of these subsidiaries is Vantaa Energy Ltd, whose fuel source choices and other development actions are crucial in order to achieve the goal of carbon neutrality. The possibility of giving up peat and natural gas as fuel sources should be looked into, as natural gas is currently causing 15 % of the emissions caused by district heating, and peat burning is equivalent to coal in its emission factor. Vantaa Energy has joined the industrial energy efficiency agreement, which supports and requires energy-saving measures.

VAV Vantaan Vuokra-asunnot Oy owns 10 % of the apartments in Vantaa. VAV has joined the rental housing association action program (VAETS) included as part of the real estate sector's energy efficiency agreement. The goal of the program is an energy savings of 7.5 % by the year 2025. VTK Kiinteistöt Oy and other properties wholly owned by the city fall under the municipal energy efficiency agreement that the city is a part of.

Vantaan Tilapalvelut Vantti Oy provides the city with real estate services, cleaning services and catering services. The operations of Vantti Oy have a significant effect on e.g. the success of energy savings in municipal premises.

The share of total greenhouse gas emissions caused by HSY waste management is 3 %. The carbon neutrality goal of the city requires the same goal from the Helsinki Region Environmental Services Authority HSY and Helsinki Region Transport (HSL) municipal bodies.

To achieve the city's goals of resource wisdom and carbon neutrality, innovative and development actions need to also be taken together with stakeholders. The city is participating in the Smart & Clean foundation, whose operational term will last until 2021.

5

COST EXAMPLES

Achieving the climate goals requires actions of different cost scales, as well as large investments. There is also a need for work done on development actions and better planning. Most environmental measures will pay themselves back. For example, measures taken to improve energy efficiency and energy self-sufficiency will reduce electricity and heating expenses. Cycling improves public health and decreases expenses caused by car traffic. For these reasons, budgeting must take a more long-term perspective than a single budget period.

Climate change is not only an environmental issue, but also a societal one. Striving toward resource wisdom and carbon neutrality takes cooperation and for the city to strongly coordinate the progress of the roadmap to resource wisdom. This also requires more human resources. When estimating costs, the risks and costs of failed climate change management should also be considered, as societal recovery in the case of an environmental catastrophe is expensive.

For the city, executing on the actions of the roadmap requires an increase in both the investment budget and operational economy budget, especially for construction of premises and infrastructure, as well as their maintenance. The costs relative to the efficacy of the actions will be evaluated at a later time. At the same time, an evaluation regarding the costs that will be avoided due to the adaptive measures can be conducted.

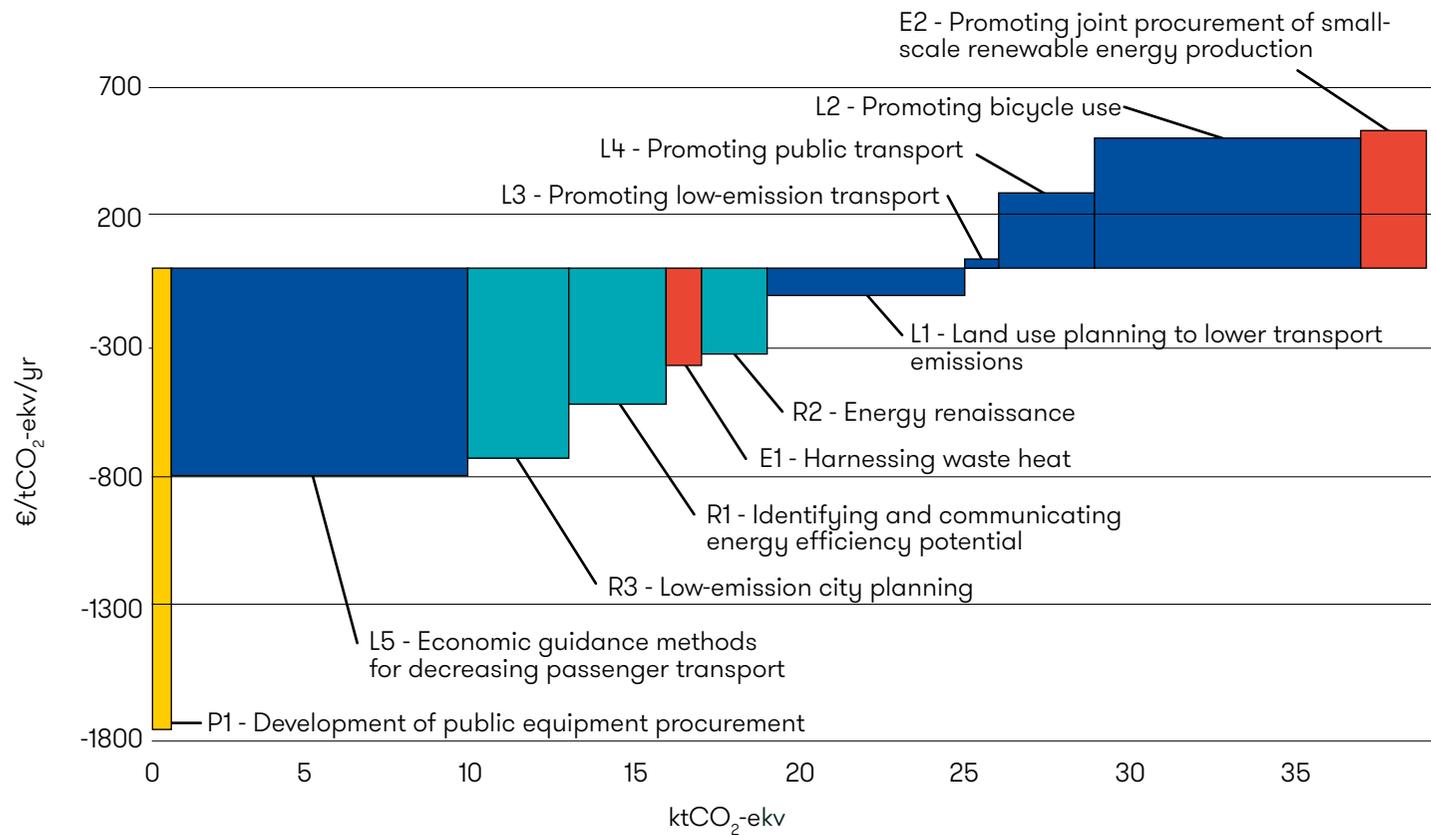
The table on the following page lists the costs of those environmental actions which are already known. The effects of most of the actions have been evaluated during the earlier goal defining process (greenhouse gas emissions -40 % by 2030), so the effects and costs mentioned will not be sufficient to achieve the new climate goal. The costs and savings are not solely directed to the city, as they will also concern companies and citizens.

The costs incurred in realizing the climate goals primarily consist of investments, coordination and other planning work. The savings will come from a decreased need for delivered energy. Additionally, certain transport-related actions, such as development of parking fees and vehicle traffic pricing, may also generate income for the city. The graph of the following city presents an estimate of the cost efficiency of these actions.

Action	Costs(M€/yr)	Savings (M€/yr)	Effects
Energy efficiency			
Public equipment procurement	0,3	1,7	New electrical equipment will incur a savings of 10 % on average ³ (LED lighting costs 25–30 K€)
Energy consumption studies	0,3	1,4	Adjustment renovations will incur a savings of 5 % in heating consumption ⁴
General project for energy-efficient renovations	1,3	2,1	Basic renovations for 500 apartments/year, and old buildings will incur an energy savings of 50 % ⁵
Energy-efficient land use	2,8 (incl. city planning work 0,3)	5,2	Mitigating the square footage to be heated per resident and company, and improving the harnessing of renewable energy production potential ⁶
Energy production			
Peat no longer used as a supporting fuel for biomass	2		⁷ This action enables the avoidance of emissions of 30 ktCO ₂ e/yr
Promoting joint procurement of small-scale renewable energy production	2,5	1,3	The city contributes to the realization of investments for 300 geothermal pumps and solar power systems in the coming years ⁸
Harnessing waste heat	0,8	1,5	The Vantaa food industry can make use of 20 % of its waste heat potential in the coming years ⁹
City switching its oil heating systems to geothermal pumps	7,5 in total		30 city buildings with oil heating, each investment would cost approx. 200-300 thousand euro ¹⁰

Action	Costs (M€/yr)	Savings (M€/yr)	Effects
Transport			
Intensification of land use	0,3	0,3	New housing and services will be located in centers and along good public transport routes. Savings will come from decreased need for parking space ¹¹
City's current stock of cars will be exchanged to be emission-free	0,5		Emissions of the depot's current stock of cars 2 ktCO ₂ e will decrease ¹²
Investments in bicycle roads	1		The share of cycling as a mode of transport can be increased from the current 6 % to 10–11 % ¹³
City bikes	0,1		Sum allows for the acquisition of approx. 400 bicycles. Costs depend on the number of bicycles, utilization rate and sponsorship ¹³
Development of trunk routes	0,9 (incl. increased operational costs 0.45)		Line 570. Public transport's share as a mode of transport increased by 1 % ¹⁴
Tramway from Aviapolis to Mellunmäki	250 M€, in total, the city's share of which is an estimated 2/3		Tram transport's share as a mode of transport increased by 3 % ¹⁵
Opening the Lapinkylä station along the Ring Rail Line	5 M€ in total		Expansion of areas with good public transport connections ¹⁶
Traffic pricing	3,75 M€	12 M€ savings in infrastructure construction and 25 M€/yr profit	Significant decrease in vehicle traffic and subsequent decreased infrastructure construction ¹⁷
Vehicle charging infrastructure	0,03		100 new charging stations in the coming years ¹⁸

Costs, savings and effects in 2030 for environmental actions already evaluated



Estimate¹⁹ of Gaia Consulting Oy regarding the annual emission reductions (in kilotonnes CO₂e) and total financial effects (€/tCO₂e) of the execution of specific actions by 2030. The bar width reflects the estimated emission reduction by 2030, while bar height reflects the financial efficiency of the emission reductions. Positive financial effects refer to expenses and negative effects to savings. These actions will achieve a total emission reduction of 40 ktCO₂e. In the light of the new carbon neutrality goal, this is equal to 5 % of the total emission reduction needs by 2030 in comparison to the level in 1990.

³ Gaia Consulting Oy 2016. Vantaan kasvihuonekaasujen päästövähennysselvitys, loppuraportti

⁴ ibid.

⁵ ibid

⁶ ibid

⁷ Vantaan Energian arvio 2018

⁸ Gaia Consulting Oy 2016. Vantaan kasvihuonekaasujen päästövähennysselvitys, loppuraportti

⁹ ibid

¹⁰ Vantaa Real Estate Centre

¹¹ Gaia Consulting Oy 2016. Vantaan kasvihuonekaasujen päästövähennysselvitys, loppuraportti

¹² Vantaan varikon arvio 2018

¹³ Helsingin kaupunki, selvityksiä 2014:5. Pyöräilyn hyödyt ja kustannukset Helsingissä

¹⁴ Gaia Consulting Oy 2016. Vantaan kasvihuonekaasujen päästövähennysselvitys, loppuraportti

¹⁵ Vantaa Transport Planning estimate

¹⁶ ibid

¹⁷ HLJ 2015. Ajoneuvoliikenteen hinnoittelun teknistoiminnallinen selvitys. HSL:n julkaisu 4/2016

¹⁸ Gaia Consulting Oy 2016. Vantaan kasvihuonekaasujen päästövähennysselvitys, loppuraportti

¹⁹ Gaia Consulting Oy 2016. Vantaan kasvihuonekaasujen päästövähennysselvitys, loppuraportti

6

MONITORING AND REPORTING

The progress toward all of the goals of the Vantaa roadmap to resource wisdom is monitored every two years — in other words, twice per council term. At the same time, the roadmap is updated. Those actions in the roadmap that are included among the binding goals of the city strategy work will be monitored annually, through annual reports and interim reports.

The department-specific execution plans of the Vantaa roadmap to resource wisdom will be monitored through monitoring reports to the management groups each spring. There will also be annual reporting on actions taken and good practices in the city’s environmental report.

6.1 Indicators

The ecological sustainability of Vantaa, as well as its level of environmental protection have long been monitored with indicators developed in cooperation between the six largest cities in Finland. However, these indicators alone cannot plot the path of Vantaa toward resource wisdom. The table below lists indicators that will be used to monitor the progress of the roadmap to resource wisdom.

Main indicators:

Greenhouse gas emissions

Greenhouse gas emissions per capita

In progress: Indicator to measure realization of circular economy

Indicators by lane

Energy production and consumption	District heating procurement by energy source District heating GHG emissions Community energy consumption	Vantaa Energy
	Energy consumption per capita Electricity and heating consumption in cityowned properties	City of Vantaa
Urban structure and transport	Proportion of densely populated areas: at least 50 residents/ha (number of areas in YTK blocks) Proportion of housing built in zoned areas, floor area (m ²) Resident count in YKR blocks with at least 50 residents/ha, and proportion of total population	City of Vantaa
	Distribution of modes of transport	Trafi
Consumption and materials	Recycling rate for municipal waste Material consumption and amount of each waste type	In progress
	Landmass reuse at infrastructure sites, m ³ Utilization rate of spaces	City of Vantaa
	Utilization of vegetable proteins Waste food amounts in kitchens of catering service providers	Catering service providers
Responsible citizen	Perceived citizen well-being (citizen satisfaction)	Citizen barometer survey
	Number of EcoCompass enterprises	HSY
	Number of trained eco-support persons/100 employees Participants in nature walks	City of Vantaa
	Schools and daycares participating in campaigning for environmental responsibility	

7

PREPARATION OF THE ROADMAP

The preparations for the roadmap to resource wisdom were started in early 2017. The design of the roadmap was started by working together with HSY and city experts to create a scenario of carbon neutrality by 2040, using the Ilmastoveivi climate scenario tool. After this, in spring 2017, an opening event and two workshops were organized. Representatives from a wide variety of stakeholders participated in the workshops, as well as experts from all sectors of the city. The city's climate change management group, together with external experts, acted as an evaluation board and gave development suggestions from the goals and proposed actions arising from the workshops.

In the early fall of 2017, the first draft of the roadmap to resource wisdom was completed, which the participants of the workshops were able to comment on. The citizens of Vantaa were also given the opportunity to participate in the drafting of the roadmap through a citizen survey conducted online in fall 2017. There were 139 responses from Vantaa citizens of ages 18–83.

The citizens of Vantaa who responded to the survey were willing to change their methods and participate in building a resource-wise Vantaa. There were requests for possibilities for shared use of goods and spaces, but also for it to be easier. Additionally, respondents were interested in new models of transport and energy production. Thus, the roadmap work also considers how the city can, for its part, contribute to the development of sharing economy opportunities, as well as inform citizens about resource-wise choices in transport and energy production.

In the late fall of 2017, the City Council set carbon neutrality by 2030 as a goal in its council strategy. Additionally, the drafting of a “Carbon neutral Vantaa 2030” program was set as a binding goal of the 2018 budget. Subsequently, in early 2018, the roadmap draft's scenario was revised to meet its goal in 2030 with the HSY Ilmastoveivi tool. Additionally, a climate workshop was organized with participants representing various stakeholders.

The roadmap work has been guided by the city's climate change management group. The city's environmental center has been responsible for preparations of the work. The preparation group consisted of the Environmental Officers from each sector, supplemented by experts. Additionally, the members of the environmental groups responsible for drafting the department-specific action plans have also contributed to the preparations of the roadmap.

The city committees and youth council gave their opinions on the roadmap draft. Opinions were also provided by the Helsinki Region Transport and Helsinki Region Environmental Services Authority municipal bodies, as well as Vantaa Energy. The draft was available online for a month.



Towards a Vantaa without emissions, without waste, using natural resources sustainably. Photo by Pertti Raami

Appendix 1 **Actions of the roadmaps to resource wisdom**

ENERGY PRODUCTION AND CONSUMPTION

Actions 2018-2021	Actions 2022-2025	Actions 2026- 2029	Desired state 2030
Vantaa Energy increases the production of renewable energy <ul style="list-style-type: none"> • Martinlaakso plant's gas/oil boiler is converted for biofuels • Chart the industrial and municipal waste heat points and connect the potential sites to the district heating network using heat pumps • Solar electricity is offered to citizens 	Vantaa Energy increases the production of renewable energy <ul style="list-style-type: none"> • Chart the applicability of geothermal heating, solar heating and trans-seasonal storage for district heating production, those with potential are taken to use 	Vantaa Energy gives up the use of coal entirely Vantaa Energy produces district heating with top quality biogas and pellets	Production of electricity and heat causes no emissions
	Vantaa Energy develops the harnessing of waste for energy <ul style="list-style-type: none"> • Look into the sorting of recyclable waste types from other municipal waste before incineration • Chart the possibility to acquire more incinerable waste to use full waste incineration capacity throughout the life cycle 		
Increase the use of renewable energy at municipal sites <ul style="list-style-type: none"> • Solar power used at municipal sites • The city moves procurement to renewable energy 			
The city gives up oil heating in its buildings	The city encourages giving up oil heating in the Vantaa area <ul style="list-style-type: none"> • Intensified communication about possible support actions and funding opportunities in use 	The city encourages giving up oil heating in the Vantaa area <ul style="list-style-type: none"> • Intensified communication about possible support actions and funding opportunities in use 	
The city guides citizens toward using renewable energy <ul style="list-style-type: none"> • Conduct municipal study of renewable energy • Actively market services provided by Ilmastoinfo and guide Ilmastoinfo activities 	The city guides citizens toward using renewable energy <ul style="list-style-type: none"> • Harnessing the municipal study results in land use planning and guiding citizens in renewable energy production • Open the Vantaa Portal for Renewable Energy to make property owners' energy solutions easier 	The city guides citizens toward using renewable energy <ul style="list-style-type: none"> • Harnessing the municipal study results in land use planning and guiding citizens in renewable energy production 	Municipal citizens are active in producing their own electricity and as operators in energy production
The city moves to use LED lighting			



Actions	Actions	Actions	Desired state
2018-2021	2022-2025	2026- 2029	2030
City planning increases the guiding effect of energy and resource efficiency <ul style="list-style-type: none"> Continuing use of calculation tools in city planning Pilot for city planning area environmental certification Requirement added to planning regulations for preparations for renewable energy production on land 	The guiding effect of energy and resource efficiency is included at all scales <ul style="list-style-type: none"> Implement planning regulations promoting the use of recycled materials, long building life cycles, dismantlability and reusability 		The basis of land use and building is resource and energy efficiency
The city requires resource and energy efficiency in design contests and plot transfer conditions	The city requires resource and energy efficiency in design contests and plot transfer conditions <ul style="list-style-type: none"> Requirements to include the construction of an entirely zero-energy area 	The city requires resource and energy efficiency in design contests and plot transfer conditions <ul style="list-style-type: none"> Pilot of plus energy area 	
The city promotes wood construction <ul style="list-style-type: none"> Pilot for wood construction area in city plan Preparations for policy to increase wood construction 	The city promotes wood construction <ul style="list-style-type: none"> Designated wood construction sites in city planning, design contests and plot transfers. 		
Municipal premises are built sustainably <ul style="list-style-type: none"> Level of the city's sustainable building guidelines are maintained New premises are planned 30 % more energy efficient than regulated Buildings' life cycle costs and carbon footprint are calculated New resource-wise building to be realized as example of energy efficiency and circular economy 	Municipal premises are built sustainably <ul style="list-style-type: none"> Look into building plus energy building Municipal premises' sustainable building guidelines to be implemented also in private sector	New municipal buildings will be plus energy buildings	
City will look into methods of space usage optimization in housing and commercial spaces	Guidelines created for efficient usage of space	Guidelines guide planning and construction	Energy consumption is smart, and the buildings are energy-efficient
The city implements the goals and actions of the municipal energy efficiency agreement	The city implements actions of the municipal energy efficiency agreement in its premises and procurements		
Creating a goal-oriented model for the city's energy leadership <ul style="list-style-type: none"> Set dynamic goal levels for the energy consumption of properties together with users To reach the goals, e.g. automatic analytics and demand responses are used 	Model of energy leadership is implemented at all city sites and will also be expanded into the private sector Use demand responses and machine learning in energy management of city properties		

URBAN STRUCTURE AND TRANSPORT

Actions 2018-2021	Actions 2022-2025	Actions 2026- 2029	Desired state 2030
<p>Land use is intensified, with mixed functions</p> <ul style="list-style-type: none"> • Urban structure is developed, relying on rail transport and as a junction city for the rail network • Creation of infill construction principles for different areas • The city supports infill construction by enabling the construction of shared parking facilities of multiple housing companies 	<p>Infill construction in central areas and station areas while retaining function diversity</p> <ul style="list-style-type: none"> • Tikkurila and Myyrmäki are built up as dense central areas • Station areas are developed while making use of information generated through development projects 	<p>Aviapolis is built up as a dense central area</p>	<p>The city structure is mixed and sustainable</p>
<p>The city promotes planning of the pricing models of vehicle traffic, public transport and parking as well as necessary studies through MAL cooperation</p> <ul style="list-style-type: none"> • Reliance on passenger cars is decreased by designing services to be accessible through smart transport • Planning for communal living: shared spaces in apartment buildings and infill of individual housing areas with communal housing solutions • Planning and implementation of townhouses in addition to other housing types along good transport routes • The city transfers plots to pilot programs supporting sustainable lifestyles • City planning for allotment garden areas, as well as enabling block farming 	<p>Enabling a sustainable lifestyle through city planning</p> <ul style="list-style-type: none"> • Services from the corner store to the local woods are placed in the vicinity of residential areas and within them 		
<p>The city promotes planning of the pricing models of vehicle traffic, public transport and parking as well as necessary studies through MAL cooperation</p>	<p>Traffic systems are developed while considering transport pricing</p> <p>Promoting the implementation of a transport pricing model</p>	<p>Traffic pricing model in use</p>	<p>Transport is carbon neutral, well-working and reasonably priced</p>
<p>The city supports public transport toward low emissions and smooth connections</p> <ul style="list-style-type: none"> • Develop public transport, supported by stronger trunk routes, trunk route 570 opened • Begin planning for tramway • Trials for smart transport and support entry of market-conformed transport services into the market, especially in Aviapolis • Public transport developed toward low emissions by e.g. expanding the charging infrastructure of electric buses 	<p>Supporting public transport toward low emissions and smooth connections</p> <ul style="list-style-type: none"> • Open 1-2 new bus trunk routes • Construction of tramway (Raide Jokeri 3) • Continue developing public transport toward low emissions by e.g. expanding the charging infrastructure of electric buses 	<p>Supporting public transport toward low emissions and smooth connections</p> <ul style="list-style-type: none"> • Tramway open to traffic (Raide Jokeri 3) • Open 1-2 new bus trunk routes • Decreasing transport needs through digitalization, smart traffic guidance and implementation of smart traffic systems 	
<p>The city supports cycling through structures, maintenance, advice and communication</p> <ul style="list-style-type: none"> • Construction of quality passageways for cycling • Developing bicycle parking • Trial and implementation of city bike model suitable for Vantaa 	<p>Continue comprehensive promotion of cycling</p> <p>Promotion of smart transport by developing public transport, pedestrian and bicycle traffic</p> <ul style="list-style-type: none"> • Planning and implementation continue to better consider different modes of transport 		
<p>City promotes the creation of workplace transport plans, both for companies as well as all municipal sites</p>	<p>The city increases sustainable commuting through incentives</p> <ul style="list-style-type: none"> • Implement bicycles as employee benefits 		



Actions	Actions	Actions	Desired state
2018-2021	2022-2025	2026- 2029	2030
<p>The city supports the introduction of alternative fuel vehicles</p> <ul style="list-style-type: none"> • Construction of public electric car charging stations in cooperation with Vantaa Energy • Prepare for gas distribution stations in city planning if necessary • The city's procurement of equipment, machinery, transport services and works favor operators using alternative fuels • The city increases the use of electric-, hybrid- and biogas-powered vehicles in its activities 	<p>The city continues the support of introduction of alternative fuel vehicles</p> <ul style="list-style-type: none"> • Continue the construction of electric car charging infrastructure • At least half of the vehicles in use by the city use alternative fuels • The city's procurement of equipment, machinery, transport services and works favor operators using alternative fuels 	<p>The vehicles in use by the city all use alternative fuels</p> <p>The city's procurement of equipment, machinery, transport services and works require operators to use alternative fuels</p>	
<p>The city investigates lowering the transport emissions of logistics companies</p> <ul style="list-style-type: none"> • Electric distribution transport will be trialed in the Aviapolis area • In cooperation with logistics companies, developing distribution functionality and identifying problem points 	<p>Improve the smoothness of transport through real-time traffic management and automatic traffic light operation</p>		
<p>The city integrates the adaptation measures for climate change into planning, construction and maintenance</p> <ul style="list-style-type: none"> • Increased climate sustainability requirements in city planning and plot transfer, such as natural storm water management, construction of green roofs, green factor utilization and ensuring urban greenery • A master plan -level preparatory study to be conducted for a floodwater management plan, and ensuring sufficient space reserved for controlled flooding 	<p>The city integrates the adaptation measures for climate change into planning, construction and maintenance</p> <ul style="list-style-type: none"> • The city's climate-sustainable construction requirements are in use at municipal sites and largely at construction partners, as well • Requirements aiming toward climate sustainability are comprehensively implemented in city planning regulations and plot transfer conditions • Preparation for climate change is included in risk management 		<p>The city has prepared for the effects of climate change and is using resource wise and natural solutions</p>
<p>The city retains and increases the biodiversity of nature</p> <ul style="list-style-type: none"> • Studies conducted of ecosystem services and ecological connections, results considered in master planning work • In conjunction with master planning work, re-examine natural reserve network and connect areas into robust wholes biodiversity-wise • New construction and renovations will preserve existing nature and increase biodiverse new vegetation and storm water areas • Guide and promote increase of biodiversity on grounds of apartment buildings and individual housing 	<p>Ecological connections and ecosystem services will be preserved and continue to be developed</p> <ul style="list-style-type: none"> • City will acquire ownership of the most important greenery and water areas • Plans will be made to repair broken ecological connections • Construction of necessary green bridges or other replacing connections • Funding ensured for repairing connections in the long term 	<p>Ecological connections will be preserved and continue to be developed</p> <ul style="list-style-type: none"> • Compensation practices for natural values will be implemented in land use conflict situations 	<p>Nature capital and biodiversity is preserved and increased, also in built-up areas</p>
<p>Maintain the good accessibility of green areas</p>	<p>Path networks of natural reserves near residential areas will be improved as part of the leisure areas</p> <p>Begin pathway planning for large Western Vantaa green areas</p>	<p>Continue planning and execution of pathways for large Western Vantaa green areas</p>	<p>Green structure creates well-being and the green areas are easily reached</p>

CONSUMPTION AND MATERIALS

Actions	Actions	Actions	Desired state
2018-2021	2022-2025	2026- 2029	2030
<p>Dismantled and recycled materials and landmasses will be reused</p> <ul style="list-style-type: none"> • City planning financial calculations will include mass balance calculations • Regional development projects will develop mass coordination • Use of secondary materials will be considered at significant infrastructure construction sites • Guidelines and commitments will be created for municipal premises and small-scale construction for the sorting of construction waste and dismantled waste 	<p>Establish material flow management systematically as part of the planning and execution processes</p> <ul style="list-style-type: none"> • All landmasses and dismantled materials that are reusable are taken into use <p>Chart possibility for pilot project of waterless toilets</p>	<p>Use of city planning regulations that support circular economy, such as dismantlability and recyclability of buildings</p>	The city promotes circular economy
<p>The city develops an operational model for circular economy areas</p>	<p>The city strengthens its cooperation with companies and citizens, as well as with neighboring municipalities in developing circular economy areas</p> <p>Development of circular economy promotes entrepreneurship and increases employment</p> <ul style="list-style-type: none"> • Making recycling of reusable goods easier and supporting small businesses 	<p>Promoting industrial symbioses in cooperation with HSY</p>	
<p>City operations are developed toward resource efficiency</p> <ul style="list-style-type: none"> • Increased use of recycled furniture in furnishing of municipal premises while continuing to develop city's internal recycling services • Investigate circular economy development needs of waste management and city's own operations 	<p>City operations are developed toward resource efficiency</p> <ul style="list-style-type: none"> • Established use of recycled furniture • Develop waste management controls in the city organization 		
<p>Developing the tools and requirements of sharing economy</p> <ul style="list-style-type: none"> • Aviapolis area will be developed into a foundation for sharing economy • Investigate cooperation possibilities of the city and Helsinki Metropolitan Area Reuse Centre to develop sharing economy • Begin development of electronic distribution network and usage of applications • Develop the lending point and recycling shelf activities of municipal premises 	<p>Implement electronic distribution network for sharing economy</p>		The sharing economy is an established part of the service network



Actions	Actions	Actions	Desired state
2018-2021	2022-2025	2026- 2029	2030
<p>The city promotes the introduction of car sharing and electric bicycles</p> <ul style="list-style-type: none"> • Intensify shared usage of the city’s stock of cars by developing a joint reservation system • Chart possibility to move from cars owned by city to shared cars • Free parking spots designated for shared cars in street areas 	<p>Offer city cars to the shared car pool</p> <p>Where possible, the city moves to use market-conform car sharing</p>	<p>The cars in use by the city are shared cars</p>	
<p>Increase efficient usage of municipal spaces</p> <ul style="list-style-type: none"> • Digital reservation system to be implemented for external renting and reservation of public spaces 	<p>Increase usage of partially used spaces city-wide</p>		
<p>The city develops the procurement procedures to achieve goals of resource wisdom</p> <ul style="list-style-type: none"> • Update procurement process and increase influence • Systematically promote introduction of life cycle principles • Procure recyclable, dismantlable, repairable and long-lived products and building materials • Use environmentally certified products in building procurements • Implement usage of recycled building materials as a criterion in public tendering 	<p>Develop idea contest and trial concept</p> <p>Establish life cycle principles and models in use</p>		Public procurement and investments are resource-efficient, responsible and support the circular economy
<p>The city will develop the responsibility of catering service procurements</p> <ul style="list-style-type: none"> • Menu planning will decrease the environmental footprint of catering services • Charting of regional local food and small-scale producers • Increase use of vegetable proteins and include in the catering service description 	<p>Increase usage of locally and responsibly produced foodstuffs</p>		The food production chain is sustainable
<p>Decrease food waste and develop leftover lunch distribution at city locations</p>	<p>Establish and continue to develop operational model to decrease and utilize food waste</p>	<p>Utilization of food waste is an everyday matter, and leftover lunches are available and distributed to those who need them</p>	

RESPONSIBLE CITIZEN

Actions 2018-2021	Actions 2022-2025	Actions 2026- 2029	Tavoitetilä 2030
<p>Supporting education of children, youth and adults into environmentally responsible and eco-socially educated citizens</p> <ul style="list-style-type: none"> • Themes of a sustainable lifestyle are included in education and early childhood education • Produce more culture increasing environmental awareness • Reinforce environmentally responsible food culture and food education • Raise energy awareness of citizens 	<p>Continue to develop and harness digital solutions to support environmental responsibility</p> <p>Reinforce awareness of food origins by e.g. promoting urban farming</p>		<p>The lifestyle of the citizens of Vantaa is sustainable and based on a good relationship with nature</p>
<p>Creating, strengthening and supporting citizens' relationship with nature</p> <ul style="list-style-type: none"> • Offer natural experiences to all citizens through diverse means in education, workplaces and residential units • Create an operational model out of theme years to strengthen the nature capital of Vantaa • Nature is harnessed as a learning environment in early childhood education and education 	<p>Creating, strengthening and supporting citizens' relationship with nature</p> <ul style="list-style-type: none"> • Trips and communal projects are made attractive and their contents tailored demographically 		
<p>Communication about environmental responsibility and its municipal actions will be done in an exciting and inclusive manner</p> <ul style="list-style-type: none"> • Implement focused campaigns and projects along different environmental responsibility themes • Make food waste and other lost resources visible • Inform citizens of current environmental matters 	<p>Develop new methods for interactive environmental communication to promote responsibility</p> <p>Ensure sufficient resources to realize good-quality environmental communication</p>		



Actions	Actions	Actions	Desired state
2018-2021	2022-2025	2026- 2029	2030
<p>The city supports the participation and communality of citizens</p> <ul style="list-style-type: none"> • Develop citizen meeting places, such as shared spaces as well as allotment gardens and communal gardens • Include citizens along themes of resource wisdom in municipal services, regional development committees and local forums 	<p>Resident spaces and other communal spaces are in active use</p>	<p>Resident spaces and other communal spaces are in active use</p>	<p>Participation and communality are part of an environmentally responsible daily life</p>
<p>Motivate citizens to join in taking care of the natural environment</p> <ul style="list-style-type: none"> • Develop adoptive activities for forests and parks, as well as other shared-responsibility pro-environment activities 	<p>Continue to establish shared-responsibility pro-environment activities</p>		
<p>Increase and develop city's environmental leadership and environmental leadership tools</p> <ul style="list-style-type: none"> • Environmental leadership is a part of life in the city • Support expansion of the use of environmental systems, such as EcoCompass and Vihreä Lippu • Keep personnel data up to date • Develop reward systems for effective environmental acts • Maintain, expand and develop eco-support activities • Develop the City of Vantaa as a City of Fair Trade 	<p>Continue the development of environmental leadership</p> <ul style="list-style-type: none"> • Introduction of environmental leadership systems noted in the city strategy • The environmental impact of significant decisions, such as construction of service networks, will be assessed 	<p>Appropriate environmental systems are in use</p>	<p>The city and the local companies are environmentally responsible</p>
<p>The city supports the environmental responsibilities of companies and communities in Vantaa</p> <ul style="list-style-type: none"> • Develop cooperation with companies in Vantaa within the framework of existing networks • Support the expansion of small and medium-sized enterprises' environmental leadership systems 	<p>The city actively supports the environmental responsibility work of companies</p>		

OTHER ACTIONS

Goal	Action	Responsible body
The city is able to influence state support actions and legislation	Through regional cooperation and together with the rest of the Six Cities group and their climate network, the city can positively influence the state's strong support of this goal.	City management and representatives.
The city's subsidiaries are committed to the goals of carbon neutrality and resource wisdom	Most of all, the city influences operations through service agreements, but also the operations of Vantti through corporate steering. The corporate steering requires city subsidiaries to be committed to the goals of carbon neutrality and resource wisdom.	City of Vantaa Group administration, city representatives on company boards.
HSY is carbon neutral by 2030	The steering of municipal bodies requires a commitment to carbon neutrality.	City representatives on boards of municipal bodies.
Research and development projects support the goals of resource wisdom and carbon neutrality	A separate budget should be reserved for development actions. The project activities started during the Smart & Clean foundation operations will continue.	City financial administration.

APPENDIX 2 Greenhouse gas emission reduction possibilities in Vantaa calculated with Ilmastoveivi

Ilmastoveivi is a tool created by HSY that can create future paths for climate change mitigation in the Capital Region. The tool makes it possible to calculate the impact of different options on the greenhouse gas emissions caused by electricity consumption, building heating and transport. Experts from the various sectors of Vantaa have used the tool to examine how much these sectors must reduce their greenhouse gas emissions in order to reach the total goal of the city.

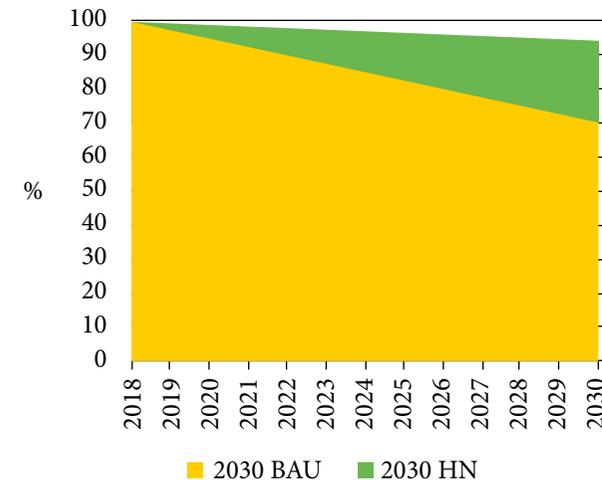
Below are the graphs on the sector-specific goals of the Vantaa 2030 goal. Their Ilmastoveivi scenario can be found at the address: <http://ilmastoveivi.fi/869483633260>

Total goal

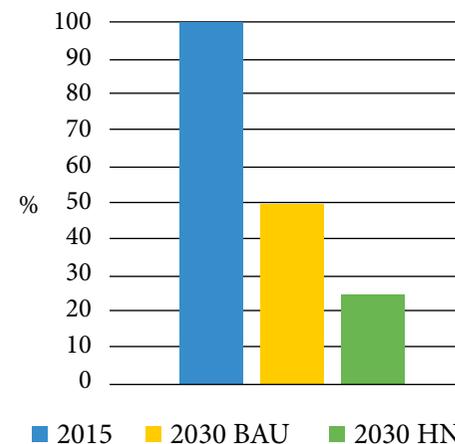
ktCO ₂ -ekv.	1990	2016	2030 BAU	2030 HN	1990-2030 differential-%
District heating	271	325	188	52	-81
Oil heating	74	60	48	0	-100
Electric heating	60	69	52	17	-72
Consumer electricity	165	160	141	45	-73
Transport	318	384	207	97	-69
Industry and machinery	95	42	16	3	-97
Waste management	91	35	22	0	-100
Agriculture	3	2	2	2	-53
Total	1076	1078	674	215	-80

Verified emissions in Vantaa and emission scenarios for 2030. The basic scenario reflects how emissions will evolve without additional action. The Carbon Neutral Vantaa 2030 scenario shows how much each sector's emissions must decrease in order to reach the new goal.

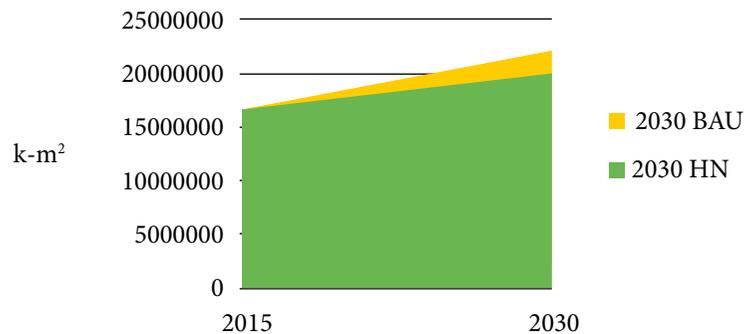
Energy production and energy efficiency goals set for Ilmastoveivi



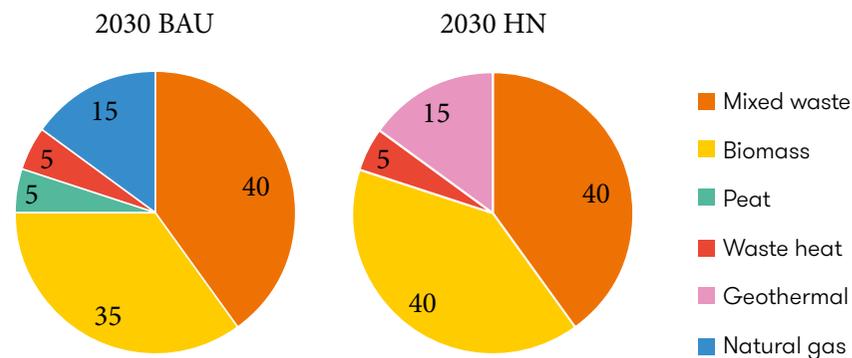
The effects of renovations of existing buildings on the energy efficiency of the current building stock for years 2018–2030. The goal set for Ilmastoveivi is for the energy efficiency of the existing building stock to improve by 3 % each year in 2018–2030.



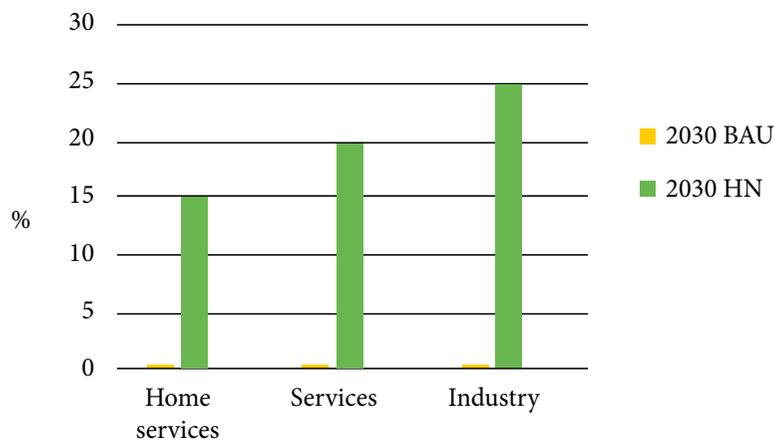
Energy efficiency of new buildings in the different scenarios for 2030 compared with current state. The goal set for Ilmastoveivi is for new buildings to be 75 % more energy efficient in 2030 than the average equivalent building currently.



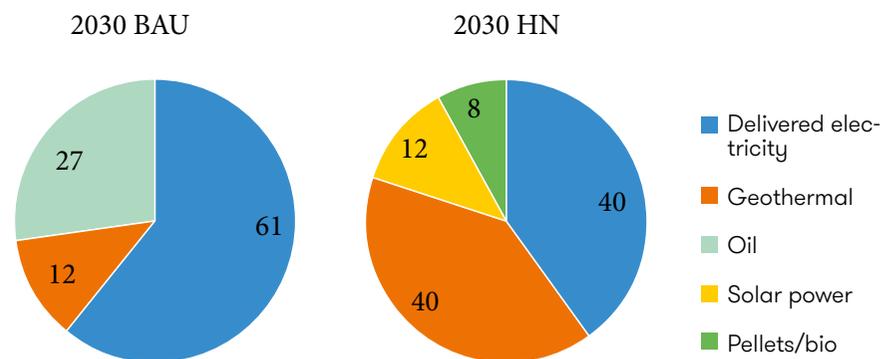
The increase in square meterage of new building stock in years 2015–2030. The goal set for Ilmastoveivi is for the floor area per resident or employee of newly constructed buildings to not increase from the current state.



District heating production distribution (%) in the different scenarios for 2030. The goal set for Ilmastoveivi is for oil, coal, natural gas and peat to be given up in district heating production.

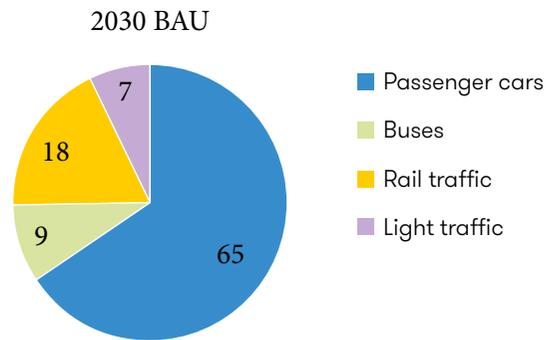


Solar power's proportion of consumer electricity in different scenarios for 2030. The goal set for Ilmastoveivi is for the share of properties' own renewable energy production to increase significantly.

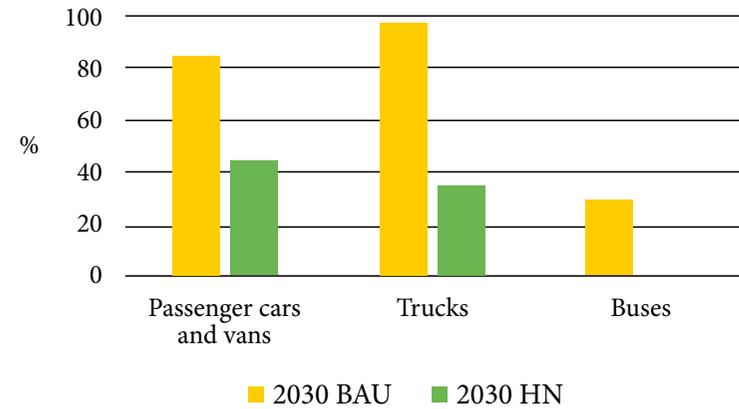


Production methods of decentralized building heating (%) in the different scenarios for 2030. The goal set for Ilmastoveivi is to lower the share of delivered electricity in decentralized building heating to 40 %, and for the other 60 % to be produced with renewable energy.

Transport goals set for Ilmastoveivi



Distribution of modes of transport (%) in the different scenarios for 2030. The goal set for Ilmastoveivi is for the amount of passenger car usage to be decreased and for the proportion of the other modes to be significantly increased.



Percentage share of gasoline and diesel as fuels in each vehicle type in the different scenarios for 2030. The goal set for Ilmastoveivi is for the use of gasoline and diesel to be decreased significantly, and for them to be replaced with electricity, charging hybrids, biogas and biofuels.

