

Environment and Climate Programme for the City of Gothenburg 2021–2030



Vision ▶ Programme Plan

City of Gothenburg governance system



The starting points for governance of the City of Gothenburg are laws and constitutions, the political will and the city's inhabitants, users and customers. In order to realize the starting points, conditions of different kinds are required. The city's politicians have the opportunity to describe, through governing documents, how they want to realize the political will. The city of Gothenburg is governed by the governing documents adopted by the municipal council and the municipal council. In addition, the boards and corporate boards determine their own governing documents for their own activities. The municipality's budget is the overriding and superior governing document for the City Councils and corporate boards.

City of Gothenburg governing documents

City of Gothenburg governing documents ensure that we have the means to do the right thing in the right way. The documents stipulate what committees, boards, administrations and companies should do, how they should do it, and who is responsible for implementation. 'Governing documents' is the collective term for all these documents.

The city's basic principles, including human rights principles, the non-discrimination policy, and fundamental views on democracy, are put into practice by incorporating them into the city's regular decision-making processes. The preparatory work leading up to decisions relating to governing documents are of vital significance to the embodiment of these principles in the work of the City of Gothenburg and its various organisations.

Governing documents should clarify for the organisation, as well as the city's inhabitants, service-users, customers, suppliers, partners and other stakeholders, about what is expected of the administrations and companies. Governing documents also form the basis for insisting on direct accountability when we fail to work in compliance with the decisions that have been reached.

Governing documents			
Municipal Directives		Planning and Regulatory Documents	
Setting standards for individuals	Targeted documents	Planning-related documents	Regulatory documents

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Appendices:
Appendix 1 Mission statement for strategy coordinators
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Introduction

Purpose of the programme

The Environment and Climate Programme for the City of Gothenburg is the guide and the shared platform for the city's strategic long-term work for the environment. The programme lays the foundation for the transition to an environmentally sustainable city by 2030 and it is the city's comprehensive governing document for work within the environmental dimension of sustainable development.

Who is covered by the programme?

The programme applies to all committees and boards of the City of Gothenburg. The programme is valid from its adoption until 2030.

Background

The City of Gothenburg's budget for 2019 gave the Environmental- and Climate Committee together with the City Executive Board the task of adjusting and updating the City of Gothenburg's Environmental Programme.

The City Executive Board decided in 2019 to change the name to Environment and Climate Programme for the City of Gothenburg.

The programme has been developed by the Environment Administration in collaboration with the City Management Office and with the support of staff from the city's departments and companies.

Link to other governing documents and legislation

The City of Gothenburg's budget is the comprehensive governing document for all boards and committees. There are international agreements in the environmental field such as the Paris Agreement, Agenda 2030 and legislation such as EU directives. There is also national legislation such as the Environmental Code and related environmental quality standards. The goal of the Environmental Code is to promote a sustainable development in order for the current and coming generations to live in a good and healthy environment. Environmental quality standards reflect the minimum acceptable environmental quality or the desired environmental state. In addition to the legislation there is the national system of environmental goals which contains the goals for the environment on a national level. The purpose of the environmental goals is to provide a long-term objective for environmental policy and to serve as a guide for society's environmental work as a whole. These are also a realization of the environmental dimension of the Sustainable Development Goals, Agenda 2030. Agenda 2030 is a

universal agenda for an economically, socially, and environmentally sustainable development.

The Environment and Climate Programme also interacts with several governing documents within the City of Gothenburg.

Limitations

The following limitations apply to the Environment and Climate Programme:

- The programme does not contain goals for areas that are already covered by other governing documents in the city, such as waste prevention, reuse and recycling as addressed by the regional waste plan,
- The programme does not contain any goals regarding climate change adaptation. Instead, the focus is on reducing our climate impact and thereby reducing the future need for climate change adaptation measures. However, the programme's strategy We plan for a green and resilient city provides space for collaboration on solutions to mitigate the effects of climate change through green infrastructure.
- Requirements contained in legislation or other regulations that motivate change are not repeated as goals or target values for indicators in the programme.

Implementation of this programme

The Environmental- and Climate Committee is responsible for driving and coordinating the work based on the committee's mission in the regulation to "drive and coordinate the city's work in the environmental dimension of sustainable development".

There is a clear ambition to develop capacity to work with the implementation in order to reach the goals in the programme. This will be done in two ways:

1. Regular operational planning with the support of environmental management systems

All committees and boards shall in their regular operational planning, with the support of their environmental management system, identify and prioritize the measures required to be carried out in their respective areas of responsibility, in order to reach the environmental goals and sub-goals in the programme. Environmental issues will in this way be integrated into the organizations' planning.

2. Cross-sectoral work through the programme's strategies

Through the programme's seven cross-cutting strategies, committees and boards will join forces in areas that require a high degree of collaboration and new cross-cutting solutions. The strategies aim to bring about change-driven development to accelerate the transition to a sustainable city.

For each strategy, there is a coordinating board or committee responsible for driving and aligning the strategy. The Environmental- and Climate Committee is responsible in coordinating the work within and between the strategies.

Any requirements of additional city-wide action plans to this will be considered. New action plans that may be developed should complement existing plans in the city and include measures that require cross-sectoral cooperation.

The coordination between the City of Gothenburg and trade and industry, inhabitants, academia, other cities and other actors is a prerequisite to meet the goals. In order to ensure a clear focus on implementation and being able to meet any obstacles that may arise, it is of great importance that the programme is properly followed up.

Follow-up of this programme

The follow-up and the analysis of the completion of goals will be reported to the City Council every two years unless the City Council decides on a different frequency related to specific parts or the whole programme. The Environmental Administration collects information for the programme's indicators continuously during the period and will request information from the city's organizations when necessary. The current indicators that are missing in the programme will be established at the beginning of the programme period and be used in the monitoring of the programme. In addition to the indicators defined in the programme there will also be other, supporting indicators which will be followed to determine how the work with the goals is progressing. The Environmental Administration will be able to follow the organizations' work with the programme and its goals through the city's ongoing work with the environmental management system.

A process-oriented follow-up of the work under the programme's strategies will be carried out to identify both successes, difficulties and possible ways forward. The results will be used for learning and for capacity development which are required to accelerate the implementation. Feedback will be given to appointed director groups connected to each strategy and will be reported once a year to the City Executive Board.

The programme will be evaluated and revised during its period of validity.

An environmentally sustainable city – for nature, climate and people

Agenda 2030 is the starting point

The starting point of the Environment and Climate Programme is the UN's Sustainable Development Goals Agenda 2030, Sweden's national environmental goals system, the Paris Agreement, and the challenges that Gothenburg as a community and the City of Gothenburg as an organization face in order to make the transition to an environmentally sustainable society.

The three dimensions of sustainability are integrated in the global sustainable development goals: social, economic, and environmental. The goals are indivisible and several of the goals are dependent on and directly linked to each other, which means that a positive development for one goal could provide positive effects for another goal. Sustainability within the environmental dimension is a basic prerequisite to achieve sustainability within the economic and social dimensions.

The objective of the programme: Environmentally sustainable city 2030

The objective of the programme is to transition Gothenburg to an environmentally sustainable city by 2030. This means that Gothenburg will become one of the world's most progressive cities when it comes to preventing and addressing environmental and climate problems. Our children and future generations should not be burdened with problems that we can solve ourselves. Nor should humans, animals and nature in other countries be negatively affected by our way of living.

The Environment and Climate Programme is the comprehensive governing document for work within the environmental dimension of sustainable development in the City of Gothenburg. The programme will help drive the City of Gothenburg to transition into an environmentally sustainable society. The coordination between the City of Gothenburg and trade and industry, inhabitants, academia, other cities and other actors is a prerequisite to succeed with this.

Environmental goals for nature, climate and people

The programme focuses on the greatest challenges for an environmentally sustainable Gothenburg, and it contains three environmental goals that addresses nature, climate and people. The three environmental goals cover the whole of Gothenburg. The environmental goals include twelve sub-goals that focus on the City of Gothenburg's own organization.

For each environmental goal and sub-goal there is a table with indicators that displays the current situation and target values. The indicators with the target values specify what

needs to be achieved for a given year. Indicators that lack values for the current situation are displayed with "requires development". These will be established at the beginning of the programme period. An in-depth description of goals and indicators can be found in appendix 1.

The Environment and Climate Programme is valid until 2030. The indicators for the three environmental goals and most of the sub-goals also have 2030 as the target year. Some of the indicators for the sub-goals have 2023 and 2025 as target years. This is because these are considered to be easier to achieve, that the transition in these areas needs to be accelerated, or that the target value needs to be reached in order for another indicator's target value to be reached by 2030. In addition to the indicators in the programme, there will also be support indicators used in the follow-up as a basis for assessments and analyses.

Each environmental goal states which of Sweden's national environmental goals and the global sustainable development goals the environmental goal mainly relates to. Each subgoal states what governing documents in the City of Gothenburg the sub-goal mainly coordinates with.

The City of Gothenburg's control over environmental impact in Gothenburg

In order to reach the environmental goals and the sub-goals there needs to be changes in society that the City of Gothenburg has varying degrees of control over. Control in this context means the manner in which the city can influence an issue. To achieve these goals, the City of Gothenburg needs to work with our direct and indirect control as well as our control through influence. Examples of the city's different degrees of control are shown in figure 2. The City of Gothenburg's general control regarding the environmental goals and the sub-goals is shown in a table for each corresponding environmental goal.

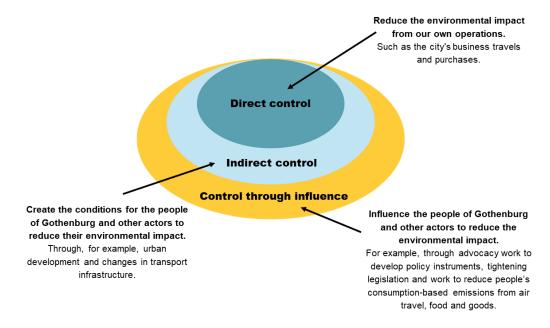


Figure 2 the City of Gothenburg's different degrees of control over the environmental impact in Gothenburg.

Cross-cutting strategies

The programme has, in addition to the goals, seven cross-cutting strategies. The work with the strategies contributes in different ways to achieving all the environmental goals.

Through the programme's strategies, committees and boards will join forces in areas that require a high degree of collaboration and new cross-cutting solutions. The aim of the strategies is to achieve a change-driven development of relevant working methods to accelerate the transition. The strategies will make the city work through more adaptive processes that encourage collaborative learning. It is crucial that the strategies are given the capacity to manage the transition.

Summary of the programme's goals and strategies

Figure 3 shows a summary image of the three environmental goals together with the subgoals and the programme's seven strategies. The goals are shortened in the image. The picture is framed by the four activities of the environmental management system for systematic environmental work: plan, implement, follow up and improve.

Figure 3 shows a summary image of the objective, the environmental goals, sub-goals and strategies of the Environment and Climate Programme. The picture is framed by the environmental management system's classification, which is an important part in the implementation of the programme. The goals in the image are shortened.

Nature

Environmental goal: Gothenburg has a high level of biodiversity

The goal is for Gothenburg to have sufficient areas of natural habitats and habitats with proper management to conserve the species present in the municipality and to provide conditions for the development of ecosystem services by 2030 at the latest. The City of Gothenburg will also contribute to biodiversity on a regional, national, and a global level.



Biodiversity is the foundation for healthy ecosystems

The loss of biodiversity is one of the greatest global environmental problems today, according to the UN's expert panel of biodiversity scientists IPBES (Intergovernmental Science-Policy Platform on Biodiversity and Ecosystem Services). The use of land and water is changing resulting in loss of habitat for plants and animals. The main cause is the overexploitation of natural resources. In addition, global warming is causing species that build ecosystems to disappear. A great challenge is to reach the environmental quality standards for water.

A rich biodiversity is a prerequisite for nature to provide the uses and benefits that we humans receive from nature. These are called ecosystem services and examples of these include the pollination of crops by insects, the purification of water and air in nature, the fertilization of the soil by micro-organisms and worms, and the improvement of our health by spending time in nature.

Globally, species are becoming extinct at a high rate and ecosystems are being destroyed. But at the same time, there are good opportunities to reverse these trends. Gothenburg has a wide variety of habitats for many plants and animals. We need to develop and take care of Gothenburg's nature and its rich plant and animal life for the benefit of future generations.

Environment and Climate Programme for the City of Gothenburg 2021–2030

The City of Gothenburg can work toward that future because we

- own and manage more than half of Gothenburg's land.
- have the possibility to protect natural areas with support from the environmental code and to enter into voluntary conservation agreements with landowners.
- manage Gothenburg's wastewater that reaches waterways, lakes and the sea
- plan the urban development of Gothenburg.
- purchase large quantities of goods and services and are able to make tough demands in procurement.

The environmental goal is followed up with the help of the following indicators as well as the sub-goal's indicators:

Indicators	Current situation	Target value 2030
Proportion of well-maintained meadows and pastures	55 percent (2017)	More than 90 percent
Area of protected nature	13,230 hectares (2019)	At least 16,200 hectares
Number of municipal biotope protection areas and natural monuments	0 (2019)	10 and 15 respectively
Area of natural grasslands	2,112 hectares (2018)	Has not decreased compared to current situation
Area of deciduous forests	1,734 hectares (2011)	Has not decreased compared to current situation
Proportion of surface water bodies with good ecological status	17 percent (2019)	100 percent



The goal relates to these national environmental goals:

- · A non-toxic environment
- Zero eutrophication
- Flourishing lakes and streams
- Good-quality groundwater
- A balanced marine environment and flourishing coastal areas and archipelagos
- Thriving wetlands
- Sustainable forests
- · A varied agricultural landscape
- · A rich diversity of plant and animal life



Sub-goals for nature

1. The City of Gothenburg protects and manages the habitats of species to ensure the development of natural values

Responsibility biotopes are habitats for plant and animal species that a municipality or region, for example, has a particular responsibility to conserve and develop from a national perspective.

The Environmental Administration has selected 23 categories of responsibility biotopes for Gothenburg. These include shallow sea bays, natural pastures, deciduous forests and small water bodies.

Many of the responsibility biotopes are dependent on continuous management, and lack of management is one of the major threats to them. One such example is how well-maintained grazing lands have declined by almost half from 1990 to today. These are very important habitats for a number of rare plants and animals that are dependent on grazing or mown meadows. Species in decline include the flowers catsfoot and meadow saxifrage. The city does not possess all the knowledge about the responsibility biotopes that we need to make the right priorities. This contributes to the fact that we do not manage and protect natural values sufficiently today.

In order to reach the goal, the City of Gothenburg needs to do an inventory and determine the need of protection for the responsibility biotopes in order to make the right priorities. Following that, the city needs to establish a long-term protection and management of the biotopes that are in need.

The greatest challenge is to increase efforts in habitats that require special management in order to preserve and develop their specific natural values, even outside protected areas. For areas that require grazing animals, the city can increase the cooperation with its

leaseholders and other livestock owners. Within the city, we need to develop our work with the conservation tools that are suitable for smaller areas, such as creating biotope protection areas or entering into conservation agreements with private landowners.

Indicators	Current situation 2020	Target value 2025	Target value 2030
Proportion of inventoried categories of responsibility biotopes (23 in total)	80 percent	100 percent	-
Proportion of categories of responsibility biotopes determined to require protection	0 percent	100 percent	-
Area of responsibility biotopes, total and on municipal land	Total 11,165 hectares of which 2,787 hectares is municipal land.	-	To be completed by 2025 at the latest based on inventories
Proportion of responsibility biotopes with nature conservation management and proportion with formal protection, total and on municipal land	Nature conservation management: Requires development Proportion with formal protection: 53 percent in total, municipal 31 percent.	-	To be completed by 2025 at the latest based on inventories

2. The City of Gothenburg works towards cleaner seas, lakes and waterways

Good water status in seas, lakes and waterways is an environmental quality standard that Sweden's water management aims to achieve by 2027. Good water status consists of several quality factors, such as the state of the river bed, if there are migration barriers, and if there are nutrient discharges that affect aquatic life through overfertilisation. Only a few water bodies in Gothenburg have good status today. The City of Gothenburg affects the status in many different ways, such as through pollutions and in our planning and management of land and water.

It is a challenge to drastically reduce the city's impact on point emissions, surface water and land use both in the existing environment and in new construction. It could mean that the total emissions need to be reduced through efficiency improvement or by developing new treatment methods. The City of Gothenburg also needs to develop a clear cooperation on the measures with the municipalities located upstream in the city's waterways. Between 45–65 percent of the water bodies today are unclassified in regards to the status of different quality factors. It creates a large uncertainty range. A comprehensive and more detailed picture of the need for action will be provided in the City of Gothenburg's action plan for good water status (*Göteborgs Stads åtgärdsplan för god vattenstatus*).

Indicators	Current situation 2019 (average value 2015–2019)	Target value 2030
Amount of wastewater overflows and discharges of nitrogen and phosphorus to recipients other than Göta Älv	42 500 cubic meters Nitrogen: 6,6 tons Phosphorous: 1 ton	Reduction of the average value over a five-year period, with a minimum reduction of 25 percent.
Discharge of nitrogen and phosphorous from the sewage system (Ryaverket and overflow of wastewater) to Göta Älv	Nitrogen: 1002 tons Phosphorous: 31 tons	Reduction of the average value over a five-year period

3. The City of Gothenburg increases biodiversity in the urban environment

Much of the biodiversity in Gothenburg is found in urban areas. With proper management, green spaces in the urban environment have a great potential to make an important contribution to the conservation of the species found in Gothenburg. These may be proper habitats for plants and animals or opportunities for them to spread across the landscape. For example, old trees in our parks are habitats for many endangered beetles, lichen and fungi, such as Megalaria grossa and the Robustus conk. Some natural values can quickly deteriorate if their management is faulty or neglected, old trees can, for example, be damaged by other trees that grow inside their crown and roadsides rich in wild flowers can become overgrown with thickets.

The challenge lies in making sure biodiversity is increasing and taken care of as a resource for the city and its inhabitants as the city expands. The City of Gothenburg needs to establish a methodology where biodiversity and the ecosystem services they provide become visible in development calculations. We also need to establish new tools that complements the city's working methodology in calculating the green space factor, which allows us to intelligently plan urban development with biodiversity. We need to make sure that areas with natural value are managed properly. It may mean that we need to establish new management methods.

Indicators	Current situation	Target value 2030
Proportion of public space with land usage "Nature" of the total planned area	3.7 percent (2020)	Has not decreased compared to 2020
Proportion of green spaces according to established criteria that the City of Gothenburg owns within "Coherent urban development" (or equivalent designation in future comprehensive plans) that have management goals for biodiversity (broken down by nature, park, and developed area)	Requires development	100 percent
Proportion of green spaces within "Coherent urban development" managed in a manner that increases biodiversity (broken down by nature, park, and developed area) – random sample	Requires development	100 percent
Area of wetlands (in urban areas)	Requires development	Annual increase

4. The City of Gothenburg's purchases help promote biodiversity

The City of Gothenburg's purchases of goods and services affect biodiversity locally as well as globally. The services the city purchases, such as land management, have a corresponding and direct impact on biodiversity in conjunction with the work. We have good opportunities to promote biodiversity in construction and subcontracting, for example by creating meadows or sandy areas for wild bees and other pollinators. The production and consumption of food has a significant impact on biodiversity, not least in the agricultural landscape.

The City of Gothenburg purchases about 13,000 tons of food annually, and the city's preschools, schools, retirement homes and other housing facilities serve around 20 million meals each year.

One challenge is to use the increased knowledge of the impact of the city's purchases on biodiversity in order to make suitable demands during procurements. To follow up and to ensure that these conditions are met may mean that criteria and accounting methods need to be developed.

Indicators	Current situation	Target value 2030
Proportion of purchases of eco-certified/eco- labelled products and services where such options are available (Does not apply to purchases covered by the organic food indicator)	Requires development	Annual increase
Proportion of organic food purchases	48 percent (2019)	80 percent
Proportion of purchased construction and civil engineering contracts according to criteria regarding meaningful impact promoting biodiversity	Requires development	Annual increase

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The City of Gothenburg's control over the environmental goal regarding nature and its sub-goals

The table below shows the general control the City of Gothenburg has over the environmental goal regarding nature and its sub-goals.

Goal	Control
Environmental goal: Gothenburg has a high level of biodiversity	
Sub-goal 1: The City of Gothenburg protects and manages the habitats of species to ensure the development of natural values	
Sub-goal 2: The City of Gothenburg works towards cleaner seas, lakes and waterways	
Sub-goal 3: The City of Gothenburg increases biodiversity in the urban environment	
Sub-goal 4: The City of Gothenburg's purchases help promote biodiversity	







Direct control

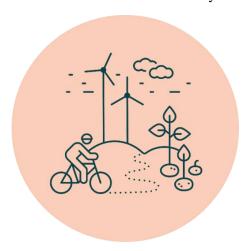
Indirect control

Control through influence

The climate

Environmental goal: Gothenburg's climate footprint is close to zero

The goal is for Gothenburg's climate footprint to be reduced annually with the aim of reaching a zero climate footprint as soon as possible. The emissions within the geographic area of Gothenburg will be reduced by at least 10.3 percent annually, and the consumption-based emissions will be reduced by at least 7.6 percent annually by 2030. The City of Gothenburg needs to reduce its emissions at a faster rate and use all tools and policy instruments available to drive the transition in society.



A global warming below 1.5 degrees

The average temperature in the earth's atmosphere has so far increased by more than one degree since pre-industrial times, and the effects of the increased temperature has already been seen in, for example, rising sea levels, the reduction of ice cover in the Arctic, and changes in precipitation patterns. The Paris Agreement states that the global temperature increase should be kept well below two degrees and that efforts should be made to limit it to 1.5 degrees. All countries of the world are committed to implementing measures that contribute to achieving the goals of the Paris Agreement. The commitments thus far are estimated to lead to a 3.2 degree warming. The world therefore needs to do more to limit global warming to 1.5 degrees.

The UN's climate panel IPCC (Intergovernmental Panel on Climate Change) points out in their special report from 2018 large differences in the consequences of a 1.5 degree global warming compared to a 2 degree global warming. To illustrate, hundreds of millions fewer people would be exposed to climate impacts and increased poverty, heat waves and water scarcity, while fewer habitats for animals and plant species would shrink or disappear. If the world is to be successful in limiting the climate impact to 1.5 degrees warming, global emissions will have to be reduced by 7.6 percent between the years 2020 and 2030 and reach net zero emissions by 2050. Success will require fast and far-reaching changes in society. We need to carry out system transitions that have never before been

conducted on such a large scale, that would significantly reduce emissions in all sectors, and we would also need a wide portfolio of measures and a significant increase in investments. Global emissions have increased 11 percent in the last ten years.

Gothenburg should be above the global reduction rate to meet the Paris Agreement and aim to reduce its climate footprint to zero as quickly as possible.

Climate impact from consumption needs to be reduced by at least 7.6 percent annually which is equivalent to a 64 percent reduction between 2017 and 2030. To be in line with the regional target of *Climate 2030 – Västra Götaland* in transition, emissions in the geographical area of Gothenburg must be reduced by at least 10.3 percent per year, which is equivalent to an 80 percent reduction between 1990 and 2030.

The term climate footprint in the goal includes both the geographic as well as the consumption-based perspective on emissions. It therefore includes emissions occurring in the geographic area of Gothenburg as well as consumption-based emissions. The consumption-based emissions include emissions from products and services that have occurred in earlier stages before being consumed, no matter where in the world these emissions occur, see figure 4.

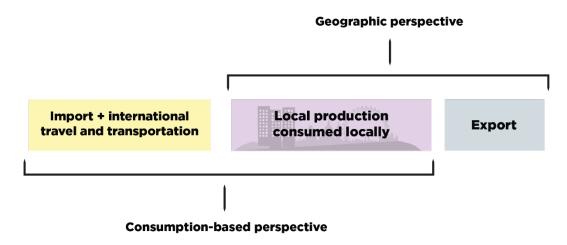


Figure 4 The image illustrates different perspectives on Gothenburg's climate footprint. The geographic perspective shows emissions caused by production within the geographic area of Gothenburg, no matter where in the world the goods and services are consumed. The consumption-based perspective shows emissions caused by goods and services consumed by the people of Gothenburg, no matter where in the world they are produced. The perspectives are overlapping each other and provide different ways of looking at partly the same emissions.

The City of Gothenburg will act as a good example of how to achieve these goals, and we will set more ambitious goals in areas where we have higher degrees of control. We will at the same time ensure that our measures not only reduce emissions locally, but that they also reduce emissions in Sweden, Europe and the world. This will present both challenges and possibilities as Gothenburg has a large industrial sector while also serving as a Swedish logistics hub. Measures that are scalable and useful in other municipalities will be prioritized.

Even though the focus will be on reducing emissions, the City of Gothenburg still needs to work towards facilitating and deploying carbon capture technologies. They are important to reach negative emissions in the future.

The City of Gothenburg is an important driving force in the climate transition of Gothenburg, above all by virtue of the city's control over a large number of policy

instruments that can create the conditions for the transition, but also by virtue of being a large organisation with significant opportunities of its own to reduce emissions.

The City of Gothenburg can work toward that future because we

- plan the urban development and traffic infrastructure of Gothenburg.
- purchase large quantities of goods and services and are able to make tough demands in procurement.
- are responsible for a significant part of the energy production and the energy infrastructure.
- can affect the energy use of our facilities and residential buildings.
- can reduce the climate impact during construction of facilities and residential buildings.
- can reduce the climate impact of our processes in areas such as water and wastewater treatment.
- can affect energy use and climate impact through supervision, advice, education and information campaigns.
- through education and guidance drive for and make the changes possible for more sustainable lifestyles and consumption patterns.
- can cooperate with businesses in the city on their important role in the transition.

The environmental goal is followed up with the help of the following indicators as well as the sub-goal's indicators:

Indicators	Current situation	Target value 2030
Emissions of greenhouse gases per inhabitant and year within the geographical area of Gothenburg (includes emissions from both traded and non-traded sectors)	4.2 tons of carbon dioxide equivalents per inhabitant and year (2018)	1.1 tons of carbon dioxide equivalents per inhabitant and year
Consumption-based greenhouse gas emissions per inhabitant in Sweden	8.9 tons of carbon dioxide equivalents per inhabitant and year (2017)	3.3 tons of carbon dioxide equivalents per inhabitant and year



The goal relates to these national environmental goals:

- Reduced climate impact
- · A non-toxic environment
- · A varied agricultural landscape
- A good built environment
- · A rich diversity of plant and animal life



The goal relates to these global sustainable development goals:

- Good health and well-being
- Affordable and clean energy
- Decent work and economic growth
- Industry, innovation, and infrastructure
- Sustainable cities and communities
- 12. Responsible consumption and production
- 13. Climate action

Sub-goals for the climate

1. The City of Gothenburg reduces energy use in residential buildings and facilities

Improving efficiency in our energy use is a prerequisite for an energy system without a negative environmental and climate impact. A reduced energy use makes it easier to transition energy production from fossil fuels to renewable energy sources. A reduced electricity consumption in the specified sectors, which may also lead to a reduction in power output, would facilitate the ongoing electrification of the industrial and transport sectors.

The sub-goal is to reduce the primary energy consumption by at least 30 percent per inhabitant by 2030 compared to 2010. The sub-goal covers the energy consumption in residential buildings, facilities, public services and businesses, not including industry, agriculture and transport. The primary energy consumption per capita was reduced by about 10 percent between 2010 and 2018.

It is important that we in the City of Gothenburg do everything we can in order to set a good example and show the way. To reach the goal the city needs to prioritize improving energy efficiency in our existing residential buildings and facilities, while constructing new buildings with a high energy performance. To encourage businesses and individuals to reduce their energy consumption, we need to use and develop our advisory capacity, supervision and collaboration with trade, industry and academia, for example through the Gothenburg Climate Partnership.

Indicators	Current situation	Target value 2030
Primary energy consumption per inhabitant within the municipality	18 MWh per inhabitant (2010) 16 MWh per inhabitant (2018)	12 MWh per inhabitant
Average primary energy consumption per square meter in the City of Gothenburg's facilities and residential buildings where the operation can be related to surface area	Facilities: 190 kWh/m ₂ (2010) 167 kWh/m ₂ (2017)	Facilities: 139 kWh/m ₂
Telateu to Surface area	Residential buildings: 133 kWh/m ₂ (2009) 117 kWh/m ₂ (2017)	Residential buildings: 95 kWh/m ₂

2. The City of Gothenburg produces energy solely from renewable sources

Gothenburg is in a good position to develop an energy system with minimal climate impact. With a well-developed district heating network and the City of Gothenburg as a producer of district heat, district cooling and electricity, the city has considerable control over the necessary transition of the energy system from fossil fuels to renewables.

The City of Gothenburg, through Göteborg Energi AB, owns several heating and power plants that produce both heat and electricity by partly using fossil fuels. The fossil fuel-fired generation plants must be decommissioned or converted to use renewable fuels by 2025 in order to reach the goal. A challenge with such a transition is the economic investments necessary and that it needs to done in a relatively short time. The city needs at the same time to work with the sub-goal *The City of Gothenburg reduces energy use in residential buildings and facilities* to facilitate the transition to a more sustainable energy system.

Indicators	Current situation	Target value 2025
The proportion of electricity and district heating produced by renewable fuels in the production facilities of Göteborg Energi AB	Electricity: 1.6 percent (2010) 20 percent (2018)	Electricity: 100 percent
	District heating: 35 percent (2010) 69 percent (2018)	District heating: 100 percent

3. The City of Gothenburg reduces the climate impact from transportation

Road traffic is the second largest source of geographical greenhouse gas emissions in Gothenburg, after the refineries. Gothenburg as a large city has greater possibilities to increase walking, cycling and public transport, as well as more efficient freight transport, than Sweden as a whole. The sub-goal regarding transport emissions is therefore set higher than the corresponding national goal. The sub-goal means that the climate impact from transportation will reduce by at least 90 percent by 2030 compared to 2010, and that

the volume of motorized traffic will be reduced by 25 percent by 2030 compared to 2020. The greenhouse gas emissions from transportation in Gothenburg has decreased by 5.4 percent between 2010 and 2017.

Reaching the sub-target will require a shift from car travel to walking, cycling and public transportation, and freight transport from road to rail and waterborne transport. Furthermore, the use of fossil fuels needs to stop and be replaced by different renewable fuels and electric vehicles. Renewable fuels will not be sufficient for the same volume of road traffic as today, nor will they be sufficient for shipping, aviation, work machinery and other sectors. That is why the volume of traffic needs to be reduced.

Indicators	Current situation	Target value 2023	Target value 2030
Greenhouse gas emissions from transportation in Gothenburg	999,900 tons of carbon dioxide equivalents per year (2010) 945,600 tons of carbon dioxide equivalents per year (2017)	-	At least 90 percent less compared to 2010
Volume of traffic, i.e. the number of kilometers driven by all types of motorized road vehicles per weekday, in Gothenburg	Requires development	-	25 percent less compared to 2020
Proportion of the City of Gothenburg's vehicles that are fossil-free	55 percent (2019)	100 percent	-

4. The City of Gothenburg reduces the climate impact from purchases

The City of Gothenburg is one of Sweden's largest buyers with purchases of around SEK 25 billion annually. At the same time, the city's services produce around 500 million tons of waste annually. Construction accounts for almost half of the purchasing volume. The sub-goal is to reduce greenhouse gas emissions from the city's purchases from a life cycle perspective by around 30 percent for food and by at least 90 percent for other purchases and for buildings and facilities.

To achieve this sub-goal, the city's purchasing, procurement, use and disposal of goods and services needs to be assessed, systematised and made more efficient. The challenge to reach the goal lies mainly in the number of small and large decisions that need to be taken within the City of Gothenburg as well as the need for coordination and common routines for prioritizing the city's purchases.

Indicators	Current situation	Target value 2025	Target value 2030
Greenhouse gas emissions from purchased inventories, products, materials and services from a life cycle perspective	Requires development	-	At least 90 percent less compared to 2020
(Does not apply to purchases covered by other indicators of the sub-goal)			
Greenhouse gas emissions from new and renovated buildings under own management and from new development on land with land allocations	Requires development	At least 50 percent less compared to 2020	At least 90 percent less compared to 2020
Greenhouse gas emissions from facilities under own management and from new development on land with land allocations	Requires development	At least 50 percent less compared to 2020	At least 90 percent less compared to 2020
Greenhouse gas emissions from purchased foods from a life cycle perspective	1.9 kg carbon dioxide equivalents/kg food (2019)	-	1.3 kg carbon dioxide equivalents/kg food

The City of Gothenburg's control over the environmental goal regarding the climate and its sub-goals

The table below shows the general control the City of Gothenburg has over the environmental goal regarding nature and its sub-goals.

Goal	Control
Environmental goal: Gothenburg's climate footprint is close to zero	
Sub-goal 1: The City of Gothenburg reduces energy use in residential buildings and facilities	
Sub-goal 2: The City of Gothenburg produces energy solely from renewable sources	
Sub-goal 3: The City of Gothenburg reduces the climate impact from transportation	
Sub-goal 4: The City of Gothenburg reduces the climate impact from purchases	







Direct control

Indirect control

Control through influence

People

Environmental goal: The people of Gothenburg have a healthy living environment



The goal is to promote the health and well-being of the people of Gothenburg by improving air quality and the sound environment, as well as reducing the use of harmful substances. Gothenburg should be a green and resilient city where ecosystem services are used to serve people's needs both now and in the future.

An environment for health and well-being

The physical living environment the people of Gothenburg are living and working in has considerable importance for health and well-being. The environmental goal and the subgoals are about strengthening the environmental health factors that affect people positively and reducing the effect of factors that have a negative impact. By creating healthy living environments, the city gives the people of Gothenburg the conditions for a good quality of life.

Exposure to harmful substances, air pollution and environments with high levels of noise can cause people health problems. Children are especially vulnerable, which is why their living environments are prioritized. Taking the youngest residents into consideration will have positive effects for everyone in Gothenburg.

Road traffic in Gothenburg is the single largest contributor to high levels of air pollution and high noise levels where people live. Road traffic needs to be reduced and walking, cycling and public transportation need to be prioritized in the planning and management of the city to create a healthy living environment for the people of Gothenburg.

The City of Gothenburg will create a green and resilient city by using, preserving and developing the benefits of nature, which is known as ecosystem services. With the help of water and green spaces, we can both offset the effects of climate change and provide the people of Gothenburg access to healthier environments. The City of Gothenburg can work toward that future because we

- plan the urban development of Gothenburg.
- plan and manage Gothenburg's transport infrastructure.
- own and manage more than half of Gothenburg's land.
- purchase large quantities of goods and services and are thus able to make demands in procurement.
- provide supervision, advice, education and information campaigns.

The environmental goal is followed up with the help of the following indicators as well as the sub-goal's indicators:

Indicators	Current situation	Target value 2030
Volume of traffic, i.e. the number of kilometers driven by all types of motorized road vehicles per weekday, in Gothenburg	Requires development	25 percent less compared to 2020
Proportion of green and blue spaces in coherent urban development (or equivalent designation in future comprehensive plans)	55 percent (2018)	Has not decreased compared to current situation
Access to "urban cold islands"	Requires development	Annual increase
Percentage of detailed plans on municipal land where green space factors are set in the consultation (percent/year)	3 percent (2019)	100 percent



The goal relates to these national environmental goals:

- Clean air
- · A non-toxic environment
- A good built environment



The goal relates to these global sustainable development goals:

- 3. Good health and well-being
- 4. Quality education
- 6. Clean water and sanitation
- 11. Sustainable cities and communities
- 12. Responsible consumption and production
- 13. Climate action
- 14. Life below water

Sub-goals for people

The City of Gothenburg reduces the use of harmful substances

Reducing the use of substances that are designated as particularly harmful by the Swedish Chemicals Agency lessens the risk of people developing health problems such as endocrine disruptions, cancer and allergies. It would also benefit animal and plant habitats where these substances might otherwise have ended up after use. Children are particularly vulnerable to the effects of chemical substances as they are exposed more than adults in relation to their body weight.

The sub-goal is for the city's administrations and companies to phase out and by 2030 stop using phase-out substances, and to halve the use of priority risk reduction substances. This applies to substances in chemical products and goods that are used directly by the city's services, as well as through the services and contracts that are procured.

The work to reduce the use of harmful substances is moving forward. Administrations and companies are working on replacing products that contain phase-out substances. The city sets requirements for chemical content in procurements and the requirements are continuously tightened. We need to develop our work continuously, as both new chemical substances and new knowledge about their effects on human health and the environment are constantly emerging.

A prerequisite to reach the goal, besides having to increase the pace, is that both managers and co-workers receive relevant education in relation to their responsibility and roles. This involves both knowing what the law requires and having sufficient knowledge to be able to make good decisions when purchasing and procuring chemical products and goods, as well as in services and contract work.

Indicators	Current situation 2020	Target value 2030
Number of chemical products containing phase-out substances used in the city's services	154 unique products	Close to zero
Number of chemical products containing priority risk reduction substances used in the city's services	711 unique products	Reduction by 50 percent
Percentage of construction materials and products in the city's logbooks in "Byggvarubedömningen" that have the overall assessment recommended or accepted	Requires development	Annual increase

2. The City of Gothenburg ensures good air quality for the people of Gothenburg

Road traffic in Gothenburg is the single largest contributor to high levels of air pollution where people live and socialize. Air pollution increases the risk of cardiovascular disease, respiratory diseases and cancer. Children, especially younger children, are particularly

vulnerable to air pollution. Children also spend time outdoors often during times when the levels of air pollution are the highest, during mornings and late afternoons. The subgoal is for the City of Gothenburg to ensure that the air quality around pre-school playgrounds and residential houses meets the national environmental goal for fresh air with respect to nitrogen dioxide and particulate matter (PM₁₀). There is a correlation between poor health and air pollution even at moderate levels, but a safe threshold where no adverse health effects occur has not been identified.

The challenges to ensure good air quality are mainly connected to reducing the effect from traffic. Reaching the sub-goal requires a shift from car travel to walking, cycling and public transport. The transition to an electrified vehicle fleet likewise contributes to reaching the goal, mainly in terms of nitrogen dioxide concentrations.

Indicators	Current situation	Target value 2030
Proportion of pre-school playgrounds and residential houses with a nitrogen dioxide (NO ₂₎ concentration of less than 20 micrograms per cubic meter	Pre-school playgrounds: 85 percent (2015) Residential houses: 73 percent (2015)	100 percent
Proportion of pre-school playgrounds and residential houses with a particulate matter (PM ₁₀) concentration of less than 15 micrograms per cubic meter	Requires development	Annual increase
Proportion of area in coherent urban development (or equivalent designation in future comprehensive plans) with a nitrogen dioxide (NO ₂) concentration of less than 20 micrograms per cubic meter	70 percent (2015)	Annual increase
Proportion of area in coherent urban development (or equivalent designation in future comprehensive plans) with a particulate matter (PM ₁₀) concentration of less than 15 micrograms per cubic meter	Requires development	Annual increase

3. The City of Gothenburg ensures a good sound environment for the people of Gothenburg

Environmental noise is the element in our environment that affects most people in Gothenburg, with traffic noise being the biggest source of noise. By ensuring that the city's homes, pre-school playgrounds and green spaces have a good sound environment reduces the risk of, among other things, cardiovascular diseases and sleep disorders.

Children, especially younger children, spend a large part of their childhood in the local neighborhood and in pre-school. Good sound environments are important for children's development and learning as well as their health and safety.

The sub-goal is for the City of Gothenburg to ensure that all pre-school playgrounds have an equivalent noise level in accordance with the guideline values set by the Swedish Environmental Protection Agency. The sub-goal is also about the City of Gothenburg ensuring that the residential buildings that are most exposed to noise have an equivalent noise level below 50 dBA on at least one side, in cases where the apartment has rooms in different directions, as well as ensuring that there is access to green spaces with an equivalent noise level below 50 dBA.

The challenges for the City of Gothenburg are to improve environments that are currently noisy, create new good sound environments and to protect environments that are currently relatively free from noise. Reaching the sub-goal requires a shift from car travel to walking, cycling and public transport. The city needs to focus its efforts both on measures at the source, and to take into account people's exposure to noise during urban planning.

Indicators	Current situation	Target value 2030
Proportion of new pre-school playgrounds with an equivalent noise level below 50 dBA	80 percent (2020)	100 percent
Proportion of older pre-school playgrounds with an equivalent noise level below 55 dBA	75 percent (2020)	100 percent
Proportion of residential buildings with a noise- exposed residential façade exceeding 60 dBA equivalent noise level that have access to a quieter side below 50 dBA equivalent noise level	60 percent (2020)	Annual increase
Proportion of inhabitants with access to green spaces larger than 0.2 hectares and within 300 meters, with an equivalent noise level below 50 dBA	75 percent (2018)	Annual increase

4. The City of Gothenburg ensures access to green spaces and uses ecosystem services

The benefits provided by nature's ecosystems, so-called ecosystem services, are an important asset for the city. Access to cultural heritage, inspiration, cultivation, meeting places, experiences in nature and recreation have far-reaching positive effects on public health and quality of life. Green spaces provide other benefits such as managing precipitation, equalizing temperatures, reducing noise and cleaning the air. The sub-goal is for the City of Gothenburg to ensure access to green spaces in both residential area surroundings as well as parks and pre-school playgrounds. This will improve the physical and psychological well-being of people. Green spaces in the city will have an even greater importance with increasing climate change, both for the well-being of people as well as the city's resilience to extreme weather.

Reaching the sub-goal requires the City of Gothenburg to improve the use, preservation and development of ecosystem services in planning, construction and management. The City of Gothenburg also needs to prioritize people's access to green spaces. The challenge lies in prioritizing access to high quality green spaces while expanding and densifying the city. To do this the City of Gothenburg needs to calculate all societal costs connected with people's health and well-being in an early planning stage, and include the benefits provided by ecosystem services to ensure maximum benefits to society.

Indicators	Current situation	Target value 2030
Proportion of pre-school playgrounds with a green space factor above 0.45	21 percent (2015)	Annual increase
Proportion of inhabitants with access to green spaces larger than 0.2 hectares and within 300 meters	93 percent (2018)	100 percent

The City of Gothenburg's control over the environmental goal regarding the people and its sub-goals

The table below shows the general control the City of Gothenburg has over the environmental goal regarding nature and its sub-goals.

Goal	Control
Environmental goal: The people of Gothenburg have a healthy living environment	
Sub-goal 1: The City of Gothenburg reduces the use of harmful substances	
Sub-goal 2: The City of Gothenburg ensures good air quality for the people of Gothenburg	
Sub-goal 3: The City of Gothenburg ensures good sound environment for the people of Gothenburg	
Sub-goal 4: The City of Gothenburg ensures access to green spaces and uses ecosystem services	







Direct control

Indirect control

Control through influence

Cross-cutting strategies

In order to both succeed in the transition to an environmentally sustainable city and accelerate the pace of the implementation, it is crucial that the City of Gothenburg makes a concerted effort. The overarching challenge to reach the goal of the programme is to implement measures that require cross-cutting cooperation. That is why the Environment and Climate Programme contains seven cross-cutting strategies, each of which contributes in different ways to achieving all the environmental goals:

- We act as forerunners
- We create conditions for sustainable living
- We drive the development of circular economy
- We work strategically on financing to accelerate the transition
- We drive the development of sustainable construction
- We plan for a green and resilient city
- We drive the development of sustainable transportation

The strategies provide a platform to drive and coordinate work on actions that require a high degree of collaboration and should have the capacity to drive implementation to fruition. The aim of the strategies is to achieve a change-driven development work to accelerate the transition. Through the work on the strategies, the city will be in a continuous learning process to increase the pace of implementation and achieve the goals of the Environment and Climate Programme.

Working with the strategies will add value to ongoing missions and bring together responsibility and drive development in areas where responsibility is currently dispersed. The strategies will also develop new solutions and working methods within and around the city.

The strategies will be linked to groups of directors with the aim of bringing them proposals for solutions that require joint decisions. The groups of directors will mostly consist of groups that already exist in the city, but they may also be formed on the basis of a specific strategy if necessary.

The strategies are party overlapping, which will be dealt with in the framework of the coordination of all strategies under the responsibility of the Environmental Administration.

General starting points

For all strategies, innovation, digitalization, communication and collaboration are key to enable success. The City of Gothenburg's governing documents for these areas are important starting points. Coordination with these documents, as well as other relevant plans and programmes in the city, is essential to develop synergies and to integrate environment and climate policy into relevant policy areas, which in turn is necessary to achieve the goals.

Capacity for implementation

Many issues can be handled in the line organization, but many issues require cooperation, especially in an area like environment and climate. One challenge in cross-cutting cooperation is to build capacity for the implementation – that arenas for cooperation have the mandates and conditions needed to drive cooperation to fruition.

The capacity for implementation can be sorted and described in many different ways, but the following is crucial:

Driving and responsible actors who are expected to participate in the work with the strategies are identified in the programme by designating coordinators and key actors in relation to each strategy. This provides guidance and conditions for co-creation, which is also made clear in the mission statement for the coordinators, see appendix 2.

Politically decided missions and support from managers and leadership provides a foundation and room for action for the services to work with the cross-cutting issues. This programme provides a politically decided mission and mission statement for coordinators, which together with the work on environmental management systems provides a basis for managers and management to support the work.

To create a cross-cutting cooperation requires trust between participating actors and shared challenges. The strategies represent a challenge-driven work method.

To work in a challenge-driven manner means repeatedly testing different approaches and solutions together for the shared challenges.

There are no obvious ways to handle conflicts and deadlocks in a cross-cutting cooperation. Different types of conflicts will emerge repeatedly, and it is crucial to a successful cooperation to manage those before they become an obstacle to the implementation. The strategies are expected to have the capacity to manage conflicts, both through the mandate given to the coordinator in the mission statement, and by the ability to forward proposed solutions to an appointed group of directors.

New working methods and new types of measures require a certain amount of risk-taking. A stage for cooperation needs to be able to allocate responsibility and risk between the actors involved. The strategies are expected to have the capacity to distribute responsibility and risk, both through the mandate given to the coordinator and by the possibility of referring the issue to the appointed group of directors.

The work in the strategies is based on the missions that exist in the city today, as well as the resources and expertise available in the organization. The first challenge is to create added value linked to the goals of the Environment and Climate Programme based on the available resources. The missions and resources that are missing today are expected to be identified through the work in the strategies. Participants in the strategies will both propose solutions and act to meet the identified requirements.

The committees and boards most closely associated with the issue are expected to be involved in the work on the strategies. Each strategy should also communicate with other interested parties, some of whom may become important players over time, and others who need the information to carry out their missions in the best possible way. Communication can be carried out on a per-strategy basis or by the coordination of the Environmental Administration.

Coordinator and important actors

Each strategy has an appointed coordinating board or committee. The responsibility is to drive and coordinate the strategy by the overarching coordination of the Environmental Administration. Working methods for strategies and the mission statement for coordinators can be found in appendix 1. In summary, this means working to ensure high capacity for cross-cutting cooperation with a focus on delivering impact and contributing

to the goals and sub-goals of the programme. The different strategies will be driven by the same basic mission, but with variations based on the different conditions present in each strategy. Some strategies will be coordinated with other strategies and missions in the city.

Certain strategies will need to be started from the ground up, while others build on extensive ongoing work that needs to be coordinated to strengthen the environmental and climate perspective. It also means that the strategies will have different types of groups of directors or counterparts to report to.

Each strategy will have examples of committees and boards that are deemed to be important actors for the implementation. There could also be additional committees and boards that will be involved in the work on the strategies. It is the coordinator's task to involve these in the best possible way. Being chosen as a key player in a strategy means actively participating over time in the joint work on the strategies, in accordance with the appointed mission and on the job description and mission statement for the strategies in appendix 1.

External players from trade and industry, civil society and academia can and should be invited to participate in the strategies as needed.

Process follow-up as a tool

In addition to the follow-up of environmental goals and sub-goals, ongoing process follow-up is carried out with a focus on the maintenance and development of capacity in each strategy.

The process follow-up is done within the framework of the Environmental- and Climate Committee's mission to follow-up on the programme. Results and reflections from the process follow-up will regularly be reported back to the coordinators. This facilitates continuous learning and becomes an integral part of the work.

Strategy: We act as forerunners

The City of Gothenburg will drive the transition to an environmentally sustainable society and be one of the most progressive cities in the world when it comes to preventing and addressing environmental and climate problems. That is why we will begin the transition with ourselves, partly because we are a large organization with considerable environmental impact, and partly to be able to inspire and influence others in a credible way.

In this area, city representatives need to show leadership and drive advocacy work nationally and at an EU level. By having the proper expertise, collaborating with academia, trade and industry and civil society organizations, and by producing good examples and results, we will also influence decision-makers nationally and at EU level so that policy instruments are tightened and legislation is changed.

The strategy involves, for example

- The City of Gothenburg driving cooperation with other cities and relevant actors in an active advocacy work toward decision-makers on a national and EU level, with the aim to develop suitable policy instruments and legislation to accelerate the transition to an environmentally sustainable society.
- The City of Gothenburg's services developing skills to meet the challenges of the transition by training staff and attracting skilled workers. Crucial to this transition is a brave leadership.
- The City of Gothenburg, in collaboration with academia, civil society organizations, trade and industry and other municipalities, taking the lead in strategically important areas and using the city's investment in test beds to drive the transition.
- The City of Gothenburg communicating, in a clear and structured way, good examples of what we are doing in the environmental field to inspire both internally and externally. The city's services should also act as role models in their daily contact with citizens, businesses and other actors.

Coordinator: The Environmental- and Climate Committee

Important actors: For example, Business Region Göteborg AB, Gothenburg European Office (Stadshus AB), Göteborg & Co AB, the City Executive Board, and the Administration for democracy and citizen service

Strategy: We create conditions for sustainable living

It should be easy for everyone to make environmentally sound choices in the sustainable city. The City of Gothenburg, with the help of its committees and boards, will create the conditions for those who visit, live and work in Gothenburg to live sustainably. The City of Gothenburg will use all its available tools and policy instruments to create the conditions for a sustainable lifestyle.

In other words, the city will make the sustainable choice the standard.

The strategy involves, for example

- The City of Gothenburg planning Gothenburg in a manner that facilitates a sustainable lifestyle.
- The City of Gothenburg's services and events always being environmentally and climate friendly.
- The City of Gothenburg contributing useful tools, communicating with and giving advice to the people of Gothenburg and civil society organizations on what they can do to contribute to the transition to a sustainable society.
- The City of Gothenburg facilitating the development of the sharing economy for the the people of Gothenburg.
- The City of Gothenburg listening to ideas and inviting civil society organizations to co-create solutions for a sustainable Gothenburg.

Coordinator: The Administration for democracy and citizen service

Important actors: For example, the Planning and Building Committee, Förvaltnings AB Framtiden, Göteborg Energi AB, Göteborg & Co AB, the Sports and Associations Committee, the Board of Sustainable Water and Waste Management, the Environmental-and Climate Committee, and the City of Gothenburg Urban Transport Committee

Strategy: We drive the development of circular economy

To reduce unsustainable resource use, greenhouse gas emissions and the spread of toxic substances, the patterns of how and what is produced and consumed need to change. The circular economy has a great potential to contribute to sustainable consumption and production from a system perspective. Toxic-free cycles are a prerequisite for a circular economy in order to stop both the release of harmful substances and to detoxify the cycle. The city's own consumption of goods and materials needs to be reduced, made more efficient and based on circular principles instead of the current linear ones. This applies to all flows including food, inventory, electronics, construction materials and demolition waste. This strategy is therefore based on the city's own services.

Using resource-efficient, non-toxic, innovative purchases and procurements, an increased recycling and an increased sharing of products would not only reduce resource use and environmental and climate impact, but it would also reduce the costs for the city.

The strategy involves, for example

- The City of Gothenburg, in cooperation with trade, industry and academia, developing models for the circular economy.
- The City of Gothenburg demanding new climate-smart business models and resource-efficient and non-toxic products in procurement and innovation procurement.
- The City of Gothenburg using recycled products and creating the conditions for various products to be made available to others in a resource-efficient way.
- The City of Gothenburg making it easier to find products and services with minimal environmental impact in the central purchasing system, and replacing environmentally harmful items in particular.
- The City of Gothenburg leading the way in waste prevention.

Coordinator: Göteborgs Stads Leasing AB

Important actors: For example, Business Region Göteborg AB, the Purchasing and Procurement Administration, the Board of Sustainable Water and Waste Management, the Environmental- and Climate Committee, and the Administration for democracy and citizen service

Strategy: We work strategically on financing to accelerate the transition

In order to accelerate the transition to meet the goals, the city needs to regroup and rethink its approach to financing, which includes both investment and operations. The city faces major challenges such as the implementation of fossil-free energy supply and sustainable mobility. Analysis and development of different financial options is required to implement the major system changes society is currently facing.

Both national and EU funding should be actively sought and used to contribute to innovation and enable the introduction of new solutions. This is where the EU's Green Deal initiative provides funding opportunities.

Sustainability-driven investing is a responsible, long-term choice for ownership, and they are investments that contribute to an environmentally and socially sustainable transition without sacrificing returns. It is important that the city does not make investments that lock us into solutions that lead to environmental degradation, such as increased greenhouse gas emissions, increased exposure to harmful substances and negative impacts on biodiversity.

The strategy involves, for example

- The City of Gothenburg having knowledge about the associated costs with the transition during decision-making from a municipal finance perspective and from a socio-economic perspective.
- The City of Gothenburg thinking innovatively and seeking different types of financing solutions, such as green bonds to manage the transition.
- The City of Gothenburg analysing which investment priorities will help us achieve the goals of the Environment and Climate Programme.

Coordinator: The Environmental- and Climate Committee

Important actors: For example, Business Region Göteborg AB, Förvaltnings AB Framtiden, Gothenburg European Office (Stadshus AB), Göteborg Energi AB, the City Executive Board, the Board of Sustainable Water and Waste Management, the City Premises Committee, Renova AB, and the City of Gothenburg Urban Transport Committee.

Strategy: We drive the development of sustainable construction

All construction in Gothenburg will focus on people's need for quality of life, good health and resource management. The strategy includes new construction, reconstruction and renovation of buildings and facilities, and adaptation of existing premises. The city is expected to set higher standards for methods with less environmental impact, to contribute to the development of methods and to contribute to the formulation of relevant functional requirements.

The strategy involves, for example

- Improving the City of Gothenburg's overall governance of sustainable construction, in the construction phase, use phase and final phase, in terms of resource management and environmental and health impacts.
- The City of Gothenburg cooperating with trade and industry to test and develop new methods and materials for sustainable construction.
- The City of Gothenburg using innovative procurements to drive the development forward of a circular, non-toxic and resource-efficient construction.
- The City of Gothenburg setting functional requirements for reduced environmental and health impacts in the construction of infrastructure, public spaces such as squares, parks, sports facilities, playgrounds and buildings.

Coordinator: Förvaltnings AB Framtiden

Important actors: For example, Business Region Göteborg AB, the Planning and Building Committee, the Property Management Committee, the Sports and Associations Committee, the Board of Sustainable Water and Waste Management, the City Premises Committee, the Environmental- and Climate Committee, the Parks and Landscape Committee, the City of Gothenburg Urban Transport Committee, and Älvstranden Utveckling AB

Strategy: We plan for a green and resilient city

The City of Gothenburg considers green infrastructure as a structural and natural part of urban planning, both in the strategic and early planning stages. Green infrastructure is essential for plants and animals to spread themselves between their habitats. This means that in planning and management, we will utilize, develop, integrate and increase the share of urban greenery, blue structures and ecosystem services.

The core of the strategy is to integrate the value of ecosystem services into all economic and policy decisions.

To build a resilient city means that urban planning ensures that society is prepared for the effects of climate change. Green infrastructure will be developed as a part of the climate change adaptation efforts and to address the undesirable effects of climate change.

The strategy involves, for example

- The City of Gothenburg is driving efforts to integrate the social costs and benefits
 of ecosystem services during the planning and implementation phase, and in
 management/operation so that target conflicts and sub-optimization can be
 managed.
- The City of Gothenburg is preparing for climate change and extreme weather with shifting temperatures, higher flows and torrential rainfall as well as rising sea levels. The city's resilience and ability to cope with climate change will be developed so that Gothenburg is in a strong position for the future.
- The City of Gothenburg actively uses green and blue structures and other measures to create a good microclimate in the developed parts of the city and to reduce the effect and avoid the development of "urban heat islands".

Coordinator: The Planning and Building Committee

Important actors: For example, Business Region Göteborg AB, the Property Management Committee, the City Executive Board, the Board of Sustainable Water and Waste Management, the Environmental- and Climate Committee, the Parks and Landscape Committee, the City of Gothenburg Urban Transport Committee and Älvstranden Utveckling AB

Strategy: We drive the development of sustainable transportation

In order to achieve a modern transportation system with a small impact on health and the environment, work with sustainable transportation and sustainable availability will be essential. Spatial planning will prioritize proximity, density and a mix of functionality. Reaching this goal requires a holistic approach that requires close collaboration between different actors in Gothenburg.

Many strong measures are needed both in urban planning and in the existing city. We need to reduce the need for transportation and work with more measures for a transportation system that is more efficient and sustainable. The transport sector faces major challenges, particularly in regards to reducing climate impact, providing clean air and a good sound environment, and ensuring efficient land use.

The Port of Gothenburg is Scandinavia's largest port and a central node in Sweden's transport system. This provides the opportunity for the City of Gothenburg to act as a forerunner and become a hub for climate change transformation of the transport system for Northern Europe.

The strategy involves, for example

- The City of Gothenburg developing a more efficient mobility by prioritizing walking, cycling and public transportation in traffic management and in prioritizing the use of street and road space. As major reconstructions will affect the city during the programme period, sustainable mobility will also be a priority for temporary traffic solutions.
- The City of Gothenburg prioritizing walking and cycling, which means that the city needs to promote soft factors and create attractive urban spaces and pedestrian routes where people want to be, spend time and move through. It includes managing and maintaining the urban environment to preserve its beauty. To succeed in reducing traffic congestion, we need to ensure that the local environment satisfies many of the needs of residents.
- The City of Gothenburg working toward an electrified transportation system, fossil-free fuels and a charging infrastructure for the city's own vehicles, as well as creating conditions for the development of the Gothenburg community, in collaboration with the business community and other regional actors.
- The City of Gothenburg developing and continuously using different types of policy instruments such as congestion tax, pricing and regulation of parking, low-emission zones and car-free zones in the city center, and behavioral interventions.
- The City of Gothenburg using our opportunities through urban planning and ownership of the largest port in the Nordic region to allocate land for multimodal logistics terminals, transshipment centers and freight tracks.

Coordinator: The City of Gothenburg Urban Transport Committee

Important actors: For example Business Region Göteborg AB, the Planning and Building Committee, Göteborg & Co AB, Göteborg Energi AB, The Port of Gothenburg, Göteborgs Stads Leasing AB, Göteborgs Stads Parkering AB, and the Environmental-and Climate Committee.

List of all indicators for the environmental goals and subgoals

Environmental goal: Gothenburg has a high level of biodiversity	Current situation	Target value 2030
Proportion of well-maintained meadows and pastures	55 percent (2017)	More than 90 percent
Area of protected nature	13,230 hectares (2019)	At least 16,200 hectares
Number of municipal biotope protection areas and natural monuments	0 (2019)	10 and 15 respectively
Area of natural grasslands	2,112 hectares (2018)	Has not decreased compared to current situation
Area of deciduous forests	1,734 hectares (2011)	Has not decreased compared to current situation
Proportion of surface water bodies with good ecological status	17 percent (2019)	100 percent

Sub-goal 1: The City of Gothenburg protects and manages the habitats of species to ensure the development of natural values	Current situation 2020	Target value 2025	Target value 2030
Proportion of inventoried categories of responsibility biotopes (23 in total)	80 percent	100 percent	-
Proportion of categories of responsibility biotopes determined to require protection	0 percent	100 percent	-
Area of responsibility biotopes, total and on municipal land	Total 11,165 hectares of which 2,787 hectares is municipal land	-	To be completed by 2025 at the latest based on inventories
Proportion of responsibility biotopes with nature conservation management and proportion with formal protection, total and on municipal land	Nature conservation management: Requires development Proportion with formal protection: 53 percent in total municipal 31 percent	-	To be completed by 2025 at the latest based on inventories

Sub-goal 2: The City of Gothenburg works towards cleaner seas, lakes and waterways	Current situation 2019 (average value 2015–2019)	Target value 2030
Amount of overflow of wastewater and discharges of nitrogen and phosphorus to recipients other than Göta Älv	42 500 cubic meters Nitrogen: 6.6 tons Phosphorous: 1 ton	Reduction of the average value over a five-year period, with a minimum reduction of 25 percent.
Discharge of nitrogen and phosphorous from the sewage system (Ryaverket and overflow of wastewater) to Göta Älv	Nitrogen: 1002 tons Phosphorous: 31 tons	Reduction of the average value over a five-year period

Sub-goal 3: The City of Gothenburg increases biodiversity in the urban environment	Current situation	Target value 2030
Proportion of public space with land usage "Nature" of the total planned area	3.7 percent (2020)	Has not decreased compared to 2020
Proportion of green spaces according to established criteria that the City of Gothenburg owns within "Coherent urban development" (or equivalent designation in future comprehensive plans) that have management goals for biodiversity (broken down by nature, park, and developed area)	Requires development	100 percent
Proportion of green spaces within "Coherent urban development" managed in a manner that increases biodiversity (broken down by nature, park, and developed area) – random sample	Requires development	100 percent
Area of wetlands (in urban areas)	Requires development	Annual increase

Sub-goal 4: The City of Gothenburg's purchases help promote biodiversity	Current situation	Target value 2030
Proportion of purchases of eco-certified products and services where such options are available.	Requires development	Annual increase
Does not apply to purchases covered by the organic food indicator		
Proportion of organic food purchases	48 percent (2019)	80 percent
Proportion of purchased construction and civil engineering contracts according to criteria regarding meaningful impact promoting biodiversity	Requires development	Annual increase

Environmental goal: Gothenburg's climate footprint is close to zero	Current situation	Target value 2030
Emissions of greenhouse gases per inhabitant and year within the geographical area of Gothenburg (includes emissions from both traded and non-traded sectors)	4.2 tons of carbon dioxide equivalents per inhabitant and year (2018)	1.1 tons of carbon dioxide equivalents per inhabitant and year
Consumption-based greenhouse gas emissions per inhabitant in Sweden	8.9 tons of carbon dioxide equivalents per inhabitant and year (2017)	3.3 tons of carbon dioxide equivalents per inhabitant and year

Sub-goal 1: The City of Gothenburg reduces energy use in residential buildings and facilities	Current situation	Target value 2030
Primary energy consumption per inhabitant within the municipality	18 MWh per inhabitant (2010) 16 MWh per inhabitant (2018)	12 MWh per inhabitant
Average primary energy consumption per square meter in the City of Gothenburg's facilities and residential buildings where the operation can be related to surface area	Facilities: 190 kWh/m² (2010) 167 kWh/m² (2017)	Facilities: 139 kWh/m²
	Residential buildings: 133 kWh/m² (2009) 117 kWh/m² (2017)	Residential buildings: 95 kWh/m²

Sub-goal 2: The City of Gothenburg produces energy solely from renewable sources	Current situation	Target value 2025
The proportion of electricity and district heating produced by renewable fuels in the production facilities of Göteborg Energi AB	Electricity: 1.6 percent (2010) 20 percent (2018)	Electricity: 100 percent
	District heating: 35 percent (2010) 69 percent (2018)	District heating: 100 percent

Sub-goal 3: The City of Gothenburg reduces the climate impact from transportation	Current situation	Target value 2023	Target value 2030
Greenhouse gas emissions from transportation in Gothenburg	999,900 tons of carbon dioxide equivalents per year (2010) 945,600 tons of carbon dioxide equivalents per year (2017)	-	At least 90 percent less compared to 2010
Volume of traffic, i.e. the number of kilometers driven by all types of motorized road vehicles per weekday, in Gothenburg	Requires development	-	25 percent less compared to 2020
Proportion of the City of Gothenburg's vehicles that are fossil-free	55 percent (2019)	100 percent	-

Sub-goal 4: The City of Gothenburg reduces the climate impact from purchases	Current situation	Target value 2025	Target value 2030
Greenhouse gas emissions from purchased inventories, products, materials, and services from a life cycle perspective	Requires development	-	At least 90 percent less compared to 2020
(Does not apply to purchases covered by other indicators of the sub-goal)			
Greenhouse gas emissions from new and renovated buildings under own management and from new development on land with land allocations	Requires development	At least 50 percent less compared to 2020	At least 90 percent less compared to 2020
Greenhouse gas emissions from facilities under own management and from new development on land with land allocations	Requires development	At least 50 percent less compared to 2020	At least 90 percent less compared to 2020
Greenhouse gas emissions from purchased foods from a life cycle perspective	1.9 kg carbon dioxide equivalents/kg food (2019)	-	1.3 kg carbon dioxide equivalents/kg food

Environmental goal: The people of Gothenburg have a healthy living environment	Current situation	Target value 2030
Volume of traffic, i.e. the number of kilometers driven by all types of motorized road vehicles per weekday, in Gothenburg	Requires development	25 percent less compared to 2020
Proportion of green and blue spaces in coherent urban development (or equivalent designation in future comprehensive plans)	55 percent (2018)	Has not decreased compared to current situation
Access to "urban cold islands"	Requires development	Annual increase
Percentage of detailed plans on municipal land where green space factors are set in the consultation (percent/year)	3 percent (2019)	100 percent

Sub-goal 1: The City of Gothenburg reduces the use of harmful substances	Current situation 2020	Target value 2030
Number of chemical products containing phase- out substances used in the city's services	154 unique products	Close to zero
Number of chemical products containing priority risk reduction substances used in the city's services	711 unique products	Reduction by 50 percent
Percentage of construction materials and products in the city's logbooks in "Byggvarubedömningen" that have the overall assessment recommended or accepted	Requires development	Annual increase

Sub-goal 2: The City of Gothenburg ensures good air quality for the people of Gothenburg	Current situation	Target value 2030
Proportion of pre-school playgrounds and residential houses with a nitrogen dioxide (NO ₂) concentration of less than 20 micrograms per cubic meter	Pre-school playgrounds: 85 percent (2015) Residential houses: 73 percent (2015)	100 percent
Proportion of pre-school playgrounds and residential houses with a particulate matter (PM ₁₀) concentration of less than 15 micrograms per cubic meter	Requires development	Annual increase
Proportion of area in coherent urban development (or equivalent designation in future comprehensive plans) with a nitrogen dioxide (NO ₂) concentration of less than 20 micrograms per cubic meter	70 percent (2015)	Annual increase
Proportion of area in coherent urban development (or equivalent designation in future comprehensive plans) with a particulate matter (PM ₁₀) concentration of less than 15 micrograms per cubic meter	Requires development	Annual increase

Sub-goal 3: The City of Gothenburg ensures good sound environment for the people of Gothenburg	Current situation	Target value 2030
Proportion of new pre-school playgrounds with an equivalent noise level below 50 dBA	80 percent (2020)	100 percent
Proportion of older pre-school playgrounds with an equivalent noise level below 55 dBA	75 percent (2020)	100 percent
Proportion of residential buildings with a noise- exposed residential façade exceeding 60 dBA equivalent noise level that have access to a quieter side below 50 dBA equivalent noise level	60 percent (2020)	Annual increase
Proportion of inhabitants with access to green spaces larger than 0.2 hectares and within 300 meters, with an equivalent noise level below 50 dBA	75 percent (2018)	Annual increase

Sub-goal 4: The City of Gothenburg ensures access to green spaces and uses ecosystem services	Current situation	Target value 2030
Proportion of pre-school playgrounds with a green space factor above 0.45	21 percent (2015)	Annual increase
Proportion of inhabitants with access to green spaces larger than 0.2 hectares and within 300 meters	93 percent (2018)	100 percent

Glossary

Biodiversity Biodiversity is the diversity of living organisms and the

ecosystems they are a part of. It includes diversity within

species, between species and of ecosystems.

Biotope A biotope is a small area of land or water with specific

characteristics that favor certain species or groups of species.

Overflow Overflow is the direct release of wastewater into a ditch, lake or

other body of water without first being treated in a sewage

treatment plant.

Byggvarubedömningen Byggvarubedömningen is a documentation and assessment

system with criteria for construction products/materials and chemical products used in the construction industry. All city

services have access to the system.

Chemsoft Chemsoft is a chemical management system for the

assessment, documentation and follow-up of chemical products. All city services have access to the system.

Ecosystem services Ecosystem services are the benefits, products and services that

nature provides us humans with that affect our well-being. Some examples of this include greenery that delays and purifies surface water, improves local climate and air quality, reduces noise,

provides pollination and experiences in nature.

Equivalent noise level Equivalent noise level is used to describe exposure to noise

during a longer time period, for example the average value in

a 24-hour period for a year.

Green infrastructure An ecologically functional network of habitats and structures,

natural areas and landscaped features that are designed, managed and operated to conserve biodiversity and to promote ecosystem services important to society across the landscape.

This includes both land and water.

Green space factor (GSF) Green space factor (GSF) is a measure of how many ecosystem

services an area provides, i.e. how well green and blue spaces can, for example, improve local climate and provide recreational

opportunities.

Climate change adaptation

Climate change adaptation means implementing measures in all sectors of society to adapt to the climate changes we are already experiencing today and to those that we cannot prevent in the future.

Climate footprint

The term climate footprint includes both the geographic as well as the consumption-based perspective on emissions. It therefore includes emissions occurring in the geographic area of Gothenburg as well as consumption-based emissions. The consumption-based emissions include emissions from products and services that have occurred in earlier stages before being consumed, no matter where in the world these emissions occur.

Carbon capture

Carbon capture is an umbrella term for different ways of capturing carbon dioxide from the air.

Nitrogen dioxide (NO2)

Nitrogen oxides are formed during combustion and have negative effects on both human health and the environment. Vehicular traffic is the main contributor, but energy production, machinery and shipping are also significant contributors of nitrogen oxides. Road traffic emissions of nitrogen oxides consist mainly of nitrogen monoxide (about 80 percent), but the substance is quickly converted into nitrogen dioxide when it reacts with oxygen in the air.

Environmental health factor

Environmental health factors are physical, chemical and biological environmental factors as well as all related factors that affect human health. These can be negative, such as air pollution, or positive, such as parks and other recreational environments.

Multimodal logistics terminal

A physical location for the transfer of goods and commodities. Multimodal means transports using more than one type of transportation method in the chain from sender to recipient.

Natura 2000

A network of protected areas within EU that contain species or natural habitats of particular conservation interest from a European perspective.

Natural value

A natural value represents the importance for biodiversity. The value may reflect the presence of species and/or biotopes, an abundance of variation between them, special ecological processes, or an important part of the green infrastructure and/or as a dispersal route for species.

Negative emissions

Negative emissions occur when the amount of carbon dioxide captured and stored from the air is greater than the amount of fossil carbon dioxide released. This would enable a reduction of carbon dioxide in the atmosphere.

The Paris Agreement

The Paris Agreement is a global climate agreement that was established primarily to limit the global temperature increase and to support those who are affected by the impacts of climate change. The Paris Agreement states that the global temperature increase should be kept well below two degrees and that efforts should be made to limit it to 1.5 degrees. All countries of the world are committed to implementing measures that contribute to achieving the goals of the Paris Agreement.

Particulate matter (PM10)

PM10 are inhalable particles with a diameter of less than 10 micrometers. PM10 is generated mainly from the wear and tear between road traffic and the road surface. The smaller fraction of PM10 are particles with a diameter of less than 2.5 micrometers (PM2,5). PM2,5 is generated during combustion and is in Gothenburg primarily originating from car exhausts and from polluted air from other countries.

Primary energy

Primary energy refers to the entire energy chain, from extraction to use, not just end use. To calculate the primary energy use, the energy use is weighted by a certain factor, depending on the energy type. For example, fossil fuels are weighted higher than renewables. The programme uses the weighting factors in Boverket's (the National Board of Housing, Building and Planning) building regulations, BBR.

Priority risk reduction substances

Priority risk reduction substances are substances designated by the Swedish Chemicals Agency to be used with caution due to their hazardous properties, such as their toxicity.

Reach

Reach is an EU regulation that includes rules on the registration, evaluation, authorization and restrictions of chemical substances in chemical products and goods. The regulation also contains rules for the production, import, sale and use of these substances.

Resilience

Resilience is a system's long-term ability, be it a forest, city or an economy, to manage change and continue developing.

Urban cold islands

Urban cold islands are the opposite of urban heat islands, a phenomenon that occurs in cities mainly due to the presence of heat-absorbing materials, such as concrete and asphalt. Greenery is recognized to be the most effective measure to lower the urban temperature and having access to "urban cold islands" in cities also reduces the risk of health problems during heat waves.

Phase-out substances

Phase-out substances are substances designated by the Swedish Chemicals Agency as having particularly harmful properties, such as being carcinogenic.

Well-maintained

Well-maintained means that a pasture is grazed with a sufficient number of grazing animals, or that a mowed meadow is mowed (mechanically or with a scythe), to ensure the grass cover is short and to prevent vegetation overgrowth.



Appendix 1: Mission statement for strategy coordinators

Main tasks

The coordinator drives and coordinates their strategy based on the aims in the crosscutting strategies, which are described in the Environment and Climate Programme. The coordinator will ensure work with the strategies progresses and contribute to the added value of existing missions, they will drive the development of new working methods and coordinate the development of new measures and activities to successfully reach the goals.

The missions involve

- being driven and taking responsibility in the work with the strategies. Convening
 and coordinating key actors and, where necessary, organizing meetings with
 additional actors from trade and industry, academia, civil society or the public
 sector.
- identifying which goals and sub-goals the strategy primarily contributes to. This can be adjusted during the course of the programme.
- identifying which strategies in other programmes, and which ongoing processes and coordination tasks the strategy should be coordinated with over a shorter or longer period of time.
- managing the strategy to create an overview of ongoing initiatives related to the strategy in the city and identifying the main obstacles and challenges for further development of the strategy.
- working to continually develop proposed solutions to the conflicts of goals, challenges and obstacles that emerge during the process.
- working to add value to existing missions and initiatives, and identifying which
 missions and types of initiatives, actions and resources are missing in order to
 accelerate the implementation.
- driving the prioritization of a few key cross-cutting initiatives to give particular focus on within each strategy.
- being the contact person for the strategy to present and represent it.

Responsibilities and authorities

- In a challenge-driven and solution-oriented manner coordinate specific key players, and others as needed.
- Where necessary, propose measures, solutions, and missions in a forward-looking discussion with the designated group of directors.
- Participate in four meetings a year that are convened by the Environmental Administration, together with the coordinators of all the seven strategies.
- Summarize what has been achieved and how the work with the strategy has been carried out on an annual basis and participate in the follow-up of the work on the strategies. The annual summary is presented to the Environmental Administration and the designated group of directors.