NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Action Plan

2030 Climate Neutrality Action Plan of Malmö

City of Malmö

NetZeroCities has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Disclaimer

The content of this document reflects only the author's view. The European Commission is not responsible for any use that may be made of the information it contains.

Table of Contents

Summary

An abstract **summarizes the content** of the 2030 Climate Neutrality Action Plan (Action Plan) that is developed jointly by local authorities, local businesses and other stakeholders.

Textual element
This document is a description of the current position of Climate Transition Malmö. It describes some of the analytical work carried out to understand the current state of affairs and scenario analyses to consider possible pathways towards net zero 2030. It provides baseline data and some assessments of the potential impacts of measures towards the net zero target. The document considers the policy framework within which the work towards climate neutrality is taking place and examines the relationships with stakeholders at a local, national and European level with a potential to influence development. The Action Plan describes activity in Malmö based on the six cross-sectoral thematic areas of Climate Transition Malmö and the related work in the seventh stream of work for a Net Zero Organisation. Work in these thematic areas is at different stages of maturity, and also varies significantly in complexity. Heating for example engages a small number of partners with a strong mandate and a clear path with technical investment focus towards climate neutrality. This is a major source of emissions, but also one of the work streams that is most advanced. Work with the Circular Economy, however, is extremely complex with no single partners with a significant mandate and impact spread across society. Here development is slower as stakeholders are engaged, analyses are carried out and a roadmap is slowly pieced together. The complexity of the process also crosses between thematic areas. Climate Neutral Building is also a complex area of work with many stakeholders, but here 200 businesses in the city are committed to all of their construction, renovation, operations and maintenance being climate neutral by 2030. In doing so they impact demand for heating and demand for circular products linking these, and other thematic areas together. 49 key actions under development in the first phase of delivery are presented and briefly described. Some of these are planned, costed and under implementation. Others are in the earlier planning stages and detailed costings and impacts are yet to be finalised. Some of the actions presented here are also overarching actions containing a larger number of sub-activities. The actions presented have been selected to provide an overview of the current state of affairs rather than a comprehensive list of all activity in Climate Transition Malmö. The transition process is an iterative one. The document describes the move from a high level of uncertainty and low level of implementation at an early stage towards a low level of uncertainty and a high level of implementation at a later stage in the process to 2030. The transition is under constant review with formal reviews taking place at least annually, but multiple iterations taking place within any individual year at this early stage. The aim is that by the end of 2026 the iterations will be slower as the process enters the final stretches and investment plans need to be in place in order for implementation to be completed by 2030. The Action Plan goes on to describe how this process works in a wider governance model that manages processes within the city with a cross-departmental high level strategic management group, and how the partnerships with the business community are working through the Climate Contracts and roadmap development processes. The plan also presents current development work to engage civil society with a specific climate contract designed for them, and work more informally with citizen engagement. This includes exciting new partnerships for the development of a neighbourhood-based approach that can operate co-design processes in different parts of the city to engage and better understand the drivers and barriers that need to be addressed to help the residents of the city to live a low-carbon lifestyle. Here the city's focus on an equitable transition is at the fore, considering how the climate transition can improve the lives of those with lowest impact and limited finance, and how wealthier communities can decrease their impact whilst maintaining their perceived quality of life.

List of figures

The list of figures **identifies the titles and locations** (page numbers) of **all visual elements:** figures, drawings, photos, maps, etc. used in the Action Plan.

List of tables

The list of tables **identifies the titles and locations** (page numbers) of **all tables** used in the Action Plan.

Abbreviations and acronyms

The list of abbreviations and acronyms **identifies the abbreviations** (a shortened form of a word used in place of the full word) **and acronyms** (a word formed from the first letters of each of the words in a phrase of name) used in the Action Plan.

Abbreviations and acronyms	Definition
CCS	Carbon Capture and Storage
KT	Kilo tonnes
TBD	To be determined

1 Introduction

The introduction should outline the local policy context in which the Action Plan is being developed and describe the gap it is addressing in broad terms.

Introduction - textual element

Climate challenge as a driving force for sustainable urban development

The climate challenge is the decisive issue of our time, one which on the one hand poses an existential threat to our society and economic system, and on the other hand offers an opportunity to create a new, sustainable and resilient society with an economic development that contributes to solving our existential needs. Meeting these challenges and embracing these opportunities requires extraordinary efforts, leadership, and innovation across organisational boundaries. It requires a mobilisation of actors, creators and resources. In the city's budget and environmental program, the City of Malmö's political leadership has set ambitious goals for climate mitigation and adaptation. To meet these goals, the City of Malmö has created a cross-administrative organisation, a mission-based approach and a cross-sectoral partnership to use climate work as a driving force for an equal and inclusive city.

The climate transition requires a paradigm shift and a change process at system level with application of proven and new technology, development of new business models, development of new instruments and incentives, management of goal conflicts, transition to new behavioural patterns and sustainability culture among the public as well as within the municipal organisation. At the same time, climate change offers opportunities for business development, increased quality of life and a step forward in societal development.

The City of Malmö has been an early innovator in climate work and one of the founders of the national platform Viable Cities, where now 23 municipalities and 6 authorities collaborate to achieve the goal of becoming climate neutral by 2030. The Mayor of Malmö, Katrin Stjernfeldt Jammeh, has signed the national climate contract together with counterparts in the other municipalities. Together, Viable Cities provides a powerful platform for a radical shift towards a climate-neutral society by 2030.

The Viable Cities initiative has in turn inspired the European Mission for 100 Climate Neutral Cities through the Net Zero Cities program. Malmö is one of the 100 selected municipalities in the EU that are working together to achieve climate neutrality by 2030, and one of the Net Zero Pilot cities. This mission is one of the EU's pioneering missions and an important tool in the implementation of EU's climate policy.

Malmö has also been a pioneer in climate adaptation work, not least in terms of urban stormwater management and nature-based solutions for heavy rainfall management. The city's density and vulnerable location at the mouth of the coast a few meters above sea level mean that climate adaptation is a priority area in its development. At the same time, Malmö has also begun to work on additional climate resilience issues such as heat waves, water supply and justice.

As an important part of the European Strategy for Climate Change Adaptation, Malmö, together with the City of Copenhagen, is in a selected pioneering region in the EU's mission for climate adaptation. This strategic development work across national borders will be a unique collaboration within Europe between two leading municipalities with common challenges and goals.

An explicit goal of the City of Malmö's climate work is to ensure that it contributes to equal and fair development in the city. The city's climate work is guided by scientific analyses that are based on technical challenges and solutions, but also considers business development, collaboration with companies and civil society and citizens, and climate justice issues. The city has developed climate action methods to promote cross-sectoral cooperations and ensure positive social and economic impacts. Scientific reports show an uneven exposure in Malmö to climate risks, other analyses also show the risks that the climate transition can affect the cost of living with negative effects for economically weaker groups. Conscious efforts to minimise risks and maximise benefits from a socio-economic development perspective are thus an important dimension in Malmö's roadmaps for achieving its climate goals in 2030.

The major investments and societal change processes required to achieve the climate goals in 2030 need to be used as leverage for innovation, business development, jobs, participation, better living conditions for the least well-off and maintained quality of life for the more well-off. The missions for climate neutrality and climate resilience are a huge challenge, but also a huge driving force for a sustainable, fair and successful Malmö.

This action plan is based on two years of development work within Climate Transition Malmö. During this time, overall analysis work has been carried out to clarify the most important thematic areas for Malmö's climate work. Within each thematic area, analyses of the current situation have been carried out and cooperation has been initiated with key stakeholders within the municipality, the municipal companies, the business community, academia and civil society.

Local work in a global context

The City of Malmö was the first municipality to adopt the UN's Sustainable Development Goals (SDGs) as its strategic goals. The SDGs' management of all aspects of sustainable development is now integrated into the city's budget and contributes to more cross-sectoral work in the city's everyday life.

In *Strategy for Sustainable Urban Development – Climate work Malmö*, there is a focus on climate issues that have a direct impact on several of the SDGs (6, 7, 9,13, 11, 12 and 14). In addition to these, the city also has a stated goal to work for equal and just transition. This means that climate work also has strong indirect links to several other goals (1, 2, 3, 4, 5, 8, 10 and 16).

The roadmaps for achieving Malmö's climate goals are based on partnership (SDG 17) across sectors. This work is further developed in the sections on governance and sectoral coordination. It is very clear that the missions for climate neutrality and adaptation are beyond the discretion of NGOs and require in-depth work to achieve results.

The UN's climate work also lays the foundation for Malmö's goals for climate change. The starting point for Malmö's work is to contribute to achieving the Paris Agreement's 1.5-degree goal for global development. Malmö has been active in the COP processes through direct participation at the political level at several COP meetings. Malmö has also been an active member of the global network of local governments ICLEI, which has long represented municipalities' interest in the COP process as an official actor. Malmö has been highlighted several times in the COP context to manifest the importance of municipalities and local governments in active actions for climate adaptation and adaptation. Katrin Stjernfeldt Jammeh, chairman of the municipal executive board in Malmö, is vice president of ICLEI and the initiator of the global Malmö Commitments for an equitable climate transition.

Malmö has also been active in other UN contexts with a connection to climate work, not least in terms of cooperation with the UN and the Swedish/Fijian initiative for the marine environment, where Malmö is a Local Action Hub with a special focus on Ocean Literacy and learning about the sea. Sea-related issues and biodiversity issues at sea and on land are important components of Malmö's climate adaptation work where nature-based solutions are powerful and cost-effective tools that also contribute to the UN biodiversity goals, which were established at the COP15 Biodiversity Conference in December 2022.

Alignment at EU level

The EU's climate policy has become increasingly sharp and concrete in recent years to meet Europe's commitment to the Paris Agreement. The European guidelines are a framework for ambitious climate work as a basis for business development and job creation in the EU. The goal is for Europe to become the first climate-neutral continent, with opportunities for business and economic development through the extraordinary efforts needed to achieve climate goals. This perspective is also found in the local work and climate partnerships in Malmö, where business development is in focus.

The EU's climate target plan, developed in 2021, sets out a legislative program to reach the goal of climate neutrality by 2050 and reduce emissions by at least 55% by 2030. The EU's EIT Climate-KIC has been an important driving force in the climate work, and the City of Malmö has been represented on the board since 2016. Net Zero Cities is part of the Horizon Europe e-programme coordinated by EIT Climate-KIC and is one of the Commission's tools to promote innovation and climate action. Net Zero Cities contributes with coordination and implementation of the EU Mission for 100 climate-neutral and smart cities by 2030. Malmö is one of 100 municipalities from the EU that have been selected as

forerunners in Net Zero Cities to accelerate the transition at the local level and show the way for other municipalities. In 2023, Net Zero Cities appointed Malmö as a pilot municipality for the transition.

The EU has also joined forces with a Climate Change Adaptation Mission to support development towards the goal of the EU being climate-resilient by 2050. Malmö and Copenhagen have jointly signed a cooperation agreement and joined a cross-border collaboration within the EU's Mission for Climate Adaptation.

The EU's new Biodiversity Strategy for 2030 also focuses on resilience, climate adaptation and the need to protect valuable nature. It also calls for work with nature-based solutions that can both create new or strengthen existing biotopes with the aim of reducing climate-related risks such as torrential rains, sea level rise or heat waves.

Climate action is also an important component of the New European Bauhaus, complementing the missions' technical focus with socio-cultural qualities in urban development. The City of Malmö aims for its climate work to contribute to equality and inclusion, and the New European Bauhaus creates an important framework for this at a European level.

Malmö's climate work also contributes to the EU's Baltic Sea Strategy by, for example, working with climate adaptation, clean freight transport, climate-smart infrastructure across national borders, reliable energy supply and improved global competitiveness.

Malmö's participation in the Missions for Climate Mitigation and Climate Change Adaptation puts it at the forefront of climate work in Europe. It means that Malmö has an important role to show other municipalities that it is technically possible to transition quickly while at the same time develop the local economy, promote equality and create prosperous safe local communities.

Sweden's climate policy and policy for sustainable development

In 2017, Sweden adopted a climate policy framework with climate laws, climate goals and climate policy advice. The national target is to achieve net-zero emissions by 2045 and then move on to negative emissions. The framework is based on the country's commitment to the Paris Agreement to cap warming at 1.5 degree. The climate target also has interim targets where Sweden's emissions should have decreased by 63% by 2030 compared to 1990. For domestic transport, there is a very ambitious interim target of a 70% reduction in emissions by 2030 from 2010 levels.

The Climate Policy Council's report 2023 points out that Sweden needs to significantly increase its efforts to reduce emissions in order to achieve the goals in 2045, and the interim goals in 2030. This means that the local policy goals of climate neutrality cannot count on enough support from positive national development, but that municipalities need to further escalate their efforts to achieve their goals.

Ahead of the UN Climate Summit in Paris in 2015, actors in Sweden's business community were invited to discussions with the government on how to jointly drive climate work. Fossil Free Sweden has since become a powerful platform where important industries in the business sector develop industry-wide roadmaps to achieve the climate goals. The roadmaps identify initiatives that the industry actors themselves have control over, but also highlight challenges where they are dependent on efforts from other industries or authorities for efforts that support development. Fossil Free Sweden drives innovation and development work for climate shift in Swedish business and is an important arena for a gathering of forces beyond the political system, linking climate action, business development and green jobs in a tangible and clear way. Fossil Free Sweden's way of working has also inspired the approach in Malmö with roadmaps that are developed with key players in the business community.

Viable Cities was established in 2017 as a joint site formed by the most ambitious municipalities and government agencies to accelerate climate transition. The City of Malmö was one of the founders of Viable Cities and among the first municipalities to take on the challenge of climate neutrality in 2030. Malmö is also represented on the board. Today, 23 municipalities, representing over 40% of Sweden's population, have taken on the goal of climate neutrality by 2030. Viable Cities is thus an important

link between national authorities and influential municipalities to address challenges, mutual learning and innovation work.

Another important arena that supports the climate transition and the link to broader sustainable societal development issues is the Council for Sustainable Development Cities. The Council is a collaboration between authorities to promote more cohesive sustainability work in municipalities and regions, as well as to handle policy conflicts and create synergies between the agencies' missions. Climate work is an obvious part of this, but it is also complemented by issues such as mission on Designed Environment that broadens perspectives and connects strongly to the New European Bauhaus. Climate Transition Malmö focuses on the goal of improved quality of life and a more equal city as effects of climate mitigation and adaptation work. Outdoor environments and public spaces play an important role in climate adaptation work, development of multifunctional spaces with climate functions, ecological values and social qualities will be an important contribution to socio-ecological urban development. Nature-based solutions are therefore handled primarily within the adaptation mission, although there are also links to the Climate transition programme, not least with regards the potential of biochar as a useful resource and carbon sink. The work with circular building materials, sustainable design and climate work in existing areas can also be strengthened by and strengthen the work with Designed Environment. Form and Design Centre in Malmö is an important partner in these processes and a node in the national work and thus offers an important arena for manifesting the link between climate change and designed living environment.

Regional innovation strategy and policy for sustainable development

Skåne's Innovation Strategy for Sustainable Growth constitutes the regional Smart Specialisation Strategy and is a central part of Skåne's regional development strategy Open Skåne 2030. It identifies priority areas for regional development and has been developed in broad collaboration between the management of the region, municipalities, academia and industry. The strategy reflects the regional challenge of increasing productivity in Skåne while reducing the burden on global sustainability.

The innovation strategy identifies six specialisation areas, one of which is Smart Cities. There are clear climate and sustainability links in all specialisation areas (Tech, Life Science & Health, Food, Advanced Materials and Manufacturing, ESS, Max IV and Science Village).

In addition to these specialisation areas, the innovation strategy also identifies five areas for broad business promotion initiatives, one of which is Green Transition. There are also clear climate and sustainability links in the other intervention areas (Digitalisation, Innovation and growth support, Export support and new markets, Financing of companies in development phase).

Climate work in Malmö includes a broad mobilisation across sectoral boundaries where the role of business is crucial in development. Through ambitious pioneering work, there is great development potential for integrating climate work into the region's areas of specialisation and priorities for business promotion efforts. Already today we see how the climate issue drives innovation in digitalisation, advanced materials, food, etc in Malmö. Climate work in Malmö aims to maximise business development potential and contribute to an economy that is based on creating an equal and sustainable society both locally and globally.

Region Skåne is also an important stakeholder in Viable Cities. As a key player of public transport system, they play a crucial role in the development of a climate-neutral mobility system at local and regional levels. Region Skåne is a member of Skåne's Energy Commission, which plays an extremely important role in electricity supply and increased production of renewable energy. Region Skåne also has a significant presence in and climate impact on Malmö through the hospital area and other healthcare institutions in the city and is thus an important partner and stakeholder in Malmö's climate work. There are also other important regional collaborations, such as Lund University's fund for open-source software which brings together research expertise, and the three mission cities in the region to support climate change.

The City of Malmö's policy for sustainable development

The Environmental Program for Malmö 2021-2030 sets a number of important goals to reduce climate impact by 2030 and prepare the city for a changed climate. The program comprises 12 goals grouped under three overall goals, the first of which is *A Malmö with the least possible climate impact*. Six of the 12 sub-goals have a direct bearing on reduced climate impact, another five sub-goals have a direct bearing on increased resilience in a changing climate.

The Environmental Program forms the basis for Malmö's climate work. It is also supported by several other key documents such as Malmö's Comprehensive plan, energy strategy, stormwater plan and, not the least, TROMP, which establishes goals for a sustainable mobility system. Climate Transition Malmö brings together the administrations to synchronise the work in accordance with these plans, programmes and strategies to optimise synergies and achieve the goals of the Environmental Program.

The City of Malmö's budget identifies urban development and climate as one of the three priorities and these issues are reflected in the strategic work. Business development in Malmö is driven and developed with an increasingly clear focus on social benefits and the climate issue is an important starting point for business establishment and business development. In April 2023, the municipal board in Malmö decided to invest in a start-up district in the port area with a focus on business development for societal challenges, not least on the climate issue where the societal transition creates challenges and opportunities for companies. The City of Malmö's Growth Commission builds on the work of the Commission for a Socially Sustainable Malmö and identified development opportunities that can create jobs and social benefits in the city's continuous development. Climate technology is highlighted as an important area for innovation and development work to promote business development and employment in a city with an unemployment rate almost twice as the national average. Once again, the climate issue can be an important business opportunity and driving force for a more equal city.

The City of Malmö's budget is based on the UN's SDGs which also constitute a follow-up mechanism for the budget's effect and goal fulfilment. It contributes to an increased understanding of the impact relationships between different goals and activities and strengthens the insight of the importance of working on the breadth of sustainability issues to ensure a good life for everyone within the planetary boundaries.

Over the past 30 years, Malmö has experienced an extensive process of change and transition from an industrial society and large-scale entrepreneurship to a more diverse society of small businesses and skills. Sustainable urban development has been an important component of this transformation with investments in the city's physical infrastructure from the Öresund Bridge to the Western Harbour, the University and the Eco-City Augustenborg, the development of bicycle and public transport infrastructure and the urban environment, as well as many other important initiatives. Together, this diversity of solutions has also contributed to innovation efforts that have created new market solutions, new companies and attracted existing companies to establish themselves in the city. Malmö's work with climate change and the ambitious goal of becoming climate neutral by 2030 mark an acceleration of an already established work.

In the same way as before, new investments must contribute to reducing the city's climate and environmental impact and improving the living situation of the residents of Malmö as well as contributing to the city's economic development. Changes in the operating environment such as the Fehrman Belt Link put pressure on existing infrastructure and strengthen the conditions for sustainable freight and passenger transport in a broader economic region. The plans for a metro link between Malmö and Copenhagen support these and contribute to regional development with extensive potential for business and the labour market. The metro can also be an important innovation arena for carbon neutrality and climate adaptation work. The work on the Metropolitan Package links housing supply, mobility and economic growth and is another important driving force in integrated development work that combines environmental, social and economic goals.

The strategy for sustainable urban development – Climate Work Malmö strengthens this development and plays a crucial role for Malmö to achieve its ambitious climate goals, contributes to an equal and just transition, and promotes business development with a focus on new solutions to solve the climate crisis.

2 Work Process

This section should list the working steps carried out, for example along the NZC Climate Transition Map, or related steps planned as well as outline timeline and milestones for future iterations for the continuous development of the Action Plan.

Work Process - combination of textual and visual elements

The City of Malmö has created a cross-administrative organisation to meet the city's ambitious climate goals. Climate adaptation Malmö has initially focused on climate neutrality in 2030 and now climate adaptation work is also being integrated. Climate Transition Malmö is based on the City of Malmö's Environmental Program and the city's commitment in the national climate contracts through Viable Cities, and the EU's mission for 100 climate-neutral cities. Nowadays, the City of Malmö and Copenhagen are also part of the EU's mission for climate resilience.

The Climate Transition in Malmö is based on factual data and current situation analyses that have identified priority areas, the largest sources of emissions, risks, challenges and needs. Based on the analysis of the current situation, key actors are invited to work together to develop a joint roadmap for achieving the climate goals. These key players are usually municipal operations or companies with control over large emissions. The roadmap work also identifies obstacles and needs for innovative financial or legal solutions in order to achieve the climate goals.

Based on the roadmaps, investment plans are developed where the size of investments is estimated, what can be implemented under the current business model, what needs for financial innovation may be required, and where there may be a need for external support from public or other funding programs.

These processes are based on a wide range of technical and socio-economic studies that have been carried out over the last two years, some with the support of EIT Climate-KIC. These studies have engaged leading experts to provide a strong scientific base on which to build the development work. Studies have ranged from the energy system, the role of plastics and options to remove them, the potential for hydrogen generation and use, to consumption footprint and citizen engagement.

Climate Transition Malmö has also developed a number of support functions. It has launched Climate Contract Malmö for companies and larger organisations, developed concepts for citizen dialogue and collaboration, and developed models for learning processes to streamline climate work. Learning processes are of particular importance in the agile process that characterises the climate transition, where rapid switching and dissemination of successful working methods is an important prerequisite for taking on the mission.

The transition process is under constant review and is reassessed on at least an annual basis, but individual roadmaps are expected to be constantly reviewed in new iterations through 2026 when most of the details will be in place.

Close dialogues with the city's business development functions, and researchers at Malmö University with a focus on equality issues also contribute to knowledge development about the potentials and risks associated with entrepreneurship, jobs, gender equality and integration. These perspectives become important components in the design of solutions that maximises socio-economic impact. This work feeds into wider socio-economic development work based on the Commission for Social Sustainability and Commission for Economic Growth in Malmö.

The City of Malmö is also investigating the conditions for a district-based approach that mobilises local actors and citizens in concrete local change work, where socio-economic effects, collaborative design and citizen engagement become important components. This investigative work is funded by Vinnova and Formas through two parallel projects that are expected to move to an implementation phase in 2024. A district-based approach can thus complement strategic thematic citywide work and promote integrated solutions.

Climate Transition Malmö is driven in a number of thematic transition areas. The work is organised according to the following themes:

Climate-neutral building
Includes new construction, renovation, operation, after-use, construction of infrastructure and earthworks. Run in collaboration with the industry initiative LFM30, which mobilises more than 200 companies and businesses to transform their operations in Malmö by 2030. The construction and real estate sector is responsible for about 20% of Sweden's emissions, and half of this is from new construction. The work is conducted in a number of working groups with representatives from different member companies focusing on

1. Business models, incentives and collaboration
2. Circular economy and resource efficiency
3. Design, process and climate calculation
4. Climate-neutral building materials
5. Climate-neutral management, operation and maintenance
6. Climate-neutral construction sites and transport

The first climate-neutral pilot projects are under implementation. By 2030 all members' projects in Malmö will be climate neutral.

Learn more about Malmö's work on climate-neutral building

Heating
Covers district heating and other heat sources in Malmö and handles challenges such as handling of recyclable materials in the incineration plant, separation of fossil-based plastics, carbon capture and storage (CCS) etc. The main stakeholder in the work is SYSAV, which accounts for 20% of Malmö's emissions, and the work is led by the City of Malmö and SYSAV together. Key areas are,

1. Sorting and reuse of fossil-based plastics in addition to packaging materials
2. Development and installation of CCS solutions

Electricity supply
Includes handling the acute situation with electricity capacity in Malmö that hampers business development in the city. Development of collaborations and initiatives to promote the installation of renewable energy and energy storage capacity in the region to ensure electricity supply without having to use fossil-fired power plants to cope with energy peaks. The work is currently mainly run by the municipality and involves the energy companies, national and regional authorities and industrial customers in Malmö. The work has mainly focused on

1. Reducing the need for energy (efficiency) and increasing the flexibility of use
2. Enable strong expansion of offshore wind power in the region
3. Development of innovative production and delivery solutions within Malmö
4. Development of hydrogen production and energy storage
5. Dialogue with national authorities and ministries to ensure electricity supply to Malmö and Skåne

Mobility
Includes passenger transport in Malmö and the regional commute, freight transport in the city as well as development opportunities in port area, expansion of metro link to Copenhagen etc. There are positive trends in Malmö with an increase in bicycle use and public transportation and electrification of the public transport system until 2027. The work has mainly focused on

1. Development of micromobility solutions throughout Malmö
2. Development of innovative forms of dialogue, co-creation and communication
3. Development of fossil-free freight transport and logistics in Malmö
4. Development of infrastructure for vehicle charging and hydrogen refuelling

Learn more about Malmö's work on mobility and low emission transport.

Circular economy
Includes work to reduce material use, increase reuse and create synergic connections to manage residual products as resources at industrial as well as household level. The City of Malmö has the goal of reducing waste streams by 30% by 2030. The work has mainly focused on

1. Identify and visualise material flows in Malmö with potential for reuse as a resource in other operations
2. Reduce material use in production and consumption stages
3. Increase reuse
4. Increase the degree of sorting of materials

Learn more about Malmö's work on circular economy

Low-carbon consumption
Includes work to reduce emissions from the consumption of goods and services used by residents and businesses. The goal is to halve consumption-based emissions by 2030. About 25% of the total consumption emissions of the residents of Malmö come from food and the same amount from air travel. There are extensive challenges in finding ways to create the conditions for the residents of Malmö to reduce their consumption emissions by 50%. In addition, there is an equality and justice perspective where income and emissions correlate to a large extent. The challenge is to be able to improve the life situation of the least well-off without increasing their emissions, and to drastically reduce emissions in others without them experiencing a deterioration in the quality of life. The work has mainly focused on

1. Develop cooperation with actors in the business community who can offer climate-neutral or sustainable products and services to the residents of Malmö
2. Develop cooperation with civil society to jointly identify challenges and solutions to significantly reduce consumption-based emissions
3. Develop incentives to promote and accelerate a transition to sustainable systems

Net Zero Organisation
Includes work with the City of Malmö's own emissions that arise as a result of the municipal operations. 98% of the City of Malmö's climate impact is linked to the purchase of goods and services. Malmö has long worked with sustainable procurements such as transition to a fossil-free vehicle fleet and investments in organic food that have had a very positive effect. There is also a need for knowledge-raising activities to promote climate-smart choices and behaviours in municipal operations. The work has mainly focused

1. Procurement of climate-smart and climate-neutral goods and services with special focus on construction, civil engineering, IT products and services, capital goods, food, etc.
2. Innovation procurement to contribute to a market shift
3. Awareness-raising efforts among employees, managers and clients about climate-smart and climate-neutral behaviours and alternatives.

3 Part A – Current State of Climate Action

Part A "Current State of Climate Action" describes the point of departure of the city towards climate neutrality, including commitments and strategies of key local businesses, and informs the subsequent modules and the outlined pathways to accelerated climate action.

3.1 Module A-1 Greenhouse Gas Emissions Baseline Inventory

Module A-1 "Greenhouse Gas Emissions Baseline Inventory" should detail and describe the city's latest GHG inventory to establish the emission baseline and to establish the emissions gap to 2030 climate neutrality according to the inventory specifications defined in the Cities Mission's *Info Kit for Cities* and the process outlined in the Action Plan Guidance.

A-1.1: Final energy use by source sectors				
Base year				
Unit	MWh/year			
	Scope 1	Scope 2	Scope 3	Total
Buildings	3 077 354	4 025 494	-	7 102 848
(Fuel type/ energy used)	Natural gas, domestic heating oil, solid fossil fuels, district heating, natural gas, diesel oil	Electricity (heat pumps, direct acting electricity and unregulated electricity use)	IE	
Transport	2 219 027	7 383		2 226 410
(Fuel type/ energy used)	Gasoline, diesel oil, natural gas, biogas, marine oil, biodiesels	Electricity (Railway traffic. Electricity used for other traffic is included in Buildings)	IE	
Waste	3 759	-	-	3 759
(Fuel type/ energy used)	Sludge	-	-	
Industrial Process and Product Use (IPPU)	No local or national data for energy use, only for emissions			
(Fuel type/ energy used)				
Agricultural, Forestry and Land Use (AFOLU)	No local or national data for energy use, only for emissions			
(Fuel type/ energy used)				

Buildings Scope 1 includes 500 000 tonnes of waste under Energy Industries that is part of the district heating system and reported in the building stock. In the city's statistical analysis there is a combination of activity statistics in kWh but also weight statistics including specific emissions coefficients that are used to calculate C02e from these. As this is a significant part of Malmö's emissions we have therefore included them here, although the table does not allow for this kind of data input. Transport Scope 1 includes direct emissions from the national emissions database. Waste includes waste tonnage and

direct emissions data from the national emissions database. IPPU and AFOLU only include direct emissions from the national emissions database.

A-1.2: Emission factors applied						
(please specify for primary energy type and GHG emission factor according to methodology used)						
For calculation in t or MWh of primary energy						
GPC						
Primary energy/ energy source	Carbon Dioxide (CO_2) **CO_2e***	Methane (CH_4)	Nitrous Oxide (N_2O)	F-gases (hydrofluorocarbons and perfluorocarbons)	Sulphur hexafluoride (SF_6)	Nitrogen trifluoride (NF_3)
Electricity	30 000 g/kWh	*	*	*	*	*
District Heating	537 000 g/kWh					
Biogas (CH4)	570 000 g/kWh					
Diesel	342 000 g/kWh					
Domestic heating oil	3 036 000 g/kWh					
Municipal waste (bio + fuel)	487 000 g/tonne					
Biodiesel (HVO)	66 700 g/kWh					
Gasoline (4.4% ethanol)	3 212 780 g/kWh					
Solid biofuels (wood and wood waste)	234 000 g/kWh					
Natural gas	231 000 g/kWh					
Ethanol	14 160 g/kWh					
Gasoline (100%)	336 000 g/kWh					
Diesel oil (27.7% HVOm 72.3% diesel)	2 657 420 g/kWh					
Landfill gas	2 710 000 000 g/tonne					
Solid waste recycling	21 317 000 g/tonne					
Marine oil	2 848 400 g/kWh					

*Emissions statistics in Malmö are monitored in CO2 equivalent rather than separated in different component gases.

A-1.3: Activity by source sectors			
Base year			
kWh			
	Scope 1	Scope 2	Scope 3
Buildings			
Residential Buildings	1 630 000 000	1 014 000 000	
Commercial & Institutional Buildings and Facilities	402 000 000	405 334 800	
Manufacturing Industries and Construction	558 000 000	47 370 900	
Energy Industries	498 000 000 + 500 000 tonnes	2 325 400 000	
Agriculture, Forestry And Fishing	6 945 000	16 755 000	
Transport			
On-road Transportation	2 095 000 000	IE (Buildings)	
Railways	1 141 312	7 382 857	
Waterbourne navigation	19 629 295	N/A	
Off-road Transportation	103 340 852	N/A	
Waste		N/A	
Solid waste disposal	82 274 tonnes	N/A	
Biological Treatment of Waste	3 759 000	N/A	
Industrial Process and Product Use (IPPU)	No local or national data for energy use, only for emissions	No local or national data for energy use, only for emissions	
Agricultural, Forestry and Land Use (AFOLU)	No local or national data for energy use, only for emissions	No local or national data for energy use, only for emissions	
Offroad vehicles and machinery	No local or national data for energy use, only for emissions	No local or national data for energy use, only for emissions	

A-1.4: GHG emissions by source sectors				
Base year				
Unit	Metric tonnes CO2equivalent/year			
	Scope 1	Scope 2	Scope 3	Total
Buildings	599 485	120 765	IE/NO	720 249
Transport	645 323	221	IE/NO	645 544
Waste	6 398	-	NO	6398
Industrial Process and Product Use (IPPU)	36 270	-	-	36 270
Agricultural, Forestry and Land Use (AFOLU)	6 370	-	-	6 370
Total	1 293 846	120 986	-	1 414 832

The numbers have gone up since the 2022 CDP Cities report when we started applying a different calculation method.

A-1.5: Graphics and charts

What do emissions look like today and how have they decreased so far?

To significantly reduce territorial greenhouse gas emissions, the current state of greenhouse gas emissions in Malmö needs to be understood with regards volume and priority sectors for focused action. Data presented is for the entire geography of the City of Malmö.

Historical emissions

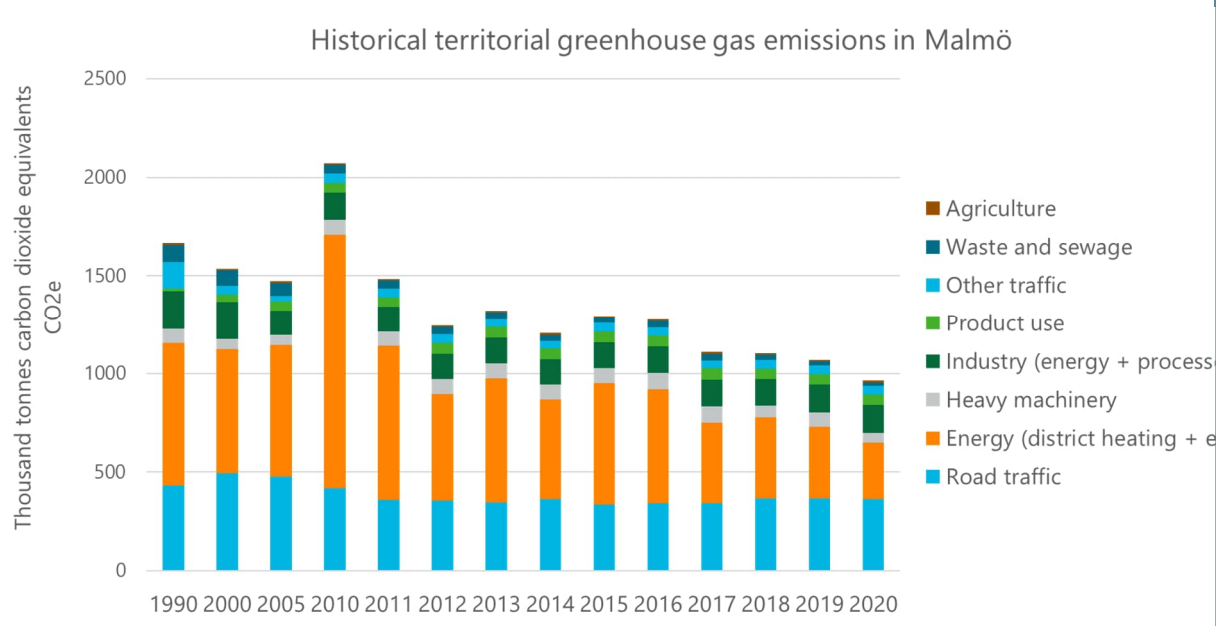


Figure 3 shows the development of Malmö's territorial greenhouse gas emissions, from 1990 to 2020. The large increase in the industrial and energy sectors in 2010 can be attributed to the Öresund plant, which was commissioned this year.

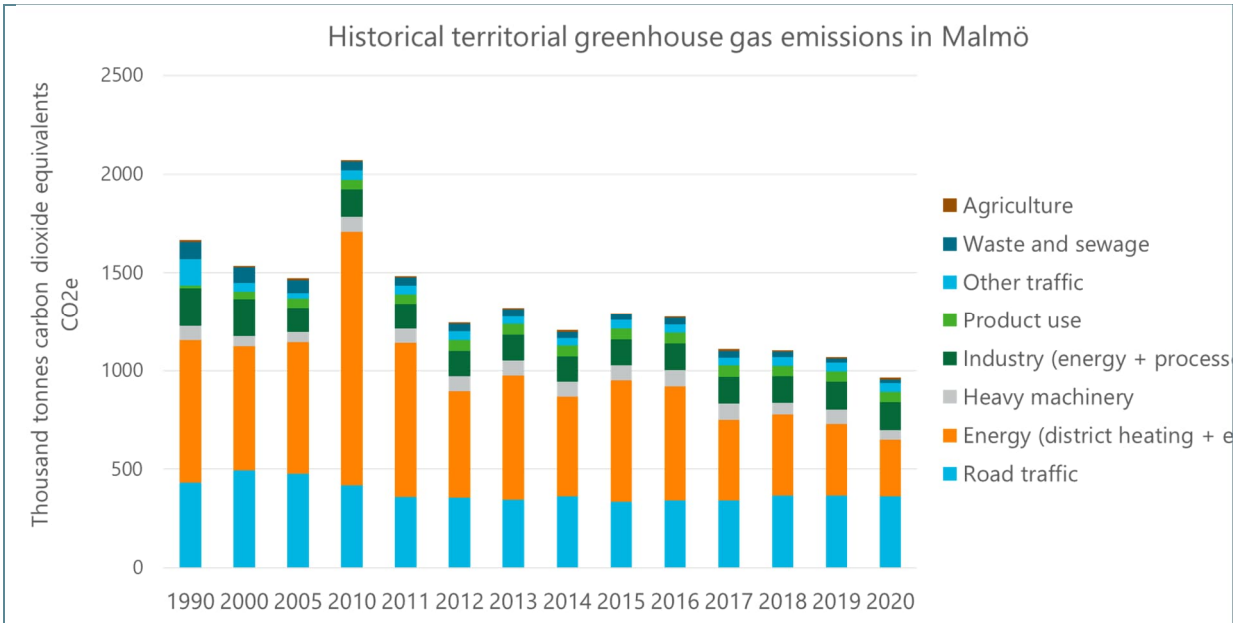


Figure 3. Malmö's territorial greenhouse gas emissions from 1990 to 2020.Source: City of Malmö's Environmental Barometer.

Between 1990 and 2020, territorial emissions fell by just over 40%. This is in line with the goal in Malmö's previous Environmental Program that emissions should be reduced by at least 40% between 1990 and 2020.

Malmö's territorial greenhouse gas emissions 2020

The City of Malmö follows up its territorial emissions in the Environmental Barometer, which can be found on the City of Malmö's website[1]. The data is updated annually and produced based on local and national data, with emphasis on local data. Figure 4 shows the territorial emissions in 2020 broken down by sector as presented in Malmö's Environmental Barometer. In 2020, these emissions were 963 000 tonnes carbon dioxide equivalent. The sectors with the highest greenhouse gas emissions are road traffic and energy.

[1] The state of the environment in Malmö - Miljöbarometern - City of Malmö (miljobarometern.se)

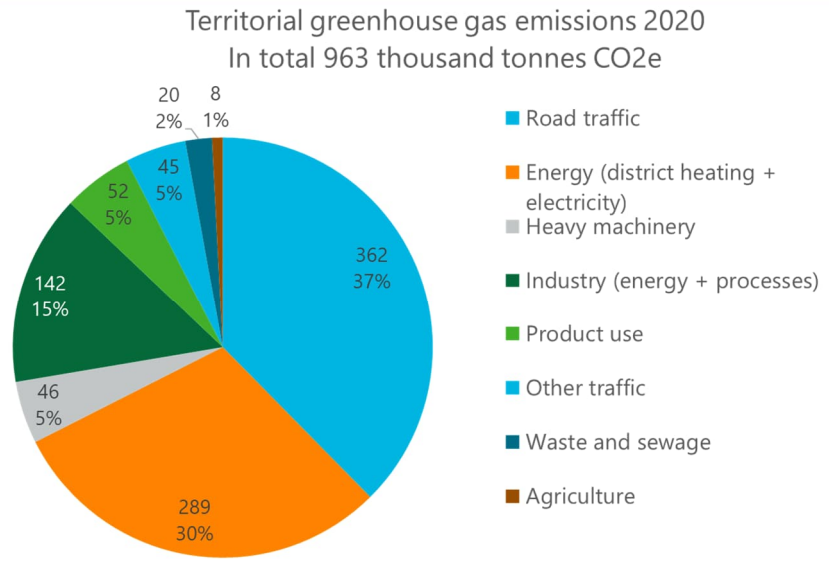
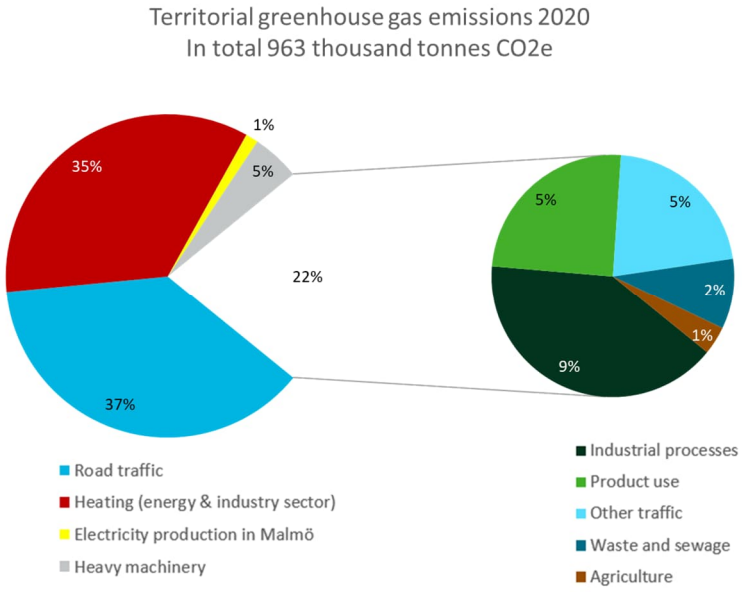


Figure 4. Overview of Malmö's territorial greenhouse gas emissions and their sources. The energy category includes electricity produced in Malmö and heating. Source: City of Malmö's Environmental Barometer.

The distribution of emissions between sectors will change over time. Reducing emissions from the traffic sector is more complex than the heating sector, which consists of fewer players. As a result, the traffic sector's share of emissions is predicted to increase over time, even if the actual amount of emissions decreases.

The energy sector can be divided into electricity and heating. The industrial sector can be divided into energy and industrial processes. Assumptions[2] about distribution show that 78% of greenhouse gas emissions in Malmö are due to four emission areas: electricity, heating, road traffic and machinery. This is more clearly illustrated in Figure 5. It is emission reductions and measures in these four areas that are included in the scenario analysis.



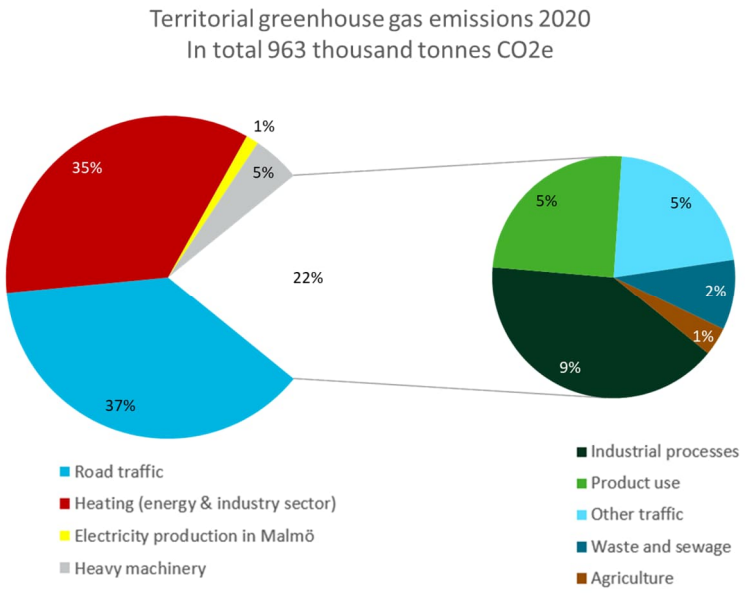


Figure 5. On the left is the distribution of the emission areas included in the scenario analysis, which corresponds to 78% of greenhouse gas emissions from territorial sources. On the right is the distribution between the other emissions not included in the scenario analysis. These account for 22% of greenhouse gas emissions. The energy and industrial sectors are divided into heating, electricity and industrial processes. Source: City of Malmö's Environmental Barometer and Material Economics.

Transport

The transport sector has become the largest source of emissions in Malmö, emitting 407 thousand tonnes of greenhouse gases in 2020. Malmö has a large number of commuters in and out, and passenger car transport is by far the largest emitting vehicle type in the city. Malmö also has high emissions from trucks, which are caused by the city being a thoroughfare for transporting imported goods to other parts of the country.

The transport sector consists of many different types of vehicles that travel both on land, rail or at sea. Figure **6** shows the distribution between the greenhouse gas emissions of different vehicle types. It shows that light vehicles contribute to 59% of the transport sector's greenhouse gas emissions. Passenger cars make up the largest share of light vehicles, 88%.

Emissions from Skånetrafiken's buses are very low as they have been fossil-free since 2015. Emissions from shipping include leisure shipping, all shipping that calls at and departs from Malmö and shipping that passes in the fairway outside Malmö but within Malmö municipality's border. The scenario analysis is limited to measures in road traffic.

[2] Missing official data. For the energy sector, Distribution from Amount local electricity generation and its calculated emission factor. For the industrial sector the distribution is based on: Material Economics Estimates of Distribution between processes and combustion for energy purposes, as well as their adoption that combustion for energy purposes a target mainly relates to heating.

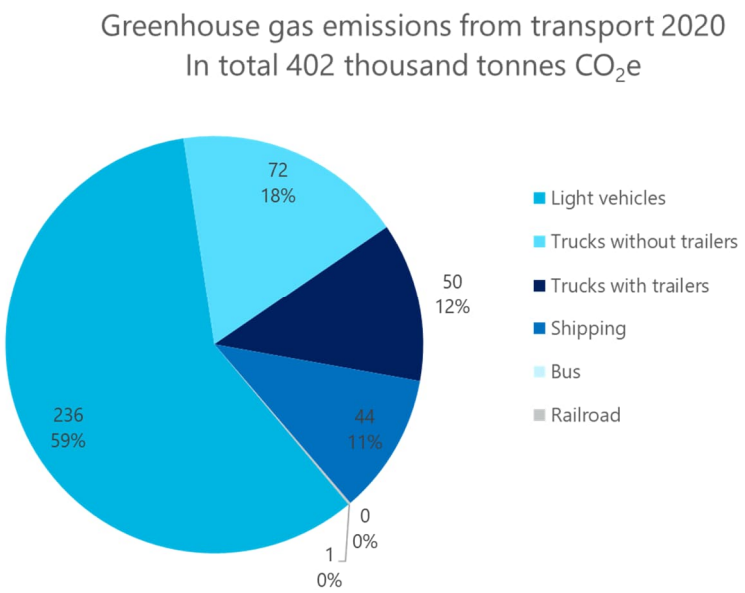


Figure 6. Greenhouse gas emissions from the transport sector in Malmö 2020 distributed by vehicle type. Of the light vehicles, 88% are passenger cars, 2% motorcycles/mopeds and 10% light trucks under 3.5 tonnes. Source: City of Malmö's Environmental Barometer.

Energy – electricity and heating

The energy sector is the second largest emitter in Malmö. The energy sector includes the electricity and heat produced locally in Malmö. This is mainly produced in combined heat and power plants, i.e. plants producing electricity and heat at the same time. The dominant plants incinerate waste or biofuels. Waste heat from industries is also utilised in the district heating network. During the coldest hours of the year, reserve capacity currently uses fossil fuels.

The fact that the energy sector in Malmö is one of the major emitters is largely due to SYSAV's waste-fired combined heat and power plant, where emissions mainly originate from the fossil plastic content in the residual waste that goes to incineration. Figure 7 shows the distribution within the local energy emissions sector. The small-scale heating consists of properties connected to the city gas grid in Malmö, as well as a few oil boilers. The local electricity sector is closely linked to district heating as Malmö, in addition to heating plants that only produce district heating, also has combined heat and power plants that produce electricity and heat at the same time. CHP plants usually produce more heat than electricity.

The emissions that Malmö's industries give rise to when burning for energy purposes are included under "Processes" in Figure 7 and are estimated to account for just under half of the emissions. Most emissions in the industrial sector originate from industrial processes.

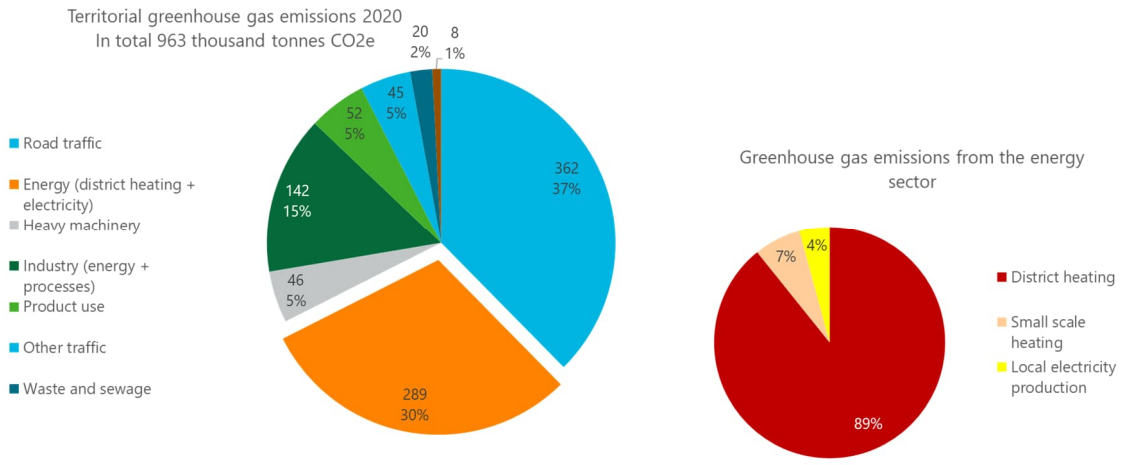


Figure 7. In the local energy sector, 89% of carbon dioxide emissions are generated by district heating production. Locally produced electricity and smaller-scale heating account for only 11%. Source: left: City of Malmö's Environmental Barometer. Source right: the distribution is based on emissions from local electricity production and Material Economics.

Work machines

Work machines account for 5% of Malmö's territorial greenhouse gas emissions. Emissions from machinery are mainly caused by internal combustion engines of machinery in the industrial and construction sectors.

Others

This category accounts for the remaining 22% of Malmö's territorial greenhouse gas emissions, which are not covered by the scenario analysis, see

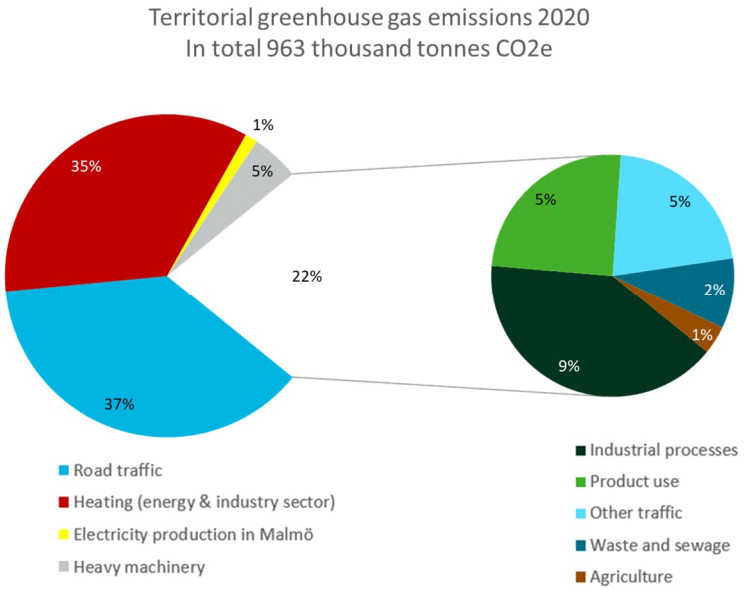


Figure 5. In the scenario analysis, a delimitation was made to four emission areas. In reality, measures will be needed in all emission areas. The size of each emission in relation to Malmö's total greenhouse gas emissions is specified in Table 1.

Industry: Emissions from this sector can be traced to various industrial processes. Emissions from industrial heating are recorded in the main sector Energy.

Waste and sewage: Emissions from waste and sewage originate from discharges from landfills, wastewater and biological treatment of waste such as composting and anaerobic digestion plants. Discharges from wastewater consist of emissions from municipal treatment plants and individual sewers.
Product use: The largest source of emissions in the sector is leakage of fluorinated gases (F-gases), which accounted for 69% of the sector's emissions in 2019. Emissions of F-gases come from leaks in refrigeration systems and air conditioners. In addition to this, carbon dioxide emissions from the use of lubricants, solvents and paraffin, fireworks, tobacco and nitrous oxide are included.
Agriculture: Includes emissions of methane from animal digestion, methane and nitrous oxide from manure handling, and nitrous oxide and carbon dioxide from agricultural land. Emissions from agricultural machinery are recorded in the main sector Machinery.
Other traffic: Other traffic includes traffic that does not take place by road, i.e. shipping and rail.

CATEGORY	GHG EMISSIONS BY CATEGORY	PERCENTAGE OF MALMÖ'S TOTAL TERRITORIAL GREENHOUSE GAS EMISSIONS
Industry (processes)	85 thousand tonnes of CO2-eq	9%
Waste and sewage	20 thousand tonnes of CO2-eq	2%
Product Usage	52 thousand tonnes of CO2-eq	5%
Agriculture	8 thousand tonnes of CO2-eq	1%
Other traffic	45 thousand tonnes of CO2-eq	5%
Completely	20.9 thousand tonsne of CO2-eq	22%

Table 1. The share of other emissions in Malmö's territorial greenhouse gas emissions. Source: City of Malmö's Environmental Barometer.

Malmö's largest point source emissions

Malmö's largest point source emissions, i.e. direct emissions from a chimney for example, are found in the energy sector. Vehicle tailpipes are not defined as point source emissions. Figure 8 shows the two plants that together in 2020 accounted for 97% of point source emissions, corresponding to 318 thousand tonnes of carbon dioxide equivalent. This corresponds to 33% of the city's greenhouse gas emissions from territorial sources (963 thousand tonnes of carbon dioxide equivalent).

SYSAV incinerates waste and produces electricity and heat; its emissions are shown in two bars in Figure 8. The waste originates from 14 municipalities in Skåne and other parts are imported from abroad. The high greenhouse gas emissions are due to the plastic fraction in the waste that is incinerated.

Norcarb Engineered Carbons is an industry in Malmö Oil Port that produces carbon black from heavy fractions of oil products. Waste energy from the plant is recovered for use in the district heating system. The other 19 point source emissions include E.on's district heating plant and gas turbines, as well as industry.

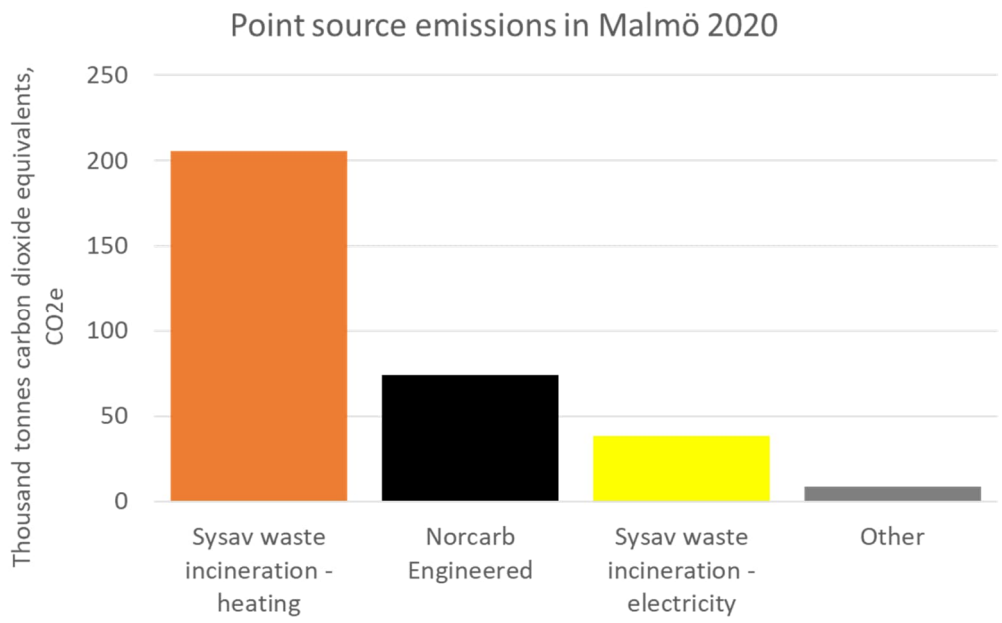


Figure 8. An overview of Malmö's 21 largest point source emissions. Two plants account for 97% of Malmö's point emissions. The remaining emissions are from 19 plants. Source: City of Malmö's Environmental Barometer.

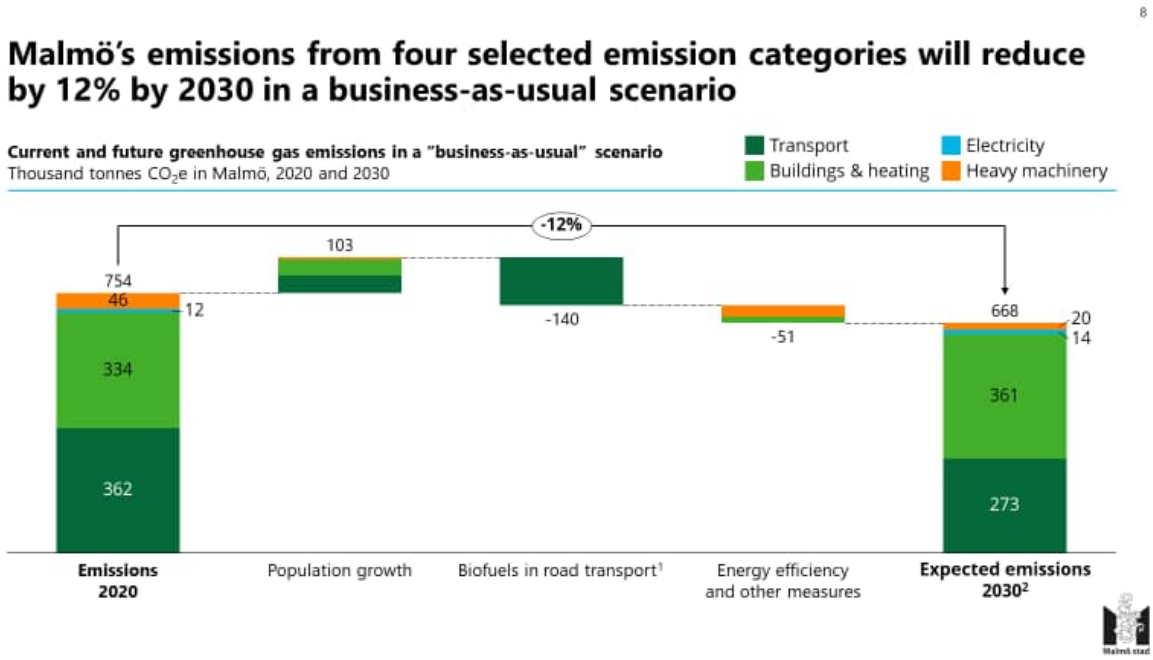
Malmö's territorial emissions by 2030 if transition does not accelerate

Error! Reference source not found. shows how greenhouse gas emissions in Malmö can change by 2030 in a "business-as-usual" scenario. With "business-as-usual", emissions are assumed to be reduced only on the basis of decisions that have already been made nationally. However, given the world situation at the time of writing, there are uncertainties as to whether decided measures will be implemented as planned.

This analysis relates to the target of a 70% reduction in territorial greenhouse gas emissions by 2030 from 1990 levels. Based on this, total territorial emissions need to be reduced by about 50% in 2020-2030, as there have already been emission reductions between 1990 and 2020.

The "business-as-usual scenario" results in an emission reduction of only 12 percent between 2020-2030 for the four selected emission categories (heating, road transport, electricity, machinery). The largest part of the reduction is due to the national reduction obligation, which means that fuel suppliers must reduce their greenhouse gas emissions from petrol and diesel by a certain percentage. This can be done, for example, by mixing renewable diesel into the fossil fuel.

A 12% emission reduction in 2020–2030 in four emission areas is not enough. Decisions and measures are needed to achieve the target of a 70 % reduction in territorial greenhouse gas emissions by 2030. Furthermore the “business as usual” scenario is also changing; the removal of the national requirement to mix biofuels into diesel and petrol would impact severely Malmö’s transport-related emissions.



- The Government has decided on a national reduction obligation, which requires fuel suppliers to mix fossil-free fuels in petrol and diesel. According to the proposal, the involvement will increase gradually until 2030. Current requirements for 2030 are 66% blend of fossil-free fuels in diesel and 28% in gasoline. The use of biofuels is thus not something that the City of Malmö itself influences.
- Based on a "business-as-usual" scenario that includes changes that are expected to occur even if Malmö does not work actively with its climate transition.

Malmö's non-territorial emissions

In this analysis, three scenarios have been created to investigate possible ways towards an emission reduction of the territorial greenhouse gas emissions within Malmö's municipal border. The territorial emissions do not include all emissions that can be attributed to Malmö's residents. Non-territorial emissions include consumption-based emissions that occur outside the municipal border and emissions related to electricity produced outside but used within Malmö.

These emissions are not included in the scenario analysis but are presented here to give a broader understanding of how a city contributes to emissions outside its geographical area. Note that some of the consumption-based emissions overlap with the territorial ones.

Consumption-based emissions

Malmö's residents and businesses do not only contribute to emissions within Malmö's municipal border. In many cases, consumption of goods and services has emissions that take place outside the municipal border.

In the City of Malmö's Environmental Program[3] , goal 3 states that consumption-based emissions in 2030 should be well on their way to a sustainable level - 1 tonne per person per year by 2050 according to the Paris Agreement. A reduction by 50% is the goal by 2030, with a goal value of 3.1 ton CO2e.

There are not as many data sets for Malmö's consumption-based emissions as for Malmö's territorial emissions. Despite difficulties in calculating greenhouse gas emissions, Swedish Environmental Research Institute (SEI) has tried to produce new statistics on household consumption-based emissions, see Table 2. In total, these are estimated at 2 100 thousand tonnes of CO_2 equivalents for all Malmö households. Compared to territorial greenhouse gas emissions in 2019 (1 100 thousand tonnes of CO_2 equivalents), consumption-based emissions are more than twice as high. If the public sector and investments are also included, the total consumption-based emissions for all Malmö

[3] Environmental programme for the City of Malmö 2021–2030 - City of Malmö (malmo.se)

residents amounts to 3 400 thousand tonnes of CO_2 equivalents. Note that some of the consumption-based emissions presented overlap with the territorial ones.

CATEGORY	HOUSEHOLD		PUBLIC SECTOR	INVESTMENTS (PRIVATE AND PUBLIC)	SUM
Distribution	Groceries incl. restaurant	25 %	-	-	-
	Accommodation and furniture	18 %			
	Transport	40 %			
	Clothes and shoes	4 %			
	Culture, sport and leisure	7 %			
	Other	6 %			
Per person in 2019[tonnes CO2e/person]	6.2		1	2.7	9.9
Total Malmö in 2019[thousand tonnes CO2e]	**2 100**		**340**	**930**	**3 400**

Table 2. Consumption-based greenhouse gas emissions for Malmö. Some of these overlap with territorial emissions. In 2019, territorial emissions were 1100 thousand tons of carbon dioxide equivalents.

Emissions from electricity use

Malmö's electricity consumption consists of 90% of electricity produced outside the municipal border. The amount of greenhouse gas emissions generated by imported electricity depends on the production mix. In Sweden, the electricity mix consists mainly of hydropower, nuclear power and wind power, which means that it has a low emission factor (8.8 g/kWh) in contrast to the Nordic electricity mix (90.4 g/kWh) which has a higher proportion of fossil electricity production. Unlike the Nordic electricity mix, the Swedish electricity mix does not make visible that the electricity grids are interconnected. Although Sweden is generally a net exporter of electricity over the year, it also imports electricity during certain periods. The Nordic electricity mix for all electricity imports overestimates emissions but constitutes an upper limit.

Given the increased electrification of society that is predicted in the transport and industrial sectors, it is increasingly important that electricity production is renewable or fossil-free in order for these sectors to be electrified with reduced greenhouse gas emissions. Final consumption of electricity in Malmö amounted to 2.2 TWh in 2020. Depending on whether the Swedish or Nordic electricity mix is chosen for calculating greenhouse gas emissions from electricity imports, the emissions from the imported electricity amount to between 17 and 180 thousand tonnes of CO2 equivalents per year. This can be compared with local electricity production (10% of electricity demand) which is estimated to result in emissions of 12 thousand tonnes of CO2 equivalents per year (see note on local electricity mix in Annex 1).

A-1.6: Description and assessment of GHG baseline inventory
The GHG baseline inventory was done as a part of the CDP Cities Report for 2023. The data reported are based on energy consumption and emissions from 2022. The calculations were done in the City Inventory Reporting and Information System (CIRIS), using the GPC method (BASIC, all GHGs). The activity data is from official Swedish authorities. Malmö's emissions, according to our GHG calculations, has increased significantly since 2022, but this is due to a new calculation method with a wider scope. According to our own internal calculations, where we use a different methodology, the emissions have not increased significantly. They have instead decreased (see Graph in A-1.5).

3.2 Module A-2 Current Policies and Strategies Assessment

Module A-2 "Current Policies and Strategies" should list relevant policies, strategies, initiatives or regulation from local, regional and national level, relevant to the city's climate neutrality transition.

A-2.1: List of relevant policies, strategies & regulations					
Type	Level	Name & Title	Description	Relevance	Need for action
	Local	Malmö City budget 2021-24	Investment och operational plan for Malmö	Main strategic document. Sets out Climate Transition as one of three overarching priorities for Malmö's political leadership	Annually renewed document but maintaining climate focus
…	Local	Malmö's Comprehensive plan (2018)	A strategic document showing the municipality's long-term planning of land, water and the built environment. Consists of strategies, maps with planning guidelines, and environmental impact assessments.	The plan establishes the municipality's vision for the future and lays out a guideline for planning policies, but it is not legally binding.	The time frame extends roughly 20 years in the future. The current plan is under revision and a new plan is expected to be adopted in 2024.
Strategy	National	Digital strategy for climate-neutral cities	Strategy for digitisation and digital tools for the transition to climate neutral	Provide a basis for the continued development work with Climate	

			cities, written by Viable Cities and Ramböll. Includes three strategic alignments: - Focus digitization on priority areas - Strengthen the organisation for digitisation - Enable support in data management and infrastructure	contract 2030 within Viable Cities.	
	Local	Det digitala Malmö	Programme for digitalisation in the City of Malmö 2017–2022. Includes four main targets: - Strengthened democracy and increased inclusion - More expedient and available service - Increased interaction in the city - Increased action in community service		
Strategy	Local	Energy strategy for Malmö	The City of Malmö's municipal energy plan that aims to meet the legal requirements as set out in the Local Government Planning Act (SFS 1977:439). Contains four focus areas: - Secure and reliable	Aimed at those working in the City organisation and city-owned businesses working with energy issues, the governing politicians of the city, partner organisations and local energy producers	

			electricity system - Local, resource-efficient and renewable energy supply. - Energy and resource efficient society - Sustainable energy and transport		
Action plan	Local	Malmö Environmental Programme 2021 – 2030	The Programme consists of twelve goals with associated indicators and measurements, divided into three main target areas: A Malmö with the lowest possible climate impact, A Malmö with a good urban environment, and A Malmö with rich biodiversity and healthy ecosystems. A Malmö with the lowest possible climate impact directly connects to climate (goal 1-14) and two goals support the climate transition (7 & 12).	A steering document for the City of Malmö's municipal boards, committees and companies, and it also aims to provide support and inspiration to the citizens of Malmö and other actors in the private and public sectors.	
Action plan	Local	Malmö's Sustainable urban mobility plan (2016)	Describes how a holistic planning approach can achieve improved quality of life for more of Malmö's residents, visitors and other stakeholders. The plan grasps on planning and	The purpose of the plan is to establish strategies for sustainable urban development that gather, develop, clarify and concretise the traffic related aims of the Comprehensive Plan and other	New plan being finalised 2023 feeding into TROMP

			clarifies how the work should progress towards a more functionally mixed, dense, green and short distance city.	strategic documents.	
Plan	Local	Waste and Eco-cycle plan (combined)	The plan is Malmö's roadmap towards climate-neutral and resource-efficient waste management, without a negative environmental impact on Burlöv Municipality and the City of Malmö. The waste and eco-cycle plan covers four different goal areas: Waste prevention, effective recycling, reduced loss and trust and collaboration.	The plan governs the municipality's departments and companies and will also involve and inspire private actors and residents.	Burlöv Municipality and the City of Malmö are at the lower end of the waste hierarchy with a focus on energy and material recovery. The municipalities need to move upwards in the Waste hierarchy to become climate-neutral.
	Local	Strategy for implementing Agenda 2030	Strategy to increase the city's ability to implement the UN's 17 global goals in the city's local development work.	The strategy is based on five development processes that support Malmö's transition: 1. Control and management systems 2. Sustainable development through business development 3. Planned communication and participation for learning and anchoring	

				4. Increased knowledge for informed decisions 5. Innovative partnerships that make a difference	
Strategy	Regional	A Climate-neutral and fossil-free Skåne: Climate and energy strategy for Skåne (Ett klimatneutralt och fossilbränslefritt Skåne: Klimat- och energistrategi för Skåne)	Regional strategy with climate goals concerning energy, transport, construction industry, agriculture,	Supports development targets in Malmö, and provides framework for increased regional co-operation	Close practical working not least on regional mobility and electricity supply, but more action needed
	Regional	Skåne's Innovation Strategy	Identifies sustainable urban development and climate change as key areas for innovation and economic development	Links climate transition into regional economic development	
	Regional	Regional transportation infrastructure for Skåne 2022-2033 (Regional Transportinfrastruktur för Skåne 2022-2033)	Regional transport planning document for major infrastructure investment	Important strategic document for development of a coherent regional public transport and cycling infrastructure and to address road transport challenges	
	National	Environmental objectives (Regeringens 16 nationella miljökvalitetsmål)	The environmental objectives describe the quality of the environment that Sweden wishes to achieve. There are 16 objectives from unpolluted air and lakes free from eutrophication and acidification, to functioning forest and	Supports development targets in Malmö, and provides framework for increased national co-operation	

			farmland ecosystems. For each objective there are a number of 'specifications', clarifying the state of the environment to be attained.		
	National	National circular economy strategi	National strategy for a transition towards a circular economy considering design, consumption, reuse and recycling and economic development	Supports development targets in Malmö, and provides framework for increased national co-operation	
	National	The Environmental Code (Miljöbalken)	The purpose of the Environmental Code is to promote sustainable development. Detailed provisions on the financial situation. Several laws are linked to the Environmental Code, for example the Forest Protection Act, the Aviation Act and the Road Act. The connection means that the law refers to provisions in the Environmental Code, which must be applied in tests and assessments according to the law.	Supports development targets in Malmö, and provides framework for increased national co-operation	

	National	Planning and Building Act (PBL)	Regulations covering planning and construction in which climate neutrality targets need a stronger representation	Need to increase relevance to climate transition	
Action plan	EU	Circular economy action plan (2020)	Focus on sustainable products, empowering consumers, construction product regulation, strategy on sustainable textiles.	Supports development targets in Malmö, and provides framework for increased national co-operation	
	EU	Eco-design directive	Regulations governing energy use and energy-related products	Supports development targets in Malmö, and provides framework for increased national co-operation	
	EU	Fit for 55	The European legislative programme with rules on climate, energy and transport and the regulations that are included in the package.		

A-2.2: Description & assessment of policies

We are aware that there are a lot of different strategies, policies and plans on different levels, and that they do not always align with Malmö's vision. The harmonisation of policies and strategies is always an on-going process as they are amended and introduced at different times. At a local level the City's annual budget is therefore of particular importance to highlight priorities over a plethora of sometimes complimentary, sometimes competing issues. Climate change is an annually recurring priority.

Other challenges cross levels of governance and add significant complexity. One example is transportation, where there is a need for policies and legislation to work together at local, regional and national level. As mobility patterns are between cities and regions, a comprehensive approach to active mobility falls outside the mandate of individual municipalities. A systems approach at regional and national level is essential to provide user-friendly and competitive solutions.

On a local level, emissions from road traffic can decrease if the necessary behavioural changes and electrification are implemented, and the reduction obligation is maintained. There are particular challenges with heavy traffic, where the vehicle fleet is predicted to have a slower rate of

electrification. In the longer term, the EU decision on fossil-free cars by 2035 plays a big role, but the rate of exchange means that the effects will be delayed by 10-15 years.

Decisions on a national level on lowered reduction obligation is an obstacle and will have a big impact on Malmö's prospect to reach the emission reductions target in transportation. On the contrary calculations show that the lowered reduction obligation will increase emissions in Malmö with 100 000 tonnes CO2/year in 2030.

A-2.3: Emissions gap

	Baseline emissions (percentage)		Residual emissions / offestting[1]		Baseline emissions reduction target[2]		Emissions reductions in existing strategies[3]		Emissions gap (to be addressed by action plan)[4]	
	(absolute, 1990)	(%)	(absolute 2030)	(%)	(absolute 2030)	(%)	(absolute 2030)	(%)	(absolute)	(%)
Transport	567	34	*	*	*		306	58		
Energy (district heating + electricity production)	723	43					707	4		
Industry (energy + processes)	194	12					118	17		
Product use	15	1					-37	11		
Heavy machines	71	4					51	4		
Waste and sewage	89	5					69	4		
Agriculture	11	1					3	2		
Total	1668	100	500**	100	1168		1217	100	0	

[1] Residual emissions consist of emissions which can't be reduced through climate actions and are being offset. Residual emissions may amount to a maximum of 20 % as stated by the Mission Info Kit.
[2] Baseline reduction target = Baseline emissions – residual emissions.
[3] Emission reductions planned for in existing action planning and strategies should be quantified per sector.
[4] Emissions gap = Baseline emission reduction target – Emissions reduction in existing strategies.

*Since 2021 Malmö has had an emissions target stating that in 2030, the greenhouse gas emissions in Malmö as geographical area have been reduced by 70 % compared to 1990 levels (Residual emissions in A-2.3). This target has not been broken down into sub-categories which is why fields have been left blank in the table above. It should be noted that Malmö's 2030 target does not align with the 80 % target as stated by the Mission Info Kit. However it does includes all Scope 1 emissions in Malmö and the emission categories that can be disregarded according to the EU Mission. As of yet, the difference between the two targets has not been calculated. Further dialogue on this is needed between Malmö and the NZC.

**An analysis has been conducted that describes actions needed to meet the target level of 500 kilo tonnes of greenhouse gas emissions in 2030. The analysis examined several paths, as outlined in A-2.3 “Emission reduction in existing strategies” focuses on the largest emissions sectors and concentrates on CCS and technical solutions for the transport sector. The analysis maps out what type of strategies are needed and is the basis for future work. What lies ahead on Malmö’s journey to climate neutrality is further outlined in Climate Roadmap Malmö 2030. (Note that for Product use there is a negative value - the analysis looked at what actions were needed starting in 2020, a year when emissions from Product use was higher than in 1990. The remaining 2030 emissions for product use in the analysis is thus lower than in 2020 but higher than in 1990).

3.3 Module A-3 Systemic Barriers and Opportunities to 2030 Climate Neutrality

Module A-3 “Systemic Barriers to 2030 Climate Neutrality” should document the results of the stakeholder, systems and ecosystem mapping and identification of systemic barriers and opportunities.

A-3.1: Systems & stakeholder mapping				
System description	Stakeholders involved	Network	Influence	Interest
Infrastructure	22 different industries such as agriculture, aviation, construction and civil engineering, electricity, heating, recycling etc.	Fossilfritt Sverige (Fossil free Sweden)	Initiative by the Swedish Government to increase the pace of climate transition. The goal is to build a strong industrial sector and to create more jobs and export opportunities by going fossil-free. 22 different industries have produced their own roadmaps to show how they can enhance their competitiveness.	Accelerate the climate transition
	Trafikverket (The Swedish Transport Administration)		Responsible for long-term planning of the transport system for all types of traffic, as well as for building, operating and maintaining public roads and railways.	Collaboration on public transport development and financing.
Capacities	23 Swedish municipalities, 6 government agencies	Viable cities	One of 17 strategic innovation programmes supported in a joint initiative by Vinnova, the Swedish Energy Agency and Formas with the mission Climate Neutral Cities 2030 with a good life for	A catalyst for new forms of cooperation between cities, industry, academia, research institutes and civil society. To mobilise change in line with national,

			all within planetary boundaries.	environmental and climate goals as well as international commitments linked to the Global Sustainability Goals and the Paris Agreement.
	National authorities	Rådet för hållbara städer (The Council for Sustainable Cities)	The Council for Sustainable Cities is a collaboration forum with 13 members who work to strengthen municipalities' conditions for developing living and sustainable cities	Strategic role to address urban sustainability issues across government agencies, streamline policy and support local delivery
	Region Skåne	Regional authority	Collaboration on public transport development and financing. Strategic partner in economic development. Hospital and health care service with significant presence and impact in Malmö	Strategic and operational delivery
	Länsstyrelsen i Skåne (The county administrative board in Skåne)	Regional arm of national government, chairs strategic environmental network	Important body for streamlined approach in areas with policy and legislative conflicts eg permitting for wind power	Close partnership approach and conflict resolution needed
	50 municipalities and one region	Klimatkommunerna (The Climate Municipalities)	Klimatkommunerna is an association of cities and regions in Sweden. Their members are frontrunners in the transition towards a fossil free future with a good quality of life for their inhabitants.	Communicating inspiring examples of effective local climate action with positive synergies. Highlight gaps in national climate policy and ideas for improvement.
	Universities and research organisations	University of Lund, Malmö University, SLU Alnarp, RISE	Create new solutions in sustainable urban development,	To develop and implement sustainability solutions in Malmö and the

			evaluate ongoing initiatives.	region. Participate in development and research projects.
		Mötesplats Social Innovation (Meeting place for social innovation)	Innovation hub with focus on social inclusion based at Malmö University but with national remit	Knowledge centre and strategic partner in equitable climate transition
		Öppen akademi (Open academy)	Collaboration and support platform for the Scanian mission cities Malmö, Helsingborg and Lund.	Strengthen knowledge-based, transformative and coordinated processes for a transition to climate-neutral cities in 2030.
	Digital innovation hub	DigIT Hub Sweden	European Digital Innovation Hub in south Sweden.	Helps the city increase its digital capacity. Special focus on contributing to lower energy consumption and low carbon dioxide emissions.
Alliances	Local building and construction companies, appr. 200 businesses	LFM 30 (Local roadmap for a climate-neutral construction and civil engineering sector in Malmö 2030)	Collaboration to learn how it is possible to become a climate-neutral building sector.	Develop methods in calculating and complete climate-neutral construction projects and the organisations' own climate transition.
	35 local companies	Climate contract companies	Local businesses that pledge their support and commit to actions to reach climate neutrality 2030 goal	Accelerate climate transition
		Malmö start-up district, MINC	Innovative start-ups that can contribute to the transition with new solutions and innovations.	Accelerate climate transition
	Civic society organisations, 1000 in Malmö	Malmö ideella	Voluntary / non-profit sector umbrella organisation in the	Engagement of local civil society in dialogue and co-creation processes

			city supporting civil society	
	European cities	EIT Climate-KIC Deep Demo cities	Collaboration and innovation at the forefront of current policy and practice at an EU level	Accelerate climate transition.
Funds	National funds such as Vinnova, Energimyndigheten, Formas EU-funding such as ERUF, Climate-KIC etc.		Financial support	Accelerate and financing climate transition.

A-3.2: Description of systemic barriers – textual elements

Electricity supply
Sweden is struggling with significant energy distribution challenges where investments in energy networks have not kept up with urbanisation, economic development and population growth. This has further been exacerbated by the closure of a nuclear power station near Malmö; production in southernmost Sweden is of an insignificant volume in relation to demand. A large proportion of Sweden's electricity production is from hydro in the north, and transmission to the south is challenging. The electricity system also extends beyond the country's borders, which is both an advantage and disadvantage for Sweden's electricity supply. It means that energy pricing has been uneven nationally, putting Malmö and southern cities at an economic disadvantage as energy has been exported into the European market, and prices are aligned to European rather than Swedish rates. Slow responses from infrastructure investment, a lack of strategic planning, slow processes for permitting, and development of major offshore wind potential are factors hampering development in Malmö and the surrounding region. This has already led to businesses relocating from Malmö due to uncertainties in supply.

Lack of capacity
A prerequisite for society's transition and electrification is that there is sufficient capacity in the power grids for additional power withdrawals. The lack of capacity in the electricity grid is noticeable in Malmö already today, and it is difficult to connect new larger businesses due to limitations in the overhead main grid. Initiatives are also required at national level to improve planning for the establishment of new electricity-intensive industries.

Permit processes
With falling costs and increased performance, wind power is growing rapidly in Sweden and attracting investment. The capacity for wind power is expected to grow strongly, but at the same time, in principle, all existing wind turbines must be replaced before 2045. The long permit processes are the biggest threat to the continued development of wind power in Sweden.

The local incentives for wind power need to be strengthened. To make wind power investments more attractive, municipalities could be allowed to take a larger share of the benefits of wind power installations than they receive today.

The designation of areas suitable for offshore wind power should also be given real importance in the permit process. No such considerations are taken today.

Energy storage
There are currently limited solutions for long-term energy storage, in addition to hydropower. In the future energy system, which is characterised by more and more intermittent electricity production, there is a need to be able to store energy to balance the system.

Obstacles that need to be cleared for large-scale use of batteries in the energy sector are a lack of raw materials, a lack of environmental and social sustainability in the extraction of rare earth metals, and that battery manufacturing is a bottleneck.

Heating

Siting of infrastructure
There is a potential physical challenge in Malmö to find suitable locations for plastics recycling facilities, CCS and additional capacity from biofuels instead of waste.

Process/ infrastructure
There are not enough instruments and incentives for all plastic waste collected to go to material recycling – as much as 87% of the plastic waste goes to energy production or fuel in industry and only 10% is recycled to become new plastics (according to Naturvårdsverket).

Potentially limited disposal for sorted plastics can lead to the investment in a material sorting facility not being made.

CCS is still a relatively immature and therefore high-risk and high-cost technology.

Business models
There is a heavy reliance on imported waste which may not be a long-term sustainable model. There are also challenges with the development of a business model for CCS and identifying a stable market for negative emissions that can be part of a long-term business model to facilitate a major investment in CCS technology.

Policies
National policy instruments disfavour CCS at facilities that burn waste.

Opportunities

- Improved recycling technologies. For the sorted plastic to be recycled, new and improved recycling technologies are needed in the form of mechanical and chemical recycling.
- Plastic products need to be recyclable.
- Goods consisting of several materials, such as paper and plastic, need to be designed so that they can be disassembled.

Mobility

Behaviour
Change in mode of transport from car to public transport, bicycle and walking is too slow. There is no joint regional approach to support whole journey systems addressing the first and the last mile. Lifestyles are dependent on flexibility and rapid mobility to meet family needs such as shopping, picking up children, commuting, caring. Viable alternatives to support active transport need further development.

Infrastructure
Investments in new bus lines and bicycle paths takes time to implement and are costly.

Electrification and biofuels
For the transport sector, electrification, biofuels and hydrogen are possible alternatives that entail different challenges. Here the infrastructure investments need to be aligned with the alternatives chosen by industry and policy.

There is an uncoordinated approach to charging infrastructure across the country and within the city that may seriously impact rate of electrification.

The transition to fossil-free fuels for heavy transport has its challenges. The vehicle manufacturers of heavy transport see both biofuels and electricity as the future. For heavy transport, on the other hand, fast charging stations along the national roads would require a power output corresponding to smaller cities, which is not reasonable. Electric roads are an alternative, but it requires extensive investments in both national and regional networks.

National regulations
An earlier proposal to introduce a mode-neutral travel deduction never materialised. Instead, the Swedish government decided to increase compensation for travel to and from work with private cars. Compensation for travel with electric benefit cars, on the other hand, remained unchanged. This is a decision that counteracts the transition to public transport and fossil-free transport.

Opportunities

- Biogas can play a major role in the future, such as liquefied biogas (LBG) for heavier vehicles. Renewable hydrogen is also seen as a way to achieve fossil-free vehicles.

Circular economy

The transition to a circular economy will require a new resource focus, new design and new production methods to break the current consumption patterns, change the norm regarding ownership and increase sharing of products.

Alliances
Businesses and organisations must work together to take advantage of material and energy resources at all stages.

Policies and jurisdiction
A municipality's ability to directly decide on these issues is limited as this area is governed both by legislation and by market interests. There is a need to address these challenges at a national level to incentivise repair, reuse and recycling.

Legislation on chemicals is currently not in step with circular development. There are initiatives to strengthen chemical legislation both within the EU and in Sweden, which aim to ban the most dangerous chemicals. Old products and businesses must have hazardous chemicals removed, and many properties contain banned substances that need to be handled safely during renovation and demolition.

Limited incentives to support circular business models
Current consumption patterns and regulations are an obstacle to using existing resources more efficiently. Market-adapted policy instruments are needed that give all actors the same incentives and opportunities to act on the market.

Market conditions, financial instruments and responsibility issues need to be developed so that all actors in the entire value chain both get and can take responsibility for acting circularly. Strong market-based control instruments and incentives can contribute to the development of new circular services and recycling solutions, new business models and collaborations across established industry boundaries.

Ownership
Municipal waste monopolies limit the opportunities for companies that want to drive circular development by reusing or recycling the waste as a resource higher up in the waste hierarchy.

International barriers
Today there are obstacles and rules that govern the cross-border trade in waste or raw materials extracted from waste. These obstacles must be minimised so that the right actors in the right countries can take care of, recycle and refine the resources that the market demands.

Opportunities

- More jobs by enabling business activities to be created when products and residual resources are used in an innovative way.
- More robust and price-stable supply chains to make the supply of raw materials becomes less sensitive to disruptions due to pandemics and wars.
- The City of Malmö has worked to promote industrial and urban symbiosis since 2012 in a number of different projects
- Development of resource hubs and potential for Finnish-style resource declarations to enable circular transactions
- Digital solutions: Already today, digitisation is changing the existing waste markets and providing new opportunities to reuse, repair and recycle more into raw materials - both in terms of developing new services and increasing traceability of materials and components. It is an area with great potential that could lead to changes in the collection of end-of-life products, new business models, new deposit systems and more.

Climate-neutral building

Responsibility
Lack of joint approach between government and industry. Politicians and authorities like to see market players themselves take responsibility for the issue while market players want clear and long-term incentives to drive climate change. Contractors and consultants want clients to request construction with a low climate impact, while clients want contractors and consultants to present solutions with a low climate impact, etc.

Business models and procurement
Emissions of greenhouse gases, and the societal costs that a changing climate entail, have traditionally not been valued by the market. At the same time, it costs money to develop and manufacture methods and products with low climate impact. As a result, this makes it difficult to calculate the cost of new products. This can be seen as a failure for the market economy because the market prices have not been able to fully reflect society's cost of production and consumption.

Innovation, processes and new materials
The construction sector is characterised by being fragmented with long and complicated value chains. This makes it difficult for any individual actor to have an overall strategy for research and development. The construction and facilities sector has extensive regulation, which is important from a quality perspective, but there is a risk that new solutions are not developed because the actors are not prepared to take risks related to trying new methods and materials.

Regulations and legislations
Currently there is no legal requirement to declare and regulate the climate impact of buildings and infrastructure from a life cycle perspective. The market-based incentives to limit emissions from a life cycle perspective have so far been limited. There is a need to introduce legislation on the declaration of the climate impact of buildings and infrastructure. Here, Sweden could also learn from Finland, which has a legal requirement to report businesses' waste products.

Knowledge and leadership
Actors in the building and construction sector need to strengthen their basic knowledge of what can be done at what stage to reduce climate impact from a life cycle perspective. Procuring entities need to increase their knowledge of how buildings and infrastructure with a low climate impact can be ordered. Designers and contractors need increased knowledge of how the climate impact in construction or civil engineering projects can be mapped in order to be able to propose measures with a lower climate impact. The tools that are now being developed to estimate the climate impact need to be developed and disseminated continuously.

Low-carbon consumption

The distribution of consumption-based emissions is unevenly distributed between different parts of Malmö. It largely reflects differences in income and living standards, which shows that in addition to reducing total emissions, we also need to work for a fair emission space.

One challenge is to decrease the consumption-based emissions for high-income households and at the same time increase the standard of living for low-income household without increasing their consumption-based emissions.

Due to political sensitivities, the municipal organisation has limited mandate to influence consumption issues and involvement in behavioural changes.

There is a significant challenge to address the economic model based on consumption-based economic growth and a sustainable economic development that is not being addressed in a coherent way at any level of government or within the business sector.

A-3.3: Description or visualisation of participatory model for the city climate neutrality – textual and visual elements

The city has a number of on-going fora and processes to engage local communities, and work is going on to develop climate-related work in existing arenas, and to develop new approaches. There has been significant interest from civil society organisations in the city in the Climate Contract model and the city plans to introduce a specific contract for civil society based on the climate contracts with business. Ideas are under development to link, for example, the MFF football club (one of the first business climate contract signatories) with amateur football and sports clubs across the city that engage thousands of people in the community.

The city is also in the process of renewing its neighbourhood-based development work, and the climate transition team have been at the forefront of developing ideas of a joint approach in targeted community programmes in partnership with local businesses, NGOs and community. The climate team would work from a perspective of understanding local needs, challenges and opportunities in Malmö's climate transition and seek to support local climate actions at a neighbourhood level. The aim is to work systematically in a small number of neighbourhoods initially and quickly scale to a large number of communities across the city, creating a critical mass and the potential for everyone in Malmö to know someone living in an active climate community.

This programme links into a strand of work which focus on the disparity in lifestyle impacts across the city where there is a clear correlation between high income and high emissions. The aim would be to try to identify ways of addressing this with a community development approach. The overarching aim of the community programme is therefore to seek to improve the lives of those with lowest impact and economic resources, without increasing their emissions, and simultaneously identify ways of working with the high-income communities to understand which changes could help facilitate a more sustainable lifestyle and how the city and other partners can support this. This will become an important arena for the design of measures for a just and equitable transition and will feed directly into the action planning.

The result becomes a living lab approach in which work with targeted communities can identify actions that can be potentially scaled across the city. The city has completed an exploratory project supported by Vinnova, the Swedish Innovation Agency, and is working with Malmö University with support from FORMAS, the national research agency, to explore further ways of addressing the equity dimensions in a neighbourhood-based model.

This process will enable a bottom-up approach based on community needs, aspirations and ideas, to meet a top-down approach based on Climate Transition Malmö's climate impacts and technical roadmaps. A neighbourhood approach can start identifying solutions that increase acceptance and

uptake of, for example, active mobility solutions, and can help design solutions that are relevant to other similar communities elsewhere in the city. There is therefore a strong potential for an approach in which local experiments co-design solutions that can be scaled, but also adapted in accordance to varying needs and aspirations across the city. Working in a large number of geographies in the city also helps to create a critical mass of people from different socio-economic backgrounds and urban districts who are actively engaging in the transition process.

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Action Plan

2030 Climate Neutrality Action Plan of Malmö

City of Malmö

NetZeroCities has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

1 Part B – Pathways towards Climate Neutrality by 2030

Part B represents the core of the Action Plan, shaped by local authorities, local businesses and stakeholders, comprising of the most essential elements: scenarios, strategic objectives, impacts, action portfolios and indicators for monitoring, evaluation and learning.

1.1 Module B-1 Climate Neutrality Scenarios and Impact Pathways

Module B-1 "Climate Neutrality Scenarios and Impact Pathways" should list impact pathways, early and late outcomes and direct and indirect impacts (co-benefits) according to and adapted from the NZC Theory of Change and the AP Guidance – clustered by fields of action.

B-1.1: Impact Pathways					
Fields of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Electrical supply	Technology and infrastructure	# 1 Shortened permitting process for new wind and solar projects	# 1 Increased local production of renewable electricity	*	# 1 Increased energy balance
	Technology and infrastructure	# 2 Identified suitable areas for solar and wind power production		*	# 2 Renewable energy solar energy: 50 000 MWh/year
	Technology and infrastructure			*	# 2 Renewable electricity leads to lower electricity prices and financial savings
	Technology and infrastructure			*	# 3 Renewable energy wind: 15 000 MWh/year
	Technology and infrastructure	# 4 Investment in solar energy commenced in city		# 4 Savings up to 26 MSEK in the purchase of electricity, including energy tax and electricity	# 4 Local renewable electricity supply frees up capacity for new industries and creates jobs

				transmission costs	
	Technology and infrastructure	# 5 TBD	# 5 Sufficient transmission capacity in the electricity grid, no barriers for establishing new industries or electrification of existing industry	*	# 5 Lower electricity prices, increase the city's attractiveness, possible new establishments, etc.
	Technology and infrastructure	# 6 Full-scale project on a system demonstrator for a sustainable energy supply for industrial production in Malmö underway by end 2024	# 6 A greater security and predictability regarding the availability of energy for the industry. The sights are set on an industry whose energy supply is 100 percent renewable or recycled within 10-15 years.	*	# 6 Resilient production industries
	Technology and infrastructure	# 7 Options appraisal for energy storage complete	# 7 Development strategy for energy storage adopted	*	# 7 Balanced electrical system
	Technology and infrastructure	# 8 Pilot micro storage		*	
	Technology and infrastructure	# 9 Evaluation of Sege Park demo for flexible electricity systems complete	# 9 All demos for flexible electricity systems evaluated and lessons being applied at scale	# 9 ACCESS-project aims to deliver 25% reduction in CO2 emissions	# 9 20% reduction in costs and cut smart grid project development time by 30%.
	Technology and infrastructure	# 10 Two additional system demos in operation			
	Technology and infrastructure	# 10 More energy efficient solutions in operation, increased investments in solar power	# 10 More energy efficient solutions in operation, increased investments in solar power	No data available, but will be by Oct 15th	# 10 Economic benefit for citizens and businesses
Field of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts	Indirect impacts (co-benefits)

				(Emission reductions	
Heating	Technology and infrastructure	# 1 Options appraisal, business plan development and procurement for separation of plastics	# 1 System for separation of plastics ready to be installed and tested	# 1 Emission reduction: 104 KT	# 1 Potential income generation through plastics sales, potential new jobs
	Technology and infrastructure	# 2 Options appraisal, business plan development and project planning for CCS on waste to energy plant for carbon storage	# 2 Procurement complete	303 KT	# 2 More circular waste/resource management
		# 3 Market analysis and development of proposed solution for renewable fuel for district heating system	# 3 Planning and procurement	Included in 104KT above	# 3 More circular waste/resource management
		# 4 Options appraisal, business plan development for enhance CHP capacity with replacement of one furnace in waste cogeneration plant	# 4 Planning and procurement	No data available, but will be by Oct 15th	# 4 If incinerated plastics are replaced with biofuels it creates possibilities for larger carbon sink in CCS plant
Field of action	Systemic lever	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Mobility	Technology and infrastructure	# 1 In 2023 150 out of 210 city buses in Malmö are already electrified. Malmö Expressen's buses will be fully electrified and will	# 1 90% of the busses in Malmö are electrified	# 1 7 KT CO2e 0,6 g CO2-ekv/MJ	# 1 Less noise, possibility to drive busses in other areas than today due to the decrease of noise, less operational costs, higher efficiency

		replace non-electric city buses as the lines are introduced			
	Technology and infrastructure	# 2 Increased travel via foot, bicycle and public transport		# 2 Reduced carbon dioxide emissions from transport	# 2 Increased accessibility to public transport
	Technology and infrastructure	# 3 Three pilot projects for micromobility hubs evaluated and proposal developed for scaling	# 3 50 hubs operational	# 3 Reduced carbon dioxide emissions from transport	# 3 Improved public health
	Technology and infrastructure	# 4 Pilot projects for mobility nodes evaluated and proposal developed for scaling		# 2 Reduced carbon dioxide emissions from transport	# Improved public health
	Technology and infrastructure	# 5 Reducing emissions by shifting from fossil fuels to electrified trucks, as well as optimization of logistics and load factors	# City logistics primarily electrified	# Reduced carbon dioxide emissions from transport	# Improved air quality, less noise, cost savings
	Technology and infrastructure		# 60% electric work machines 2027	# Reduced carbon dioxide emissions from work machines, 30 KT less per year in 2030	# Improved air quality, less noise, cost savings
	Technology and infrastructure		# 2 65% electric vehicles in 2027	# Reduced carbon dioxide emissions	# Improved air quality
	Governance & policy		# New standards for urban streetscapes established	Supports wider measures	
‘	Governance & policy, Learning & capabilities	Designed concept for public awareness raising work to	# Increased take-up and use of new bus routes, cycleways etc	Supports wider measures	Improved public health, improved air quality, savings in fuel costs for citizens

		support behavioural change			
	Governance & policy, Democracy/participation	#1 Contribute to increased travel via foot, bicycle and public transport from mobility management campaigns		Supports wider measures	
Field of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Climate-neutral building	Governance & policy, Finance & funding	# 1 Process for analysis of potential for repurposing existing buildings.	# 1 Shared use contracts trialed and scaled	TBD	TBD
	Technology and infrastructure, Governance & policy	# 2 Concept development for scaling of building materials recycling	# 2 Implementation of building materials recycling centre		# 2 New jobs created
	Technology and infrastructure, Governance & policy	# 3 Concept for sector circularity database developed	# 3 Pilot of sector circularity database evaluated		
	Learning & capabilities	.# 1 Climate neutrality integrated into urban development practice on trial basis	# 1 Climate neutrality fully integrated into local policy and influencing national policy		
	Technology and infrastructure, Governance & policy	# 1 Strategy for carbon capture and compensation developed – prioritised carbon sinks, legal aspects, pilot projects on purchase of negative emissions	# 1 TBD, work in progress	Work in progress, theoretical maximum 1100 KT 2030	TBD
	Technology and	# 2	# 2 Streamlined		

	infrastructure , Governance & policy	7 climate neutral projects completed	governance to facilitate climate-neutral building		
	Learning & capabilities	# 3 Training programme for increased competence and learning within the transition area developed and trialed	# 3 Training programme fully developed and mainstreamed	N/A	N/A
Circular economy	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
	Governance & policy, Finance & funding	# 1 Concept for local hub in national network developed	# 1 Pilot local hub in operation		# 1 Employment and new business opportunities
	Governance and policy	# 2 Collaboration with Viable Cities partners and Centre for Industrial symbiosis	# 2 National action to support circular economy development at scale		
	Governance and policy	# 3 Influence national development of incentives			
	Technology and infrastructure / Governance and policy	# 1 Upscaling of pilot textiles collection and separation	# 1 Full scale textiles separation for recycling		# 1 Employment and new business opportunities
	Technology and infrastructure / Governance and policy		# 2 Textiles removed from incineration and fibres recovered		
	Technology and infrastructure / Governance and policy	# 1 Development of post-consumer waste separation for plastics (see Heating)	# 1 Full scale plastics separation for recycling (se Heating)		
	Technology and		# 2 Oil-based plastics		

	infrastructure / Governance and policy		removed from energy system and used for materials recovery		
Field of action	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Low-carbon consumtion	Democracy/participation Technology/infrastructure	# 1. First thematic partnership in place.	# 1 Three thematic partnerships in place.	TBD	# 1 Mobilising partners and communities
	Democracy/participation Technology/infrastructure	# 2 First three neighbourhood partnerships in place	# 2 Five neighbourhood partnerships in place	TBD	# 1 Mobilising partners and communities
Field of acotion	Systemic levers	Early changes (1-2 years)	Late outcomes (3-4 years)	Direct impacts (Emission reductions	Indirect impacts (co-benefits)
Net Zero Organisation	Governance & policy, Finance & funding	Priority procurement identified and baseline specification developed and tested on 3 major procurements	First innovation procurement in place. Climate neutral procurement in place for all major procurement exercises		# 1 Economic development opportunities for innovative businesses

* The Swedish electricity mix is close to 98% fossil-free. The main purpose of the roadmap for electricity supply is to ensure that there is enough electricity to meet the needs of the climate transition.

B-1.2: Description of impact pathways– textual and visual elements

Transition area: Electricity supply

- By 2030, all energy used in Malmö will come from renewable and recycled energy
- The need for electricity is increasing sharply. This is partly due to the electrification that is necessary for the climate transition, for example, electric cars replacing gasoline-powered cars. But it is also because Malmö is growing and that more and more people and companies need electricity in Malmö.
- Almost all electricity used in Malmö is transmitted from other parts of Sweden – only about a tenth of our electricity needs are produced locally.
- The possibility of transmitting electricity through Sweden is limited. The bottlenecks in the grid are being expanded, but that takes a long time.

- More renewable electricity production is needed in Skåne to meet the increasing electricity demand and to bring down electricity prices in southern Sweden in order to achieve Malmö's environmental goals.
- Malmö is planning a significant expansion of solar energy production in the city.

Transition area: heating

- District heating covers 90% of Malmö's heating needs
- 60% of district heating in Malmö and Burlöv comes from SYSAV's combined heat and power plant for waste (in 2021). The rest is biofuels, biogas, waste heat and a small amount of fossil fuel oil for the coldest days.
- SYSAV's combined heat and power plant for burning waste currently accounts for about 20% of GHG-emissions in Malmö. That makes the plant the single largest source of fossil emissions in the city. The main reason is the combustion of plastic.
- Waste that cannot be prevented, reused, or recycled is incinerated and used as energy. SYSAV also has an important societal task in taking care of hazardous waste and ensuring that it is removed from the cycle.
- Heating accounts for about 25-30% of the total fossil GHG-emissions in Malmö
- Between 1990 and 2020, the energy sector's GHG-emissions have decreased by 60%.

District heating provides efficient heating but is not yet completely fossil-free

Centralised heat production, e.g., district heating is more efficient than using small-scale heating methods. District heating also has several environmental benefits. Waste heat from industries can be used in the district heating network, and since combustion takes place under controlled conditions at large plants, the flue gases can be purified before they are discharged from the chimneys. Malmö shares a district heating network with Burlöv. The network is owned by the energy company E.ON, and the largest district heating producers are SYSAV and E.ON. SYSAV, Malmö's largest producer of electricity and district heating, uses waste as fuel. E.ON owns four district heating-producing plants. E.ON's plants run on biogas, biofuels, and a smaller proportion of fuel oil. Sjölunda wastewater treatment plant contributes with waste heat, which is captured using heat pumps. The waste heat from the wastewater contributes about 8% of Malmö's district heating needs. Other industries also contribute with waste heat, such as Norcarb Engineered Carbons.

Transition area: Mobility

- Today, road transport is the largest source of emissions in Malmö.
- Emissions from road traffic and other traffic have decreased in Malmö historically, but even greater emission reductions will be required in the future if the emission targets set by Malmö and Sweden for the transport sector are to be achieved.
- Traveling together or cycling is more energy- and space-efficient than driving a car. When we travel more climate-friendly, we get a lot of other good things in the bargain: better air and health, less noise, less congestion, more free spaces to use for more fun things than parking.
- The proportion of cyclists in Malmö increased from 23% to 26% between 2007 and 2018. The share of those using public transport increased from 19% to 25% during the same period.
- Men and women have different travel habits in Malmö. In the latest travel habit survey (2018), women chose the car for 29% of their trips. The corresponding figure for men in the municipality was 39%.

In Malmö, road traffic accounts for 42% of all greenhouse gas emissions and is the single largest emission source that contributes to climate change. Passenger car traffic accounts for 80% of the

traffic work and 66% of the emissions from road traffic. Heavy transport makes up 8% of traffic work and accounts for 34% of emissions. Traffic also contributes to other environmental effects: acidification and depletion of biological diversity, eutrophication of land and sea, formation of ground-level ozone that is harmful to people, animals and nature.

Road traffic accounts for the largest part of pollution in Sweden's urban areas. The air pollutants that mainly affect our health are nitrogen dioxide, ozone and particles. The health effects are many: damage to the lungs, respiratory infections, allergies, inflammations, asthma, cancer, effects on genetics and the nervous system. The traffic also causes increased noise levels in the city with significant health effects for the population - especially with long-term exposure - and can damage sleep and rest, cause stress and difficulty in concentrating. High noise levels also affects people's desire to be outdoors and enjoy the city's various rooms. In addition to negative effects on air quality and noise, traffic leads to traffic accidents every year.

Transition area: Circular economy

- The Swedish economy is currently 3.4% circular, according to the Circularity Gap Report17
- Malmö's inhabitants cause about 470 kg of municipal waste per person every year, which is slightly less than the EU average (505 kg per person in 2020).
- SYSAV's combined heat and power plant for the incineration of waste-to-energy is one of the largest in the country and in Europe. Here, almost 590 kiloton of waste is handled every year from households, municipalities, commercial operators, and industries.
- Malmö's average climate impact is 9.88 tonnes of CO2 equivalents per year when calculated from a consumption-based perspective. In comparison with many countries in the world, this is very high - if everyone lived as a Malmö citizen, it would take about four globes.

Transition area: Climate-neutral building

- Today, about a fifth of Sweden's GHG-emissions come from construction and maintenance of properties.
- Of those emissions, construction itself accounts for just under 50%.
- Today, as much is being built in Sweden as in the 1970s when the million programs were built.
- Malmö continues to grow. Over the next 10-15 years, approximately 28 500 new homes are planned to be built.
- The overall goal in Malmö is to have "A climate-neutral construction and civil engineering sector in Malmö by 2030".

Malmö is growing, and it will need new housing, premises, roads and squares. The City of Malmö collaborates with developers to learn more about how it is possible to build with as little climate impact as possible. The industry has developed a plan for how it will succeed. The initiative is called LFM30 (Local roadmap for a climate-neutral construction and civil engineering sector in Malmö 2030). Every developer who has signed LFM30 must start at least one climate-neutral construction project in Malmö by 2025. By 2023 almost 200 organisations have signed up for climate-neutral construction – developers, contractors, consulting companies, material suppliers as well as universities and research institutes.

Transition area: Low-carbon consumption

- The goal is that 2030 Malmö's consumptions-based greenhouse gas emissions are well on their way to a sustainable level*
- Consumption-based emissions include emissions from goods and services used in Malmö, regardless of where the emissions occur.

- The average Malmö resident causes less greenhouse gas emissions from driving than the average Swede.
- About 25% of Malmö residents' average greenhouse gas emissions come from food and drink and 25% from air travel
- To reduce consumption-based greenhouse gas emissions, a combination of many measures is needed, such as improved climate performance, behavioural changes, and legislation.

According to the Swedish environmental protection agency and Statistics Sweden, the national average for consumption-based emissions in Sweden was approximately 8 tons CO2e per person and year (excluding international flights) 2020. On a national average, 60 % of consumption emissions derives from households and 40 % from investments and local, state and regional authorities. To reach the 1.5 ºC-target of the Paris agreement, in 2050 the global emissions need to be a maximum of 1 tonne per person and year. So far, Sweden is the only Nordic country reporting consumption-based emissions within the official statistics as part of the environmental accounts, as a complement to territorial emission accounting. Consumption-based emissions include emissions from goods and services used in Sweden, regardless of where the emissions occur.

1.2 Module B-2 Climate Neutrality Portfolio Design

Module B-2 “Climate Neutrality Portfolio Design” should contain a project description for **each intervention planned**, including interventions by local businesses and industry, according to the template B-2.1, including actions those interventions targeted at enhancing carbon sinks to address residual emissions. Narrative analysis and comments can be provided in B-2.2. A summary of how residual emissions are addressed, should be provided in B-2.3.

B-2.1: Description of action portfolios - textual or visual		
Fields of action	Portfolio description	
	List of actions	Descriptions
Electricity supply	Support energy efficiency measures for public and private sector and residents	Further develop the energy advisory service for residents and businesses, with focus on efficient energy solutions.
	Increase solar and wind production	1) Speed up permitting process for new wind and solar projects 2) Identify suitable areas for solar and wind power production 3) Set a clear overall target in GWh of how much solar power production the City of Malmö should install 4) Set an overall target in GWh of how much solar power production is to be installed in the Malmö area. 5) Increase solar energy production from City of Malmö
	Increase capacity in electricity distribution system	1) Participation in consultations via Energy Commission Skåne regarding network development plans 2) close dialogue with E.ON regarding population growth, business etc. to ensure that the city's development plans are taken into account when planning local and regional networks.

		3) Influence how the revenue framework for the network companies works in order to indirectly control network investments/design of the local network.
	Develop resilient energy system in Northern Harbour	1) Feasibility study for a resilient and sustainable energy supply for industry in Malmö's port area. 2) Mapping as basis for a larger project application to create a system demonstrator.
	Establish energy storage capacity	1) Feasibility study identifying location options 2) initiating pilots with industry to expand knowledge of, for example, capacity-enhancing opportunities by utilising energy storage.
	Four place-based system demonstrators for flexible electricity systems	1) Sege Park as first demonstrator for flexible electricity systems. 2) Test smart control using solar cells, batteries and a control system to cut power peaks and reduce emissions.
	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö
Heating	Separation of plastics to remove fossil oil-based plastic from energy recovery system	Mechanical separation technology for plastics removal and recycling
	Carbon Capture and Storage on waste-to-energy plant	Implementation of CCS on waste to energy plant for carbon storage
	Secure supply of renewable fuel for district heating system	Identify secure supplies of sustainable biofuels to replace energy from plastic
	Expand coverage of district heating system	Expand coverage of district heating system into areas of the city served by gas network
	Enhance CHP capacity	Replacement of one furnace in the waste cogeneration plant to be able to burn biofuels
	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö
Mobility	Electrification of bus fleet	Replacement of existing biogas powered bus fleet with electric buses enabling increased biogas availability for, e.g., HGV use.
	Construction and completion of 5 new Malmö Express routes	Fully electrified, prioritised rapid bus transport system for higher capacity city bus lines. Three electric bus routes will be implemented.
	Construction of 27 km of dedicated cycle highways	A total of 14 projects. The cycle paths will connect the parts of the city where there are a lot of people living with large workplaces, stations and the centre.

		Here it should be extra safe, secure, and fast cycling.
	Establishment of regional network of cycle highways, “superbike paths”	Improvements of existing routes, appr. 30 km within and/or connected to Malmö.
	Electrification and co-ordination of freight and logistics	Reducing emissions by shifting from fossil fuels to electrified trucks, as well as optimisation of logistics and load factors.
	Installation of 100 micromobility hubs around the entire city	The mobility hubs will provide the citizens with shared vehicles such as carpool cars, bicycles, electric scooters etc.
	Transform multi-storey car parks to mobility nodes	Develop parking services that, in addition to car parking, have room for and offers mobility services such as a carpool, bike pool, bike parking, bike workshop and more.
	Integrated approach to climate mitigation and adaptation in streetscape	Mainstreaming of integrated attractive streetscape approach to promote active mobility, integrate shade and stormwater management and social and commercial and non-commercial use of public realm.
	Innovative approaches to support behavioural changes resulting from infrastructure investment	Public awareness-raising work, innovative business models and incentives to promote cycling, walking and public transport in support of infrastructure investment.
	Mobility management package	Information campaigns, educational efforts, trial measures that influence the choice of transport modes and promote walking, cycling, public transport and sharing services like carpools and bicycle pools.
	Purchase emission free work machines	Purchase emission free work machines for the municipality’s vehicle fleet
	Purchase emission free vehicles for the City of Malmö	Purchase emission free vehicles for the municipality’s vehicle fleet
	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments.
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö
Climate-neutral building	Method development	Synchronising, applying and evaluation of climate calculation models
	Repurpose existing buildings and create shared use concepts for efficient property use	1) Increase knowledge on preservation of existing buildings through interdisciplinary co-operation, 2) Increase the authority to make trade-offs between different interests and 3) Increase shared use of premises and develop premises supply process.
	Circular and resource efficient building	1) Establish an internal recycling operation in the city,

		2) Create open database for recycled materials in the construction sector. 3) Develop a mass management strategy, 4) Improve client competence in the city for procurement of alternative materials and products, 5) Streamline land use and increase joint use of premises
	Carbon capture and compensation	1) Participate in developing and implementing compensation strategy 2) Establish more carbon sinks and increase the proportion of green areas 3) Identify areas for carbon sinks and preserve existing carbon sinks
	Enabling urban development process	1) Standardise and apply climate calculations at detailed plan level 2) Develop and apply requirements for climate neutrality in land transactions 3) Introduce requirements for re-use inventory before demolition permit 4) Establish forum for handling policy conflicts and enforcement
	Organisational learning & competence	Develop a plan for competence provision and Increase competence and learning within the transition area throughout the organisation, exchange knowledge with other municipalities and regions.
	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments.
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö
Circular economy	Develop a regional resource hub	Identification of local partnerships to support development of local hub as part of national initiative under concept design by RISE.
	Development innovative procurement processes to support circular business	See Net Zero Organisation below
	Influence national development of incentives	Includes cooperation with Viable Cities partners and Centre for Industrial symbiosis.
	Implement full scale textiles separation for recycling	Larger scale collection of textiles for re-use or recycling building on pilot SIPTEX plant.
	Implement full scale plastics separation for recycling	See details under Heating
	Resource mapping of material flows	Resource mapping of a few thematic areas, such as textile, food, IT/digital hardware

	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö
Low-carbon consumption	Design of support systems and services for low carbon lifestyles	1) Development of lifestyle tool for raising knowledge and inspiration for behavioural change, implementation partnerships on thematic areas such as food, fashion, travel. 2) Neighbourhood-based sustainable action programme.
	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments.
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö
Net Zero Organisation	Net Zero Public Procurement	1) Analysis of procurement and planned coming procurement to identify key areas with high climate impact, large volume and potential for change. 2) Implement Net Zero requirements on a pilot basis to identify challenges and learning needs. 3) Develop criteria and evaluation methods for different procurement types, particular focus on circular products and services. 4) Consider innovation procurement models to shift market or open for innovative solutions.
	Cross-cutting costs development and management	Develop and co-ordinate activity with key partners and city departments.
	Climate Transition Roadmap co-ordination	Central management function for roadmap in Climate Transition Malmö.

B-2.2: Individual action outlines
(fill out one sheet per intervention/project)

Action outline	Action name	**Increase solar and wind production**
	Action type	Technical development
	Action description	Action includes 1) Speed up permitting process for new wind and solar projects 2) Identify suitable areas for solar and wind power production 3) Set a clear overall target in GWh of how much solar power production the City of Malmö should install 4) Set an overall target in GWh of how much solar power production is to be installed in the Malmö area. 5) Increase solar energy production from City of Malmö owned land and buildings.
	Field of action	Electrical supply

Reference to impact pathway	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	# 1 Shortened permitting process for new wind and solar projects # 2 Identified suitable areas for solar and wind power production # 3 Investment commenced in city 3-4 years: Increased local production of renewable electricity.
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	Roofs on existing and planned buildings owned by Stadsfastigheter
	Involved stakeholders	E.ON, the County Administrative Board (Länsstyrelsen)
	Comments on implementation	The Service Committee has submitted the application to the municipal council
Impact & cost	Generated renewable energy (if applicable)	Solar energy: up to 300 GWh Wind energy: up to 149 GWh
	Removed/substituted energy, volume or fuel type	50 000 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	232 MSEK for solar energy, batteries and smart control devices on 50% of the roofs owned by Stadsfastigheter.

Action outline	Action name	**Increase capacity in electricity distribution system**
	Action type	Technical development
	Action description	1) Participation in consultations via Energy commission Skåne regarding network development plans 2) close dialogue with E.ON regarding population growth, business etc. to ensure that the city's development plans are taken into account when planning local and regional networks. 3) Influence how the revenue framework for the network companies works in order to indirectly control network investments/design of the local network.
Reference to impact pathway	Field of action	Electrical supply
	Systemic lever	Technology/infrastructure

	Outcome (according to module B-1.1)	*Later outcomes:* Sufficient transmission capacity in the electricity grid, no barriers for establishing new industries or electrification of existing industry
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	Both city-wide and inter-regional
	Involved stakeholders	National distribution company, energy producers, Region Skåne, Swedish Energy Agency and others
	Comments on implementation	Process underway through Skånes Energy Commission as co-ordination body
Impact & cost	Generated renewable energy (if applicable)	TBD
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Develop resilient energy system in Northern Harbour**
	Action type	Technical development
	Action description	1) Feasibility study for a resilient and sustainable energy supply for industry in Malmö's port area. 2) Mapping as basis for a larger project application to create a system demonstrator.
Reference to impact pathway	Field of action	Electrical supply
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* Full-scale project on a system demonstrator for a sustainable energy supply for industrial production in Malmö underway by end 2024. *Late outcomes:* A greater security and predictability regarding the availability of energy for the industry. The sights are set on an industry whose energy supply is 100 percent renewable or recycled, within 10-15 years.
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department

	Action scale & addressed entities	Energy-based symbiosis across industrial area of Northern Harbour but supporting wider development in city
	Involved stakeholders	Port authority, E.ON, SYSAV, other energy intensive industries
	Comments on implementation	Work in progress
Impact & cost	Generated renewable energy (if applicable)	TBD
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Establish energy storage capacity**
	Action type	Technical development
	Action description	1) Feasibility study identifying location options 2) initiating pilots with industry to expand knowledge of for example capacity-enhancing opportunities by utilising energy storage.
Reference to impact pathway	Field of action	Electrical supply
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Options appraisal for energy storage complete # 2 Pilot micro storage *Late outcomes:* Development strategy for energy storage adopted
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	Localised initiatives across city
	Involved stakeholders	P-Malmö, City of Malmö, energy companies
	Comments on implementation	Under development
Impact & cost	Generated renewable energy (if applicable)	TBD
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	Investments TBD, 6.5 MSEK/year in operational costs

Action outline	Action name	**Four place-based system demonstrators for flexible electricity systems**
	Action type	Technical development
	Action description	1) Sege Park as first demonstrator for flexible electricity systems. 2) Test smart control using solar cells, batteries and a control system to cut power peaks and reduce emissions
Reference to impact pathway	Field of action	Electrical supply
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Evaluation of Sege Park demo complete # 2 Two additional system demos for flexible electricity systems in operation *Late outcomes:* # 1 All demos for flexible electricity systems evaluated and lessons being applied at scale
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department, Parking Malmö
	Action scale & addressed entities	Local system
	Involved stakeholders	City of Malmö, P-Malmö
	Comments on implementation	Phase 1 complete and under operation. Evaluation not carried out yet
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	20% reduction in costs and cut smart grid project development time by 30%.
	GHG emissions reduction estimate (total) per emission source sector	25% reduction in CO2 emissions
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Support energy efficiency measures for public and private sector and residents**
	Action type	Technical development
	Action description	Further develop the energy advisory service for residents and businesses, with focus on efficient energy solutions.
Reference to impact pathway	Field of action	Electrical supply
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* More energy efficient solutions in operation

Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	Digital and physical advisory service across city
	Involved stakeholders	Private households, businesses
	Comments on implementation	Service in use, but will be further developed
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	6 MSEK

Action outline	Action name	**Separation of plastics to remove fossil oil-based plastic from energy recovery system**
	Action type	Technology
	Action description	Mechanical separation technology for plastics removal and recycling
Reference to impact pathway	Field of action	Heating
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # *1* Lower emissions in Malmö 10% within 2 years, # 2 Options appraisal, business plan development and procurement *Later outcomes:* # 1 System ready to be installed and tested
Implementation	Responsible bodies/person for implementation	SYSAV Waste management company
	Action scale & addressed entities	Regional waste management system
	Involved stakeholders	Cities in region, industry, consumers, contractors
	Comments on implementation	Feasibility study
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Fossil oil-based plastics removed from waste-to-energy system
	GHG emissions reduction estimate (total) per emission source sector	104 KT 10% of Malmö's total emissions

	Total costs and costs by CO2e unit	400–500 MSEK

Action outline	Action name	**Carbon Capture and Storage on waste-to-energy plant**
	Action type	Technology
	Action description	Implementation of CCS on waste to energy plant for carbon storage
Reference to impact pathway	Field of action	Heating
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* *#1* Options appraisal, business plan development and project planning *Later outcomes:* #1 Procurement complete
Implementation	Responsible bodies/person for implementation	SYSAV
	Action scale & addressed entities	Point emission intervention
	Involved stakeholders	SYSAV, Avfall Sverige, Malmö stad, CNetSS
	Comments on implementation	An orientation decision needs to be made by 2025 at the latest and an investment decision in 2027 at the latest to be able to put CCS in operation.
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	303 KT
	Total costs and costs by CO2e unit	1.5–2BSEK in investment costs, operational costs appr 795 MSEK/år

Action outline	Action name	**Secure supply of renewable fuel for district heating system**
	Action type	Technology
	Action description	Identify secure supplies of sustainable biofuels to replace energy from plastic
Reference to impact pathway	Field of action	Heating
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* *#1* Market analysis and development of proposed solution *Later outcomes:* *# 1 Planning and procurement*

Implementation	Responsible bodies/person for implementation	SYSAV
	Action scale & addressed entities	City-wide impact
	Involved stakeholders	SYSAV
	Comments on implementation	Under development
Impact & cost	Generated renewable energy (if applicable)	TBD
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	Included in 104KT in action above (separation of plastics)
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Expand coverage of district heating system**
	Action type	Technology
	Action description	Expand coverage of district heating system into areas of the city served by gas network
Reference to impact pathway	Field of action	Heating
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # *1* Options appraisal, business plan development *Later outcomes:* #1 Planning, permitting and procurement
Implementation	Responsible bodies/person for implementation	City of Malmö
	Action scale & addressed entities	Local networks
	Involved stakeholders	E.ON
	Comments on implementation	Feasibility
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Replacement of natural gas
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Expand CHP capacity**
	Action type	Technology

	Action description	Replacement of one furnace in the waste cogeneration plant to be able to burn biofuels
Reference to impact pathway	Field of action	Heating
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # *1* Options appraisal, business plan development *Later outcomes:* #1 Planning and procurement
Implementation	Responsible bodies/person for implementation	SYSAV
	Action scale & addressed entities	Local
	Involved stakeholders	N/A
	Comments on implementation	Planning
Impact & cost	Generated renewable energy (if applicable)	TBD
	Removed/substituted energy, volume or fuel type	Plastic waste
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	2 BSEK

Action outline	Action name	**Electrification of bus fleet**
	Action type	Technical development
	Action description	Replacement of existing biogas powered bus fleet with electric buses enabling increased biogas availability for, e.g., HGV use
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure, Finance & funding
	Outcome (according to module B-1.1)	*Early outcomes:* #1 In 2023 150 out of 210 city buses in Malmö are already electrified. Malmö Expressen's buses will be fully electrified and will replace non-electric city buses as the lines are introduced. *Later outcomes:* #1 90% of the busses electrified
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	City-wide
	Involved stakeholders	Skånetrafiken, Nobina

	Comments on implementation	Ongoing, procurement for the last 60 busses that is due to be in traffic 2027.
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Busses on biogas fuel will be replaced by electric busses
	GHG emissions reduction estimate (total) per emission source sector	7 KT CO2e (0.6 g CO2-ekv/MJ)
	Total costs and costs by CO2e unit	615 MSEK in investments, 24 MSEK/year in operational costs

Action outline	Action name	**Construction and completion of 5 new Malmö Express routes and electric bus routes**
	Action type	Technical development
	Action description	Fully electrified, prioritized rapid bus transport system for higher capacity city bus lines. Three electric bus routes will be implemented.
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure, Finance & funding
	Outcome (according to module B-1.1)	#1 Contribute to increased travel via foot, bicycle and public transport
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	City wide development of faster and higher capacity bus network in the city.
	Involved stakeholders	Partnership between city, national government, regional public transport company etc
	Comments on implementation	Under delivery, initial phases complete
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Biogas replaced with electricity
	GHG emissions reduction estimate (total) per emission source sector	Contribute to decrease of 32KT C02e from active transport measures
	Total costs and costs by CO2e unit	3410 MSEK

Action outline	Action name	**Construction of 27 km of dedicated cycle highways**
	Action type	Technical development
	Action description	Construction of dedicated cycle infrastructure in 14 projects across the city. The cycle paths will connect the parts of the city where there are a lot of people living with large workplaces,

		stations and the centre. Here it should be extra safe, secure, and fast cycling.
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	#1 Contribute to increased travel via foot, bicycle and public transport
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	New network of dedicated cycle routes developed across the city
	Involved stakeholders	City of Malmö
	Comments on implementation	Under implementation – completion 2030
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	Contribute to decrease of 32KT C02e from active transport measures
	Total costs and costs by CO2e unit	573 MSEK

Action outline	Action name	**Establishment of regional network of cycle highways, "superbike paths"**
	Action type	Technical development
	Action description	Improvements of existing routes, appr 30 km within and/or connected to the City of Malmö
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	#1 Contribute to increased travel via foot, bicycle and public transport
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	Improvements of existing network of dedicated cycle routes across the city and in connection with cities and villages in the vicinity.
	Involved stakeholders	Logistics business in the city
	Comments on implementation	Under implementation – some completed before 2027, the rest before 2033
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	Contribute to decrease of 32KT C02e from active transport measures

	Total costs and costs by CO2e unit	180 MSEK regional funding for all routes in Skåne (50% funding from municipalities)

Action outline	Action name	**Electrification and co-ordination of freight and logistics**
	Action type	Technical development
	Action description	Reducing emissions by shifting from fossil fuels to electrified trucks, as well as optimisation of logistics and load factors
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	City logistics primarily electrified
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	City-wide
	Involved stakeholders	Logistics business in the city
	Comments on implementation	Individual pilots underway
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Diesel replaced
	GHG emissions reduction estimate (total) per emission source sector	Reduced carbon dioxide emissions from transport
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Installation of 100 micromobility hubs around the entire city**
	Action type	Technical development
	Action description	The mobility hubs will provide the citizens with shared vehicles such as carpool cars, bicycles, electric scooters etc.
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure, Finance & funding
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Three pilot projects evaluated and proposal developed for scaling *Later outcomes:* # 1: 50 hubs operational
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	Streets

	Involved stakeholders	Micromobility companies, Public transport company, Parking Malmö
	Comments on implementation	Concept development for mobility hubs has started
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Decreased petrol and diesel use
	GHG emissions reduction estimate (total) per emission source sector	Contribute to decrease of 32KT C02e from active transport measures
	Total costs and costs by CO2e unit	1000 MSEK

Action outline	Action name	**Transform multi-storey car parks to mobility nodes**
	Action type	Technical development
	Action description	Develop parking services that, in addition to car parking, have room for and offers mobility services such as a carpool, bike pool, bike parking, bike workshop and more.
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure, Finance & funding
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Pilot projects evaluated and proposal developed for scaling *Later outcomes:* # 1 Mobility services available at all major transport hubs
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department, P-Malmö
	Action scale & addressed entities	Car parks all over the city
	Involved stakeholders	Parkering Malmö, Trivector, University of Lund
	Comments on implementation	Ongoing
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Decreased petrol and diesel
	GHG emissions reduction estimate (total) per emission source sector	Reduced carbon emissions from transport. Scale:TBD
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Integrated approach to climate mitigation and adaptation in streetscape**
	Action type	Governance and investment
	Action description	Mainstreaming of integrated attractive streetscape approach to promote active mobility, integrate shade and stormwater management and social and commercial and non-commercial use of public realm
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Governance & policy, Technology/infrastructure
	Outcome (according to module B-1.1)	New standards for urban streetscapes established
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	City-wide
	Involved stakeholders	City of Malmö
	Comments on implementation	Feasibility
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	N/A

Action outline	Action name	**Innovative approaches to support behavioural change resulting from infrastructure investment**
	Action type	Awareness raising
	Action description	Public awareness raising work, innovative business models and incentives to promote cycling, walking and public transport in support of infrastructure investment
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Learning & capabilities
	Outcome (according to module B-1.1)	Increased take-up and use of new bus routes, cycleways etc
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	City wide campaigns, development of business partnership approach, specific campaigns connected to new infrastructure
	Involved stakeholders	City of Malmö

	Comments on implementation	Development
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Supports wider measures
	GHG emissions reduction estimate (total) per emission source sector	Supports wider measures
	Total costs and costs by CO2e unit	18 MSEK/year

Action outline	Action name	**Mobility management package**
	Action type	Awareness raising
	Action description	Information campaigns, educational efforts, trial measures that influence the choice of transport modes and promote walking, cycling, public transport and sharing services like carpools and bicycle pools.
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	#1 Contribute to increased travel via foot, bicycle and public transport
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department
	Action scale & addressed entities	city-wide
	Involved stakeholders	City of Malmö
	Comments on implementation	Development
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Supports wider measures
	GHG emissions reduction estimate (total) per emission source sector	Supports wider measures
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Purchase emission free work machines**
	Action type	Technical development
	Action description	Purchase emission free work machines for the municipality's vehicle fleet (>3.5 tonnes)
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure

	Outcome (according to module B-1.1)	*Early/later outcomes:* Reduced carbon emissions from transport.
Implementation	Responsible bodies/person for implementation	Malmö Leasing
	Action scale & addressed entities	Concerning approximately 105 vehicles (heavy trucks, tractors, loading machines etc.)
	Involved stakeholders	
	Comments on implementation	On-going process
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Diesel, fuels for 95 heavy vehicles
	GHG emissions reduction estimate (total) per emission source sector	Reduced carbon emissions from transport. 30 KT less emissions per year in 2030
	Total costs and costs by CO2e unit	105 MSEK in additional costs

Action outline	Action name	**Purchase emission free vehicles for the City of Malmö**
	Action type	Technical development
	Action description	Purchase emission free vehicles for the municipality's vehicle fleet (<3.5 tonnes)
Reference to impact pathway	Field of action	Mobility
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early/later outcomes:* Reduced carbon emissions from transport.
Implementation	Responsible bodies/person for implementation	Malmö Leasing
	Action scale & addressed entities	Concerning approximately 1000 vehicles (cars, minibuses, minivans)
	Involved stakeholders	
	Comments on implementation	Vehicles will be replaced within 10 years
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Diesel for 131 vehicles, gas for 884 vehicles
	GHG emissions reduction estimate (total) per emission source sector	Reduced carbon emissions from transport.
	Total costs and costs by CO2e unit	200 MSEK in additional costs

Action outline	Action name	**Method development**
	Action type	Policy, management & governance, digital solution

	Action description	This action includes synchronizing, applying and evaluation of climate calculation models
Reference to impact pathway	Field of action	Climate-neutral building
	Systemic lever	Technology/infrastructure, Governance & policy
	Outcome (according to module B-1.1)	Streamlined governance to facilitate climate-neutral building
Implementation	Responsible bodies/person for implementation	City of Malmö technical departments
	Action scale & addressed entities	Internal governance system as base for development
	Involved stakeholders	
	Comments on implementation	Under development
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	N/A

Action outline	Action name	**Repurpose existing buildings and create shared use concepts for efficient property use**
	Action type	Policy, business development
	Action description	1) Increase knowledge on preservation of existing buildings through interdisciplinary co-operation, 2) Increase the authority to make trade-offs between different interests and 3) Increase shared use of premises and develop premises supply process
Reference to impact pathway	Field of action	Climate-neutral building
	Systemic lever	Governance & policy, Learning & capabilities
	Outcome (according to module B-1.1)	*Early outcomes:* # 1. Process for analysis of repurposing potential. # 2. Shared use pilot projects initiated *Later outcomes:* # 1. Shared use contracts trialed and scaled
Implementation	Responsible bodies/person for implementation	City of Malmö, Service Department
	Action scale & addressed entities	Buildings

	Involved stakeholders	Real estate industry, real estate owners, Boverket (the Swedish National Board of Housing, Building and Planning)
	Comments on implementation	On-going
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	9.6 MSEK/year in operational costs

Action outline	Action name	**Circular and resource efficient building**
	Action type	Policy/strategy, business development
	Action description	1) Establish an internal recycling operation in the city 2) Create open database for recycled materials in the construction sector. 3) Develop a mass management strategy 4) Improve client competence in the city for procurement of alternative materials and products 5) Improve efficiency of land use and increase joint use of premises
Reference to impact pathway	Field of action	Climate-neutral building
	Systemic lever	Governance & policy, Finance & funding
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Concept development for scaling of building materials recycling # 2 Concept for sector circularity database developed *Late outcomes:* # 1 Implementation of building materials recycling centre # 2 Pilot of sector circularity database evaluated
Implementation	Responsible bodies/person for implementation	City of Malmö technical departments
	Action scale & addressed entities	Buildings
	Involved stakeholders	LFM30
	Comments on implementation	Actions will be initiated 2023–2024.
Impact & cost	Generated renewable energy (if applicable)	N/A

	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	17 MSEK

Action outline	Action name	**Carbon capture and compensation**
	Action type	Technology/infrastructure, policy/strategy
	Action description	1) Participate in developing and implementing compensation strategy 2) Establish more carbon sinks and increase the proportion of green areas 3) Identify areas for carbon sinks and preserve existing carbon sinks
Reference to impact pathway	Field of action	Climate-neutral building
	Systemic lever	Technology/infrastructure, Finance & funding
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Strategy for compensation developed – prioritised carbon sinks, legal aspects, pilot projects on purchase of negative emissions # 2-3) TBD, work in progress *Later outcomes:* TBD, work in progress
Implementation	Responsible bodies/person for implementation	City of Malmö Property Management Department and Streets and Parks Department, and Planning Office
	Action scale & addressed entities	Green structures/areas
	Involved stakeholders	Real property owners, real property managers
	Comments on implementation	Actions will start in 2024
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	1) N/A 2) work in progress, theoretical maximum 1100 KT 2030 3) N/A
	Total costs and costs by CO2e unit	N/A

Action outline	Action name	**Enabling urban development process**
	Action type	Policy/strategy, digital solution

	Action description	1) Standardise and apply climate calculations at detailed plan level, 2) Develop and apply requirements for climate neutrality in land transactions, 3) Introduce requirements for re-use inventory before demolition permit and 4) Establish forum for handling policy conflicts and enforcement
Reference to impact pathway	Field of action	Climate-neutral building
	Systemic lever	Technology/infrastructure, Governance & policy
	Outcome (according to module B-1.1)	*Early outcomes:* # *1* Climate neutrality integrated into urban development practice on trial basis *Later outcomes:* # 1 Climate neutrality fully integrated into local policy and influencing national policy
Implementation	Responsible bodies/person for implementation	City of Malmö City Planning Office, Property Management Department and Streets and Parks Department
	Action scale & addressed entities	City-wide
	Involved stakeholders	Building and construction companies
	Comments on implementation	Survey on climate calculations in detail development plans is ongoing
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A emissions reduction will emerge when recycled material will be used
	Total costs and costs by CO2e unit	17 MSEK in operational costs

Action outline	Action name	**Organisational learning & competence**
	Action type	Business development, competence development and communication
	Action description	1) Develop a plan for competence provision and 2) Increase competence and learning within the transition area throughout the organisation, exchange knowledge with other municipalities and regions
Reference to impact pathway	Field of action	Climate-neutral building
	Systemic lever	Learning & capabilities
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Training programme developed and trialed

		Later outcomes: # 1 Training programme fully developed and mainstreamed
Implementation	Responsible bodies/person for implementation	City of Malmö technical departments
	Action scale & addressed entities	Internal processes
	Involved stakeholders	City of Malmö deparments, other municipalities and regions, real estate industry and initiatives like LFM30
	Comments on implementation	Ongoing, a more detailed plan will be ready in 2024.
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	30 MSEK/year

Action outline	Action name	**Develop a regional resource hub**
	Action type	Concept development preparing for technical development
	Action description	Identification of local partnerships to support development of local hub as part of national initiative under concept design by RISE
Reference to impact pathway	Field of action	Circular economy
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Concept for local hub in national network developed *Later outcomes:* # 1 Pilot local hub in operation
Implementation	Responsible bodies/person for implementation	City of Malmö, Environment Dept, RISE
	Action scale & addressed entities	Regional part of national system
	Involved stakeholders	City of Malmö, RISE, SYSAV, universities, SME (small and medium-sized enterprises), system owners (VA Syd, E.ON, waste companies) etc
	Comments on implementation	Concept development is ongoing
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD

	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	Appr. 900 000 SEK for prestudy
Action outline	Action name	**Development innovative procurement processes to support circular business**
	Action type	Technical development
	Action description	See Net Zero Organisation
Reference to impact pathway	Field of action	Circular economy
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	
Implementation	Responsible bodies/person for implementation	
	Action scale & addressed entities	
	Involved stakeholders	
	Comments on implementation	
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	
	Total costs and costs by CO2e unit	

Action outline	Action name	**Influence national development of incentives**
	Action type	Technical development
	Action description	Includes cooperation with Viable Cities partners and Centre for Industrial symbiosis.
Reference to impact pathway	Field of action	Circular economy
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	National action to support circular economy development at scale
Implementation	Responsible bodies/person for implementation	City of Malmö
	Action scale & addressed entities	Lobbying alliances at national level
	Involved stakeholders	Viable cities, Centre for Industrial symbiosis
	Comments on implementation	Early stage
Impact & cost	Generated renewable energy (if applicable)	N/A

	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	Implement **full scale textiles separation for recycling**
	Action type	Technical development
	Action description	Larger scale collection of textiles for re-use or recycling building on pilot SIPTEX plant
Reference to impact pathway	Field of action	Circular economy
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # 1 Upscaling of pilot textiles collection and separation *Later outcomes:* # 1 Full scale textiles separation for recycling # 2 Textiles removed from incineration and fibres recovered
Implementation	Responsible bodies/person for implementation	SYSAV
	Action scale & addressed entities	Buildings, recycling process
	Involved stakeholders	City of Malmö
	Comments on implementation	Pilot project fully operational
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	TBD

Action outline	Action name	**Implement full scale plastic separation for recycling**
	Action type	Technical development
	Action description	Post-collection mechanised separation of fossil-based plastics for recycling – *see details under Heating*
Reference to impact pathway	Field of action	Circular economy
	Systemic lever	Technology/infrastructure

	Outcome (according to module B-1.1)	Oil-based plastics removed from energy system and used for materials recovery
Implementation	Responsible bodies/person for implementation	SYSAV
	Action scale & addressed entities	Buildings, recycling process
	Involved stakeholders	City of Malmö
	Comments on implementation	Feasibility
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	Fossil-based plastics removed (43% feed by weight for waste-to-energy)
	GHG emissions reduction estimate (total) per emission source sector	104KT C02e
	Total costs and costs by CO2e unit	400-500MSEK

Action outline	Action name	**Resource mapping of material flows**
	Action type	Analysis & calculations
	Action description	Resource mapping of a few thematic areas, such as textile, food, IT/digital hardware
Reference to impact pathway	Field of action	Circular economy
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	Overview of waste and resource flows in city and region
Implementation	Responsible bodies/person for implementation	City of Malmö, Environment Dept
	Action scale & addressed entities	City-wide and regional
	Involved stakeholders	Recycling industry, business partners
	Comments on implementation	Initiated
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	Appr. 700 000 SEK for initial work

Action outline	Action name	**Design of support systems and services for low carbon lifestyles**
	Action type	Method development

	Action description	1) Development of lifestyle tool for raising knowledge and inspiration for behavioural change, implementation partnerships on thematic areas such as food, fashion, travel. 2) Neighbourhood based sustainable action programme.
Reference to impact pathway	Field of action	Low carbon consumption
	Systemic lever	Democracy/participation, Technology/infrastructure
	Outcome (according to module B-1.1)	*Early outcomes:* # 1. First thematic partnership in place. # 2. First three neighbourhood partnerships in place *Later outcomes:* # 1. Three thematic partnerships in place. # 2. Five neighbourhood partnerships in place
Implementation	Responsible bodies/person for implementation	City of Malmö Environment Dept
	Action scale & addressed entities	City-wide
	Involved stakeholders	Property companies, local NGOs
	Comments on implementation	Concept development
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	16 MSEK/year in operational costs

Action outline	Action name	**Net Zero Public Procurement**
	Action type	Policy development
	Action description	1) Analysis of procurement and planned coming procurement to identify key areas with high climate impact, large volume and potential for change. 2) Implement Net Zero requirements on a pilot basis to identify challenges and learning needs. 3) Develop criteria and evaluation methods for different procurement types, particular focus on circular products and services. 4) Consider innovation procurement models to shift market or open for innovative solutions.
	Field of action	Net Zero Organisation

Reference to impact pathway	Systemic lever	Governance & policy, Finance & funding
	Outcome (according to module B-1.1)	*Early outcomes:* # 1. Priority procurement identified and baseline specification developed and tested on 3 major procurements *Later outcomes:* # 1. First innovation procurement in place. Climate neutral procurement in place for all major procurement exercises
Implementation	Responsible bodies/person for implementation	City of Malmö
	Action scale & addressed entities	To be applied on all procurement by City of Malmö and extended to city-owned companies
	Involved stakeholders	City of Malmö and city-owned enterprises
	Comments on implementation	Under development
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	TBD
	GHG emissions reduction estimate (total) per emission source sector	TBD
	Total costs and costs by CO2e unit	12 MSEK/year in operational costs

Action outline	Action name	**Development and management**
	Action type	Management
	Action description	Develop and co-ordinate activity with key partners and city departments
Reference to impact pathway	Field of action	Cross cutting management
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	*Smooth and collaborative partnership, operations and co-ordination between key stakeholders in climate transition process*
Implementation	Responsible bodies/person for implementation	City of Malmö
	Action scale & addressed entities	Key internal and external stakeholders in the climate transition
	Involved stakeholders	City of Malmö
	Comments on implementation	Demands action focussed network collaboration to develop dynamic working relationship with light-touch coordination
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A

	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	79.6 MSEK/year for all transition areas, where 30 MSEK is allocated to Climate Neutral building, 16 MSEK to Mobility.

Action outline	Action name	**Climate Transition Roadmap co-ordination**
	Action type	Management
	Action description	Central management of the climate transition process, strategic co-ordination within city, reporting to senior management and politicians, co-ordinating transition areas
Reference to impact pathway	Field of action	Cross cutting management?
	Systemic lever	Governance & policy
	Outcome (according to module B-1.1)	*Well co-ordinated roadmaps and strong support from city leadership*
Implementation	Responsible bodies/person for implementation	City of Malmö
	Action scale & addressed entities	Internal operations within the city of Malmö and strategic overview of wider transition process
	Involved stakeholders	City of Malmö
	Comments on implementation	Demanding role that needs strong action focus and ability to break hierarchical and administrative inertia
Impact & cost	Generated renewable energy (if applicable)	N/A
	Removed/substituted energy, volume or fuel type	N/A
	GHG emissions reduction estimate (total) per emission source sector	N/A
	Total costs and costs by CO2e unit	14 MSEK/year for all transition areas, distributed on 2 MSEK/area

B-2.3: Summary strategy for residual emissions

Planning is currently underway to consider approaches to dealing with residual emissions. This is based on both the potential of carbon sequestration in soils and carbon capture and storage at the main emission point in the city – the SYSAV waste-to-energy plant. Studies that have been carried out demonstrate that with both measures in place, there is the potential for Malmö to become climate positive, by sequestering and capturing more carbon than emitted. Both elements of addressing residual emissions are currently under development.

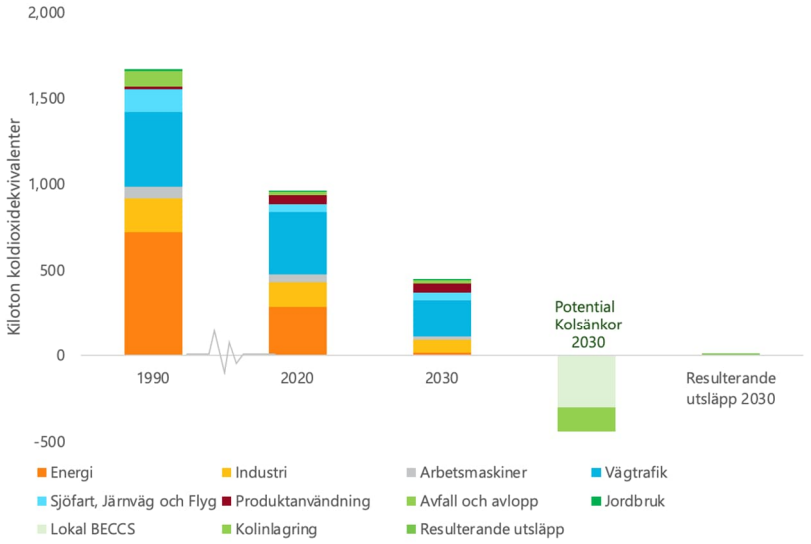
The city has been experimenting with biochar in a number of different municipal applications and has been a partner in the main biochar innovation and development project in the country that is

demonstrating a significant potential, but challenges with supplying sufficient volumes at realistic prices.

SYSAV is exploring options and has carried out feasibility studies into CCS. The estimated CCS sink is roughly 120KT CO2e. The BECCS sink is estimated to be roughly 420KT CO2e. Combined resulting in captured emissions of approximately 540KT CO2e per year. This number will fluctuate depending on if it is a cold or warm winter as the district heat need is reliant on temperature. SYSAV has established a project organisation for CCS implementation. It is currently exploring technical solutions, innovations business models, ownership, governance and business model issues related to the sales of negative emissions etc.

Note that the total volume of negative emissions in Malmö can be higher depending on if the new biobased district heating plant that is under planning process will have BECCS installed or not.

Emissions development scenarios with carbon capture and storage and sequestration



An investigation carried out by the research institute RISE on behalf of the Environment Agency, identifies two areas of action that could increase carbon storage in the city of Malmö by 2030. The greatest opportunity to create negative emissions is by using bio-based materials in new housing construction. Wood or other bio-based materials give rise to carbon sequestration, while at the same time there is regrowth through annual carbon sequestration in sustainable forestry or regrowth of other bio-based material. Within housing construction, there are several components that show great potentials for local carbon storage such as the importance of preserving existing wooden buildings, allowing wooden buildings to form an increasingly large part of new construction, and using renewable materials in extensions and renovation. In addition, reuse and recycling and pyrolysis for biochar is a way to further extend the carbon sink. There is solid knowledge in timber construction; an increase in renewable materials is not expected to create a large cost increase compared to other materials.The analysis shows that by 2030 there is potential to increase carbon storage for the sector by approx. 460 KT CO2e. When we calculated the carbon storage potential for 2122, with the assumption that the rate of new construction continues to the same extent as 2022–2030, the storage potential is about 750 KT CO2e, but the uncertainty about the future rate of new construction is naturally large. In the calculation, it has been assumed that half the stock of existing housing has been demolished in 2122 and the biogenic carbon has returned to the atmosphere as CO2.

The second largest potential for increasing carbon sinks is found in agricultural crop cultivation, where the carbon sink consists of increasing the carbon stock with biochar and increasing the annual carbon storage by raising the soil's humus content. By 2030, there is a potential to increase the carbon sink by 366 KT CO2e. It would require that all the farmed land in the municipality receive an application of 20 tonnes of biochar/hectare by 2030. The measure is expected to provide higher yields in the long run through an increased water retention capacity with better soil structure and lower leaching of plant nutrients. Currently, it is expensive to buy in biochar and investment in production is recommended in order to maximise the use of biochar and thereby achieve a large carbon storage.

An increased production of biochar with local residual products would provide the opportunity for large carbon sinks at a lower price. To reach the potential, measures in cultivation technology are also required to increase the soil's annual carbon storage, which is a slow process that has a large effect in the longer term. The changes mainly consist of a more varied crop rotation that includes perennial fallow, intermediate and catch crops after the main crop, cultivation of more nitrogen-fixing legumes, increased use of humus-rich manures and reduced tillage. There is knowledge of the advantages of a varied farming system, but there also needs to be financial incentives, for example compensation for carbon storage, to justify changing the farming system.

Through a changed plant cultivation technique that builds soils and using 20 tonnes of biochar/hectare, the carbon sink can be increased to 1 518 KT CO2e by 2130. The analysis shows that the combined potential for increased carbon storage through measures within the various categories has the potential to store just under 1 000 KT CO2e to 2030, compared to 2022. The time period is short, and it requires major efforts from the city of Malmö to increase the carbon storage to this amount every year. At the same time, emissions must drop every year to reach the goals that the City of Malmö has set.

1.3 Module B-3 Indicators for Monitoring, Evaluation and Learning

Module B-3 “Indicators for Monitoring, Evaluation and Learning” should contain a selection of indicators taken from the Comprehensive Indicator Sets developed by NZC. The following should be provided: An overview table listing the indicators selected per outcome and impact including targets and evaluation points (B-3.1); and a metadata table for each indicator selected, as specified in the Comprehensive Indicator Sets (B-3.2).

B-3.1: Impact Pathways

Outcomes/ impacts addressed	Action/ project	**Indicator No.** (unique identified)	Indicator name		Target values		
					2025	2027	2030
Increased local production of renewable electricity	Increase solar and wind production	01.01	% of the municipality's electricity use		20%	30%	46%
Balanced electrical system, Development	Establish energy storage capacity	01.04	Installed storage capacity gWh		TBD	TBD	TBD

strategy for energy storage adopted							
More circular waste/resource management, System ready to be installed and tested	Separation of plastics to remove fossil oil based plastic from energy recovery system	02.09	% oil-based plastics as fuel (by weight) in waste-to-energy plant		43%	43%	0%
Climate positive outcomes, procurement completed	Carbon Capture and Storage on waste-to-energy plant	02.10	Kilotonnes C02e captured		0	TBD	412KT
Increase renewable fuel	Secure supply of renewable fuel for district heating system	02.11	Tonnes biofuel replacing plastics		0	0	X tonnes or 100% of oil-based plastics replaced
Lower number of properties using gas	Expand coverage of district heating system	02.12	Number of properties switching from gas to DHS		0	TBD	TBD
90% of the busses electrified – noise reduction, less operational costs, higher efficiency	Electrification of bus fleet	03.16	Number of electric busses in the city bus fleet		150	180	210
Reduced carbon dioxide emissions from transport, contribute to increased travel via foot, bicycle and public transport	Construction and completion of 5 new Malmö Express routes	03.17	Number of completed express routes		0	3	5
	Construction of 27 km of dedicated cycle highways	03.18	Completed cycle projects		0	8	14
	Establishment of regional network of cycle highways, “superbike paths”	03.19	Completed cycle projects/km improved paths		0	18 km	Appr. 30 km
	Installation of 100 micromobility hubs around the entire city	03.21	Number of installed micromobility hubs		25 hubs	50 hubs	100 hubs
	Transform multi-storey car parks to mobility nodes	03.22	Number of transformed multi-storey car parks		1	5	10 car parks transformed
	Purchase emission free work machines	03.26	% electric work machines		1%	60%	100% electric work machines
Reduced carbon dioxide	Purchase emission free	03.27	% electric vehicles		11%	65%	100% electric

emissions from transport, improved air quality Increased efficient property use	vehicles for the City of Malmö						vehicles in 2030
	Repurpose existing buildings and create shared use concepts for efficient property use	04.31a	Number buildings repurposed		TBD	TBD	TBD
		04.31b	Number shared use contracts		TBD	TBD	TBD
Increased resource efficient building	Circular and resource efficient building	04.32	% recycled materials in the constructions		TBD	TBD	TBD
Lower consumption-based emissions	Method development and collaboration to work with consumption-based emissions in order to give Malmö residents better conditions for adopting sustainable lifestyles	06.45	Consumption-based GHG-emissions per person per year		TBD	TBD	3.1 tonnes per person per year
Climate neutral procurement in place for all major procurement exercises	Net Zero Procurement	07.48	C02e savings per MSEK		TBD	TBD	TBD

B-3.2: Indicator Metadata	
Indicator Name	**% of the municipality's electricity use**
Indicator Unit	%
Indicator ID	01.01
Definition	Electricity supply from solar and wind power
Calculation	Effect from installed solar and wind projects related to the use of electricity by the city of Malmö
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Electricity
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits # 1 Increased energy balance

	# 2 Renewable electricity leads to lower electricity prices and financial savings # 3 Local renewable electricity supply frees up capacity for new industries and creates jobs
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1 Electricity supply
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	Roadmap electricity supply
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	GWh installed solar and wind energy
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	**% oil-based plastics as fuel (by weight) in waste-to-energy plant**
Indicator Unit	%
Indicator ID	02.09
Definition	See above
Calculation	See above
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Heating
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits # 1 Potential income generation through plastics sales, potential new jobs. # 2 More circular waste/resource management
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1 Heating
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	

Expected data source	Roadmap heating
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	**Kilotonnes C02e captured**
Indicator Unit	KT CO2e
Indicator ID	02.10
Definition	KT captured from CCS on waste-to-energy plant
Calculation	measurement
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Heating
Does the indicator measure indirect impacts (i.e. co- benefits)?	No
If yes, which co-benefit does it measure?	Co-Benefits
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1 Heating
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Roadmap heating
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Implemented Carbon Capture and Storage on waste-to-energy plant
Other indicator systems using this indicator	TDB

Indicator Metadata 03.16	
Indicator Name	**Number of electric busses in the city bus fleet**
Indicator Unit	Number
Indicator ID	03.16
Definition	Electrification of Malmö's bus fleet
Calculation	see above
Indicator Context	

Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Transport
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits: Decrease of noise, less operational costs, higher efficiency
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to - according to Module B-1 Mobility
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Skånetrafiken
Expected availability	Data available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Procured and implemented electric busses
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	**Number of completed express routes**
Indicator Unit	Number
Indicator ID	03.17
Definition	Construction and completion of 5 new Malmö Express routes
Calculation	Number of completed express routes
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Transport
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits: Increased accessibility to public transport
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1 Mobility

Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Storstadspaketet, Roadmap mobility
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Completed bus routes
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	**Number of completed cycle projects**
Indicator Unit	Number
Indicator ID	03.18
Definition	Construction of 27 km dedicated cycle highways, in 14 projects
Calculation	14 projects
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Transportation
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits: Improved public health
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1: Mobility
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Roadmap mobility
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Completed cycle routes
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	Completed cycle projects/km improved paths
Indicator Unit	km
Indicator ID	03.19

Definition	Establishment of regional cycle network “superbike paths”
Calculation	Planned routes connected to Malmö according to Region Skåne
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Transportation
Does the indicator measure indirect impacts (i.e. co- benefits)?	yes
If yes, which co-benefit does it measure?	Co-Benefits: Improved public health
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1: Mobility
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Roadmap mobility, Region Skåne regional cycle highways
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Completed cycle projects/km improved paths
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	**Number of installed micromobility hubs**
Indicator Unit	Number
Indicator ID	03.21
Definition	Installed micromobility hubs
Calculation	See above
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	No
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Transportation
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-benefits: Improved public health
Can the indicator be used for monitoring impact pathways?	Yes

If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1: Mobility
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Roadmap mobility
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Infrastructure for micromobility and carpools
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	% electric work machines
Indicator Unit	%
Indicator ID	03.26
Definition	Purchase of emission free work machines for the City of Malmö
Calculation	Number of work machines currently running on diesel and other fuels except electricity
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1 Transportation
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits: Improved air quality
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1 Mobility
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Statistics from Malmö Leasing
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Purchased electrical work machines
Other indicator systems using this indicator	TDB

Indicator Metadata	
Indicator Name	% electric vehicles
Indicator Unit	%

Indicator ID	03.27
Definition	Purchase of emission free vehicles for the City of Malmö
Calculation	Number of vehicles currently running on diesel and other fuels except electricity
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1: Transportation
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits: Improved air quality
Can the indicator be used for monitoring impact pathways?	Yes
If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1: Mobility
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	No
Data requirements	
Expected data source	Statistics from Malmö Leasing
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	Purchased electrical vehicles
Other indicator systems using this indicator	No

Indicator Metadata	
Indicator Name	Consumption-based GHG-emissions per person per year
Indicator Unit	GHG-emissions per person per year
Indicator ID	06.45
Definition	Method development and collaboration to work with consumption-based emissions
Calculation	National data
Indicator Context	
Does the indicator measure direct impacts (i.e. reduction in greenhouse gas emissions?)	Yes
If yes, which emission source sectors does it impact?	Fields of action according to GHG inventory format – Module A-1
Does the indicator measure indirect impacts (i.e. co- benefits)?	Yes
If yes, which co-benefit does it measure?	Co-Benefits: Mobilising partners and communities
Can the indicator be used for monitoring impact pathways?	Yes

If yes, which NZC impact pathway is it relevant for?	Impact Pathways according to Module B-1 Low-carbon consumption
Is the indicator captured by the existing CDP/ SCIS/ Covenant of Mayors platforms?	Yes
Data requirements	
Expected data source	National emissions data
Expected availability	Easily available
Suggested collection interval	Annually
References	
Deliverables describing the indicator	TBC
Other indicator systems using this indicator	No

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Action Plan

2030 Climate Neutrality Action Plan of Malmö

City of Malmö

NetZeroCities has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

1 Part C – Enabling Climate Neutrality by 2030

Part C "Enabling Climate Neutrality by 2030" aims to outline any enabling interventions, i.e. with regard to organizational setting or collaborative governance models, or related to social innovations – designed to support and enable the climate action portfolios described in Module B-2 as well as aiming to achieve co-benefits outlined in the impact pathway (Module B-1).

1.1 Module C-1 Organisational and Governance Innovation Interventions

Module C-1 "Organisational and Governance Innovation Interventions" consists of a summary table, listing organizational and governance interventions and describing their impact (C-1.1) and a section for more detailed descriptions and comments (C-1.2).

C.1.1: Enabling organisational and governance interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
(indicate name of intervention)	(describe the substance of the intervention)	(indicate responsible)	(list all stakeholder involved and affected)	(describe how intervention enables climate neutrality)	(indicate how intervention helps achieve impact listed in Module B-1)
Climate Transition Malmö organisation	Cross departmental organisation to drive transition across local government departments	Environment Department	City of Malmö technical departments in primary role, other departments and public companies in secondary role	Shared strategic leadership and management to identify issues, prioritise resources and deliver change	…
Climate Contract Business	Open partnership with business community to co-operate on reaching climate transition target	Co-ordinated by Environment Department	Open for participation for businesses working towards climate neutrality in Malmö 2030	Facilitates a mobilisation and increased collaboration B2B and B2C	
Open Academy	Partnership with local universities and other Net Zero Cities in region	University of Lund	Cities of Helsingborg and Lund, Region Skåne, Skånetrfiken, Lund University, Agricultural University,	Arena for exchange between research and practice to accelerate transition and learn from experience for	

			Malmö University	the benefit of others	
Viable Cities	National collaboration platform between cities, government agencies and academia	Co-ordinated by KTH University, Stockholm	23 cities committed to climate neutrality 2030, 6 national government agencies, other partners	Arena for national mobilisation, exchange and development to meet 2030 target	

C-1.2: Description of organisation and governance interventions – textual and visual elements

Governance and organisation

Climate Transition Malmö is based on the Environmental Program's politically adopted goals, the municipality's budget goals, commitments in the national climate contract with the Viable Cities platform, and the EU's Missions for sustainable and sustainable cities. The overall goal is for Malmö to be climate neutral by 2030 and more resilient to climate change. Reporting back to the political leadership takes place partly through the respective committee or board of the municipal companies, and partly directly to the political leadership via Climate Work Malmö's civil servant organisation.

Supervision takes place through a commission group consisting of the directors of the technical departments. The operational work is coordinated by a process management team in the Environmental Department, and a number of people in various municipal departments are responsible for the thematic areas. The transition work is organised into seven thematic areas; climate adaptation work, which currently has three thematic areas, is being development parallelly.

A common work process is applied in the thematic areas where an analysis of the current situation is carried out, key actors are identified and invited to develop roadmaps and investment plans. These key players come from various municipal departments, municipal companies, private companies or other organisations. The roadmaps identify which efforts are required of which actors to reach the 2030 climate neutrality target. These efforts can include extensive physical investments as well as advocacy or the development of new business models.

Work is currently underway on the development of partnerships and roadmaps in the thematic areas. Municipal departments, municipal companies, companies and other actors are then responsible for allocating resources for the implementation or for identifying needs, funding opportunities and business models for the implementation. The strong link between the directors of the commissioning group and the political leadership creates an arena for integrated work at management level that connects the city to its partner organisations in a cross-sectoral governance model.

The Climate Transition team has an overview of the whole process and the synergies, interdependencies and overlaps between roadmap processes. Challenges and solutions can therefore be escalated at a strategic level to maximise delivery potential within the roadmap processes.

This process is exemplified through the thematic area Climate Neutral Building. Here, Climate Transition Malmö's process and structure are linked with the industry initiative LFM30 to bring about a climate-neutral construction and civil engineering sector in Malmö by 2030. In this, the City of Malmö has a strategic role in relation to LFM30's development, as well as an operational role as an important construction and civil engineering player, as well as a landowner. Climate Transition Malmö has one coordinator for the strategic cooperation and another coordinator for the internal work on climate-neutral construction. The internal work brings together actors from several municipal administrations who together develop the City of Malmö's internal roadmap for climate-neutral construction, which supports the partnership's overall goals.

In parallel with the roadmap work, initiatives and tools are being developed for broader mobilisation and involvement of other actors in business, civil society, academia and with the residents of Malmö. Climate Contract Malmö has been the first initiative where companies and universities have been invited to in-depth collaboration with the City of Malmö. A similar initiative has been launched to make it easier for civil society in Malmö to get involved. Prerequisites are investigated for local development work where thematic issues meet local needs and conditions that vary across the city. This can create an everyday opportunity for co-creative processes with citizens and an opportunity to gain citizen

perspectives that contribute to the design of central solutions that meet both the climate goals and people's everyday needs.

The planned work involves active citizen dialogue and co-creation to create a deeper understanding of local challenges, opportunities and driving forces as well as to support local initiatives that contribute to climate work. The city is developing a pilot programme for neighbourhood level climate work as a way to engage with communities and support local priorities and needs and facilitate local co-creation processes. The strategic thematic work at city-wide level can thus contribute to important knowledge about how solutions and priorities may need to be adapted at local level to meet local needs and conditions. This is done through administrative and cross-sectoral cooperation and is usually based on ongoing processes and arenas. In this way, Climate Transition Malmö aims to contribute to increased quality of life for the least well-off who usually have the lowest climate impact, and at the same time contribute to maintained quality of life for the more well-off who usually have the highest climate impact. This will be an important component of an equal and just transition process.

An internal communication network is coordinated by the Environmental Department to ensure clear internal communication within and between the municipal departments. The internal network is established and well-functioning. In parallel with this, work is underway to design external communication adapted to target groups. Within the thematic areas, some communication is under way in cross-organisational cooperation on the roadmaps and their implementation. This is complemented by broader communication efforts to climate contract actors, the business community and residents of Malmö. This is done through existing channels that are relevant to the purpose (for example, many companies can be reached through cooperation with Business Office's network) or developed specifically based on needs.

Sectoral coordination

The logic of change in Climate work Malmö is based on an iterative process that includes basic analyses and co-creation based on the following parts,

1. A clear and common goal
2. A general analysis and categorisation of Malmö's emissions and adaptation needs
3. Analyses of the current situations in each thematic area with input from key stakeholders
4. Development of draft roadmaps together with key stakeholders
5. Anchoring of roadmaps with broader stakeholder group
6. Development of investment plans and co-benefit plans
7. Implementation of measures
8. Evaluation, learning and feedback
9. Possible revision of the roadmaps as a result
10. Dissemination of knowledge within and outside Malmö

Together, the roadmaps contain a comprehensive portfolio of actions owned and operated by various municipal administrations, municipal companies, businesses, as well as civil society and academia. The sum of these measures will ensure that the 2030 climate transition and adaptation goals are achieved, and that the partnership can also continue to work beyond 2030 with a focus on consumption and adaptation issues.

The analysis of the current situation and the roadmap work highlight challenges that need to be addressed. These may be of a technical, financial or legal nature and need to be addressed to enable implementation. Examples of issues identified include challenges with quality assurance of circular

products in the construction industry that hinder their use, or legal uncertainties regarding responsibility and authority regarding climate adaptation. Some of these issues are highlighted as special priority initiatives within the Strategy for Sustainable Development – Climate Work Malmö, where there may be opportunities to establish collaborative processes between municipalities, market actors and national authorities to investigate solutions that are possible within existing legal frameworks, and what requires clarification or changes in regulations.

The constellation of actors in climate work varies between the thematic areas. In some areas, there are a few players with abundant resources, while in other areas there are many actors with little resources. In the area of heating, for example, most of the emissions originate from SYSAV's operations. In this case, SYSAV and the City of Malmö are working closely together to identify solutions for emissions with a focus on removing fossil-based plastics from combustion and installing CCS (carbon capture). When it comes to consumption issues, on the other hand, there is no single player with great resourcefulness. Instead, this requires partnership-building work with, for example, food retailers, retail as well as non-profit associations, as well as communication and dialogue processes with Malmö residents.

Some of the roadmap processes are at an early stage of development, while others have a different degree of maturity. The work on the roadmap for mobility takes place in connection with the update of Malmö's transport and mobility plan. The roadmaps for heating and electricity supply are now available as drafts. while the process of circular economy is still in early stage. The goal is for all transition areas to have a first version of the roadmap ready before the end of 2023.

Climate Transition Malmö is developing broad mobilisations in other areas to support actors with greater resources to work together to move the market in other sectors towards climate-neutral economy.

Another important part of the process is to identify synergies between actors and the thematic areas in order to maximise the overall benefit of the change process. This is done in collaboration with the key players in the roadmap process, and through Climate Transition Malmö's process management, which has an important role in linking together the different, and sometimes overlapping thematic areas. There are strong links between, for example, the thematic areas of climate-neutral construction and the circular economy, electricity supply and heating, as well as climate adaptation. The role of the process management will be to ensure integrated work between the thematic areas to maximize synergies and avoid parallel processes.

Work has also begun to identify other social or economic effects and include measures to ensure that desired effects are achieved, and undesirable effects do not occur. With support from FORMAS, the City of Malmö and Malmö University are currently collaborating to investigate socio-economic effects of local climate work at district level. Collaborative design processes with Malmö residents and interest groups can contribute to the design of mobility solutions that are adapted to different local conditions in different parts of the city and ensure more equal access to mobility. It may also entail the integration of community safety measures and create an opportunity to introduce climate adaptation measures in a wider supporting process for active mobility. Dialogue, communication and collaborative design thus become important components of the strategy to contribute to an equal and just transition in accordance with Malmö's political goals.

The strategy also includes measures to maximise the business development potential of the transition. The climate issue is already an active component in several of the city's profile areas, where future food and digitalisation both have strong links to climate work. The strategy will work to promote climate and societal benefits in business development through investments in clusters and

innovation environments for SMEs, and prioritises support measures for companies in the city to increase their climate efficiency, minimise waste, develop circular services, etc. The goal is to help companies transform their existing operations by reducing their climate impact, but also to equip them to become part of the solution in tomorrow's climate-neutral market. Climate Contract Malmö is one of the tools already developed for mobilising the business community and Malmö is in the process of developing a start-up district in the district Nyhamnen (new harbour) with climate transition as one of the key focus areas.

Monitoring and evaluation

The ambitious climate goals and the short implementation time require an agile and flexible way of working in order to quickly measure and follow the movement through technical follow-up and lessons learned to quickly adapt the work accordingly.

Technical monitoring takes place annually at the city-wide level in connection with environmental status reports. This data is based on reported data, statistics and measurements of greenhouse gas emissions, purchases and other important parameters in Malmö. Indicators in each project implemented under the strategy will be able to be monitored on a quarterly basis to ensure that the project-specific objectives are met. For some actions, this can provide directly measurable impact even in city-wide greenhouse gas emissions data. Other actions will have a more facilitating function and will be more difficult to clearly show effect relationships through central emission monitoring but can be followed up against the project-specific theory of change. This means that a combination of quantitative and qualitative indicators is needed to ensure a clear follow-up of the project's goal fulfillment.

During the start-up phase of Climate Transition Malmö, the ERUF-funded project RASK has contributed to follow-up and learning processes. RASK has developed and tested tools and methods for evaluation and learning and has developed a simple structure for how follow-ups and learnings are integrated into climate work. These recommendations will be processed by Climate Transition Malmö's commission group in the autumn of 2023 and are expected to form the basis for the continued work on learning and follow-up. At the same time, the learning process is also an agile process that will be developed during the program period.

The basic structure is based on the following principles,

1. The commission group requires that departments and partners continuously integrate results of follow-up is into their ordinary work and reports back at least twice a year
2. Situation-specific forums for learning, knowledge transfer and dialogue are developed
3. Learning sessions are built into each roadmap process to promote individual and collective reflection and discussion of challenges, solutions, lessons learned and dissemination
4. Tools and methods are used and developed to promote learning and changes in work as a result
5. The method is re-evaluated annually to adopt new perspectives that are developed based on the follow-up and learning work

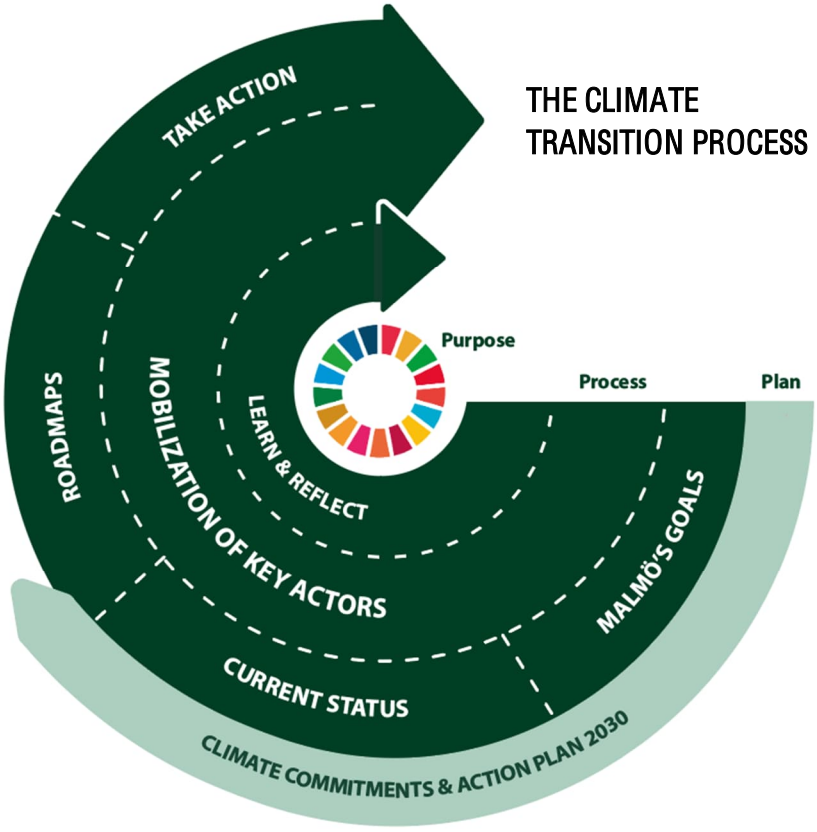
An important function that is integrated into the work is knowledge sharing and dissemination both within Malmö as well as nationally and internationally. Viable Cities and the EU's mission work for climate adaptation and climate adaptation are strategically important arenas for knowledge exchange and also dissemination of Malmö's experiences. Malmö is also active in several regional, national, European and international network organisations with a focus on sustainability issues. The climate issue is a common global challenge where we share responsibility and need to cooperate to an increasing extent to jointly create the desired transition.

Malmö has previously had positive experiences of working with follow-up research as an integrated part of learning and sees potential to further develop this within the new programme. The city works closely with universities in Skåne and other parts of the country, as well as with government research institutes and knowledge-intensive companies.

Learn more about Malmö's work on "Equitable and inclusive city"
Learn more about Malmö's work on "Sustainable and Resilient City"
Learn more about Malmö's work on "Nature based Neigbourhood"

Iteration

Climate transition Malmö has since 2015 worked in iterative processes. The creation of the process was initiated in 2015 and have since then undergone several revisions. The latest version has been adapted to visually and content-wise align with the Net Zero City process model with some key changes. Most significant is the clarification on the need for continuous learning and reflection (evaluation) of ongoing processes.



The lessons learned from the continual development process are being fed back into the iteration cycle. In order for the iteration cycle to function efficiently, it does not follow a set path but is open to rapid change in response to internal and external changes. Iteration can take place at a sub-activity level, an action level, a thematic roadmap level or an overarching transition process level. A critical role of the senior management of the transition process is to ensure that relevant decisions are taken by the appropriate partner and at the appropriate level to ensure a dynamic management process. A high level of mutual trust is essential, alongside clear communications for more significant changes to be reported.

It is inevitable then that changes will be made at different times and in different ways. The role of each thematic roadmap co-ordinator is to continuously remain informed of iterative changes underway within their prioritised actions and ensure that any interdependencies with potentially impacted streams of work are involved in the change processes to understand broader implications. Significant iterations are discussed at a roadmap partnership level and will also involve the transition co-ordination office who can review potential impacts between roadmaps.

Major changes with significant impacts on cost for the city, operations, or target fulfilment will be reported to the management group for the climate transition.

This process is on-going and not time bound. However, it needs to also feed into wider planning and budgeting processes. Therefore, it is tied into the city's budget reporting and planning process with tertiary reporting and annual work and budget planning processes. The tertiary reports provide an opportunity three times a year to collect progress reports from the roadmaps and consider challenges, and new iterations that have been put in place or are being developed. The work planning process normally starts in the spring to consider plans for the following calendar year. These plans are finalised in early autumn for the budgeting process which runs through the autumn. For the city's own activity, this is a critical period, but it also provides a natural cycle for review of overall progress and the impact on the city's own work streams.

1.2 Module C-2 Social and Other Innovation Interventions

Module C-2 "Social and Other Innovation Interventions" consists of a summary table, listing organizational and collaborative governance interventions and describing their impact (C-2.1) and a section for more detailed descriptions and comments (C-2.2).

C.2.1: Enabling social innovation interventions					
Intervention name	Description	Responsible entity/ dept./ person	Involved stakeholder	Enabling impact	Co-benefits
Civil society Climate Contract	Climate contract for voluntary organisations to commit to supporting the transition process in a way appropriate to their organisation and operations	Co-ordinated by Environment Department	Civil society organisations throughout Malmö	Engages a wide breadth of organisations with significant contact with citizens. Increases potential for co-creation, innovation and development at a grassroots level	Significant potential for co-benefits in empowerment, health and social benefits and potential for new economic development

Neighbourhood development	Development of innovation programme to work with local communities and partners to understand local needs, how they can be matched with climate targets, and action to make change	Led by Environment Department	National innovation Agency and National Research Agency, Malmö University, local businesses and NGOs	Supports action at a local level in close dialogue with local partners. Helps co-design solutions for use across the city, mobilises public support and delivers local change that can be scaled	Develops increased interest and demand for transition in business and raises expectations of political action
Climate Awareness	Digital climate awareness function that provides easy to read climate information and simple measures that local people can implement to decrease personal footprint	Environment Department	Targeted at the wider community	Supports awareness-raising and community activity to decrease personal emissions	Develops increased interest and demand for transition in business and raises expectations of political action

C-2.2: Description of social innovation interventions – textual and visual elements

The City of Malmö is developing tools and approaches to support increased involvement of civil society and the wider community in the transition process. The city has a long history of working with or supporting different initiatives at a grassroots level to increase engagement in local sustainability work. This has included urban co-design processes engaging young women to lead consultation and design, urban farming initiatives with young families from ethnic minority backgrounds, carbon "weightwatchers" with families, participatory design processes for local development, creation of maker spaces etc. The city has also worked with innovative communication strategies to encourage behavioural changes such as the highly successful "In town without my car" initiative to promote cycling and walking in a light-hearted way.

There have also been various collaborative approaches to drive the sustainability agenda further. The annual Malmö Festival for example that attracts over one million visitors over one week now has strong green credentials and has broken ground in promoting green events, with impacts on catering companies, service providers etc and providing a strong communications platform for the wider community where sustainability is seamlessly incorporated into operations.

The city is building on these approaches in the Climate Transition work to inform, engage and empower the community in the transition process. One key strategy for engagement and empowerment is the development of a neighbourhood climate action programme. The aim is to start a pilot project in 2023 to engage with 2-3 neighbourhoods with different physical and socio-economic characteristics to engage local people and other local stakeholders to identify local actions to decrease climate impact and improve quality of life. At the neighbourhood level, all the thematic strands of the technical climate transition roadmaps merge into the real world of local people. Together with the local community we can explore what would be needed in their neighbourhood to increase active transport, or uptake of electric vehicles, or decreased waste.

The initiative aims to scale from a pilot in 2-3 neighbourhoods to work in 4-6 neighbourhoods within 2 years and 12 neighbourhoods within 4 years. This process can help design initiatives that can be scaled across the city, helps create community leaders, and reaches a critical mass where people throughout the city know somebody living in one of the target communities.

The city is also developing its existing climate contract model focussed on the business community, to develop a new climate contract for civil society organisations. This will support NGOs in the city wanting to engage with citizens in climate transition activity and create a valuable forum for co-creation, new initiatives and wider acceptance of the climate transition process.

1.3 Module C-3 Financing of Action Portfolio

Module C-3 “Financing of Action Portfolio” should contain the list of action portfolios and interventions outlined in Modules B-2, and those from C-1 and C-2 with cost implication to provide a summary list of interventions that need to be unpacked in the Investment Plan.

C-3.1: Summary of interventions with cost implication (to be unpacked in Investment Plan)					
Action/ intervention name	Responsible entity and person	Start/end date	Field of action	Impact	Total cost estimated
(list action portfolios and interventions from Modules B-2, C-1 and C-2, which have a cost implication)	(indicate responsible entity and person)	(indicate start and end date of the activity)	(indicate the field of action the interventions belongs to)	(indicate impact - i.e. the GHG reduction/ co-benefit)	(indicate the total costs in €, estimated for the intervention)
Road for electricity supply	N/A	Ongoing	Electricity supply	TBD*	232MSEK (€19.43M)
Roadmap for heating	N/A	Ongoing	Heating	TBD*	4.5BSEK (€377M)
Roadmap for Mobility	N/A	Ongoing	Mobility	TBD*	6.1BSEK (€511M)
Roadmap for Climate neutral building	N/A	Ongoing	Climate neutral building	TBD*	TBD
Roadmap for Circular economy	N/A	Ongoing	Circular economy	TBD*	501MSEK (€42M)
Roadmap for Low-carbon consumption	N/A	Ongoing	Low-carbon consumption	TBD*	832MSEK

Net Zero City organisation	City of Malmö	Ongoing	Project management	TBD*	20MSEK/year operational + approx 1.5BSEK/year investment
Climate transition Roadmap co-ordination	City of Malmö	Ongoing	Strategic work across all transition areas	Well co-ordinated roadmaps and strong support from city leadership. Strategic overview of wider transition process.	79.6 MSEK/year (6.68M€)

*Some individual actions have impact calculations (B1.1), but not all so not possible to provide totals

2 Outlook and next steps

This section should draw any necessary conclusions on the Action Plan above and highlight next steps and plans for further refining the Action Plan as part of the Climate City Contract.

Plans for next CCC and Action Plan iteration – textual elements

When the Climate Transition team was set up there was a clear understanding that it would take 4-5 years before the process could be fully rolled out, all components active and all key stakeholders engaged. While substantial progress has been made in understanding what the City of Malmö's journey to become climate neutral by 2030 would need to focus on, most of the work remains to be completed.

Listed below are selected key actions that are in the pipeline, with more to be added as our insights into the climate transition deepens. The focus is on work to be completed in the next year, until Q2 2024.

Continue to develop city-level roadmaps

- The climate policy gap needs to be closed. An overarching roadmap for Malmö that covers all prioritised transition areas has been developed with two active sub-roadmaps (heating and climate neutral building). The two sub-roadmaps have completed the first full iteration in the process and are in implementation stage.
  The next phase will see the roadmaps for circular economy, climate-smart consumption, electricity supply, net zero organisation and mobility finalising their first iteration in the climate transition process.
- Explore how Malmö can organise efficient work around retrofit to meet climate commitment as well as social and economic goals. As a signatory of The Shift as well as the ICLEI Malmö commitment the political will and goal is clear. In the coming year Malmö needs to strengthen ongoing initiatives as well as develop new fit-for-purpose tools to strengthen capability to work efficiently with retrofit.
- Roadmaps for all the prioritised transition areas - with additional measures analysed, climate and co-benefits from a socio-economic and business perspective - as well as long-term climate investment plans will be developed jointly by municipality, industry, citizens, civil society, and academia to steer investments in the right direction and increase the pace of transition.

- From roadmaps to decided and implemented measures - continued integration of the transition area roadmaps and climate investment plans into existing governance, policy, urban planning, budget, investment and procurement processes – considering the long-term investment perspective to ensure that climate targets are met.

Vertical climate policy integration through a European policy lab

- Promote increased understanding, anticipating, and influencing existing and future regulatory frameworks, policies, and ambitions to ensure the pathway to climate neutral by 2030 on local, regional, national, and European levels. Malmö wants to see a European policy lab that can support the creation of a mutual understanding on how far current European policy will take us (think taxonomy, Fit-for-55, RePowerEU), what else can be done to support cities in the EU mission of 100 climate neutral and smart cities by 2030.

Strengthen the financial matchmaking capability between needs and available financial tools

- Further deepen Malmö's understanding of today's large investment flows, household consumption, assets and their potential for the climate transition is needed to be able to redirect investments and consumption in line with the mission to become climate neutral by 2030.
- Exploring options on co-ordinating public and private funding needed to bridge the climate policy gap and accelerate the transition. This is needed both for investments and for building institutional transition capacity.

Enhance Malmö's climate contract for businesses and citizens

- Continue to deploy Climate Contract Malmö with the local and regional stakeholders (industry, civil society, citizens, and academia) as well as the Swedish Climate City Contract 2030.
- Develop a digital service to facilitate more local stakeholders to sign the Climate Contract Malmö
- Develop a digital climate action tool for citizen engagement, to be rolled out in 2023.

Climate Transition Office

- Continue to strengthen and further developed decision-making support tools to ensure that politicians and other relevant stakeholders can make informed decisions, e.g., the digital framework and infrastructure under development with ClimateView & RISE Research Institutes of Sweden on climate action data, digital climate roadmaps, scenario analysis, climate investment plans.
- Create an integrated process for climate mitigation and adaptation in Malmö. Malmö is now part of two European missions and needs to better understand how to accomplish synergies between adaptation and mitigation.
- Learning is an overall process that empowers Climate Transition Malmö. The goal is to accelerate learning at multiple levels (individual, team, organisation, Malmö) to increase goal fulfilment. Other desired effects include:
  - To contribute organisational learning with an increased ability to learn from previous efforts and to be able to take these lessons and experiences into new efforts
  - That the individual's own learning should also be able to benefit the organisation
  - That an internal learning culture is developed within the organisation and process
  - To contribute to transformative learning where actors can move from knowledge to action competence and behavioural change

In 2023 and 2024, various solutions will be tested and developed by the Environmental Department in close cooperation with the process management team, with the aim that functional solutions will

gradually be disseminated to others. Read more on how learning is part of the climate transition in chapter *The climate transition process is in play*.

Malmö is leveraging digital infrastructure to build a city of the future that meets citizens' needs in a climate-neutral way. By using the platform ClimateOS, the Climate Transition Office identifies the most effective shifts from hig- carbon to low-carbon activities that meet citizens' needs. With scenarios and visualisations, Malmö can better explain the link between climate measures and benefits for those who ultimately decide on the climate transition and ensure that the transition is by and for the citizens and leaves no-one behind.

3 Annexes

Add any textual or **visual material** to the 2030 Climate Neutrality Action Plan in the ANNEX as necessary.

NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Commitments

Climate Neutrality Commitments

City of Malmö

NetZeroCities has received funding from the H2020 Research and Innovation Programme under the grant agreement n°101036519.

Disclaimer

Table of contents

1 Introduction

Your text

Just like the European Commission, the City of Malmö (hereafter "Malmö") appreciate that current targets are challenging and ambitious, but we need to go further and faster. Cities play a key role in the mobilisation of citizens, businesses, civil society actors and academics in the creation of a just and equitable climate transition and together we *can* go further and faster.

Malmö is fully committed to addressing the climate crisis while at the same time tackling our significant socio-economic challenges. Although we have been awarded Sweden's Best Environmental Municipality 2022 and four times previously in the last decade, we still have much to do both from an environmental and socio-economic development perspective. Malmö has made many of the easier emissions reductions and is now grappling with more complex issues. Malmö has diversified its economy but its unemployment rate is almost twice the national average and the tax base to finance local public spending is only 87% of the national average (the equivalent in Stockholm and Gothenburg is approximately 20% and 5% above the national average respectively). It is therefore essential for us to further integrate climate and socio-economic transitions to ensure that climate investments contribute to new employments and improved lives for all in Malmö.

An early leader in sustainable urban development, Malmö has worked actively with climate-related development for over 30 years. Even though emissions have decreased while the population has significantly increased, we acknowledge that the rate of progress has been too slow. We are also acutely aware that collaboration, shared learning, and mobilisation are key aspects of innovation and acceleration. They are also essential for the upscaling of actions internationally to meet our shared climate challenge, and ultimately reduce climate impacts at home. Joining forces with other ambitious cities across Europe to commit to a challenging mission in collaboration with the EU is therefore a logical step for the City of Malmö to strengthen measures locally and contribute to shared leadership.

Malmö has also taken a leading role together with ICLEI to the Malmö Commitments on Inclusive and Equitable Communities at the ICLEI World Congress in 2022. According to the Malmö Commitments climate transition and mitigation will go hand in hand to improve the lives of the most vulnerable members of society.

Today's rapidly changing world means that organisations need to react and adapt quickly, and find new ways to communicate and work with each other. This can be solved only by creating sustained organisational adaptability. Creativity is a collaborative endeavour. Innovation is a team effort. Malmö is building on over 30 years of experience working on partnerships and investing at both a macro and micro level, with testbeds and learning processes. We are now using this accumulated knowledge and inter-organisational capacity to deal with the complexities of a just and equitable climate transition. To address the climate neutral 2030 mission Malmö has reinvented its way of working. A horizontal Climate Transition Malmö office is established to maximise synergies between organisational silos and with other stakeholders. Key takeaways from Malmö's analyses show that Malmö can become climate positive by 2030 if, and only if, stakeholders at local, regional, national, and European levels are engaged and work together on accelerating transformation.

Malmö was one of the founding members of Viable Cities, where 23 cities in Sweden have come together under the commitment to become - *Climate neutral cities 2030.* As a part of the announcement Viable Cities has launched Climate Contract 2030, an agreement between cities, national authorities, and Viable Cities where all parties agree to undertake concrete measures to speed up their climate transitions. The contracts consist of the actor's intention to raise the ambition within sustainable city development and climate transition. Malmö signed the initiative in December 2020.

In similar fashion Malmö is now engaged in the European mission for 100 climate neutral and smart cities by 2030. Malmö has been selected to be one of the pilot cities within the mission and is looking forward to supporting the EU mission onwards.

2 Goal: Climate neutrality by 2030

Your text

The climate neutrality 2030 goal is enshrined in the City of Malmö's Environment Programme, adopted by the city council. The targets are supported by key stakeholders in the business community, many of whom have equivalent targets that they are working on meeting for their entire business operations, or for their operations in Malmö.

The City of Malmö has the ambition to become climate-neutral by 2030 in respect to scope 1 and 2 emissions according to the GHG-protocol and ensuring a just and equitable climate transition. Process, measurements, and tools to monitor scope 1 and 2 emission and socio-economic aspect are being developed.

Climate neutrality for Malmö by 2030 means:

- A combination of emission reductions and compensating measures
- At least 70 % reduction of territorial emissions compared to 1990, according to our Environmental Programme. This is compared to Sweden's national goal of climate neutrality 2045, where there needs to be an 85 % reduction of territorial emissions compared to 1990.
- The EU Commission's mission option to exclude parts of the emissions has not been applied. Therefore, the following emissions are included when aiming for climate neutrality 2030: the high-way traffic passing by the city (equal to 17% of the total emissions), the harbour with its freight, all emissions from the production of heat and electricity from the waste incineration plants (even though the district heating network also supports the municipality of Burlöv is included in the emission scope), consumption-based emissions.
- Malmö's goals for consumption-based emissions in 2030 are outlined in the Environmental Programme. The 2050 global emissions need to be capped at 1 ton CO_2 per person per year to reach the 1.5 ºC-target of the Paris Agreement. Malmö's consumption-based goal is to reach a 50% emission reduction by 2030 with a goal value of 3.1 ton CO_2 emission per person per year.

Malmö's analyses show that there are strong co-benefits to working with behavioural change as it creates a shared mission, supports the physical investment, has health benefits, and paves the way for work with consumption-based emissions. Malmö is committed to a just and equitable transition that can improve the lives of those with strongest needs and usually lowest emissions. The development of green jobs and sustainable economic development through climate transition is one such key co-benefit that the city is actively developing. Malmö launched its Climate Contract for business in 2021 to mobilise partners in the private sector to commit to the shared 2030 target.

The City of Malmö has been working with a number of different processes to support citizen participation and engagement in the development and delivery of climate action. There are currently three complimentary approaches which are under development or in a pilot phase.

The first is a climate contract for local communities. Instead of individual commitments this form of climate contract allows for a number of different facets. One is the creation of simple communications models to provide advice for a community and allowing citizens to commit to their individual climate actions. The city is also working with a pilot development of an interactive app that can support citizens

in lifestyle choices, but also opens for a community to communicate with the city by asking questions or making proposals.

The city is also in the process of renewing its neighbourhood-based development work, and the climate transition team have been at the forefront of developing a joint approach in targeted community programmes in partnership with local businesses, NGOs and community. The climate transition team works from a perspective of understanding local needs, challenges and opportunities in climate transition and seek to support climate actions at a local/ neighbourhood level. The aim is to work systematically in a small number of neighbourhoods initially and quickly scale up to a large number of neighbourhoods across the city, creating a critical mass and the potential for everyone in Malmö to know someone living in an active climate neighbourhood.

This programme links to a third strand of work which focuses on the disparity in lifestyle impacts across the city where there is a clear correlation between higher income and higher emissions. The aim is to identify ways of addressing this with a community development approach. The overarching aim of the community programme is therefore to improve the lives of those with the least economic resources without increasing their emissions, and simultaneously identify ways of working with the higher-income communities to understand which changes could help facilitate a more sustainable lifestyle and how the city and other partners can support this. This will become an important arena for the design of measures for a just and equitable transition and will feed directly into the action planning.

The result becomes a living lab approach in which work with targeted communities can identify actions that can be potentially scaled across the city. The city has completed an exploratory project with support of Vinnova (the Swedish Innovation Agency) and is working with Malmö University with support from FORMAS (the national research agency) to explore further ways of addressing the equity dimensions in a neighbourhood-based model.

3 Key priorities and strategic interventions

Your text

Climate Transition Malmö has identified seven transition areas, six of which are thematic and across the entire city, while one transition area focusses on the municipal organisation. Roadmaps for the transition areas are being developed one by one.

The needs identified in the baseline studies and addressed in the roadmaps vary from a heavy investment focus (for example Heating) or a process focus (for example Consumption) and even a strong lobbying focus (for example Electricity). All have their significant challenges in order to meet the 2030 target. Below are the seven transition areas and their key focus areas -

1. Heating – key focus areas: separation of plastics, new local CHP capacity, CCS.
2. Electricity supply – key focus areas: development of city-owned solar company, lobbying for increased infrastructure capacity and wind investment in region.
3. Mobility – key focus areas: electrification of bus fleet, improved public transport, Metro to Copenhagen, accessibility, micromobility, regional system perspective.
4. Climate-neutral building – key focus areas: urban development process, site preparation & aggregates, circular / carbon neutral materials, renovation and property management, carbon storage and compensation.
5. Circular economy – key focus areas heat recovery, circular construction materials, market development recycled materials, circular procurement and consumer goods.
6. Low-carbon consumption – key focus areas: social equity, food, textiles, mobility, and tourism.
7. Net Zero organisation – key focus areas: carbon neutral procurement, construction & energy efficiency.

Two roadmaps are currently being implemented

Roadmaps for Heating and Climate-neutral building are being implemented. Together they cover 30% of Malmö's territorial emissions and represent a carbon sink equal to approximately 60% of the total territorial emission. Prioritised measures have been identified, responsible actors are mobilised and have assumed ownership of the implementation and are currently working on delivering the solutions needed to meet the goals of the roadmaps.

- The roadmap for Heating has as a goal to be climate positive by 2030.
- The roadmap for Climate-neutral Building has the goal to be climate neutral by 2030 and climate positive by 2035.

Five more roadmaps will be completed before the end of 2023

In Q1 2024 all roadmaps are expected to be operational. This does not mean that Malmö will have full emission reduction coverage as certain key measures are decided upon by regional, national, and European decision-makers – but rather that there will be systematic transition processes established with a clear understanding of what needs to change to deliver climate and societal impact while also identifying what is not clear, which further development work is needed in the coming iterations.

4 Principles and process

Your text

The underlying tenet of Climate Transition Malmö is that a science-based approach and a broad mobilisation are needed to drive changes in the most critical areas to reach the 2030 climate target. In addition, the climate transition process should be designed to deliver a just and equitable transition, improve the lives of local people, and support economic development.

To meet the challenges ahead the climate strategy works at four different levels:

1. *Accelerating* existing planned initiatives to reach further and faster (e.g., deep geothermal energy and phasing out plastics at waste-to-heat plant).
2. *Testing* new methods and solutions
3. *Mobilising* to increase cross-sectoral activity (e.g., climate contracts and roadmaps); and,
4. *Systematic* learning, scaling and mainstreaming.

Malmö's strategy is designed to meet the 1.5-degree target of the Paris Agreement and a just and equitable transition. Malmö's approach is simple, robust and science-based. It is built on a shared commitment with the business community to reach climate neutrality 2030. Malmö has carried out comprehensive analyses of the current status of transition and challenges ahead, including initial financial aspects. There is also a clear understanding of the measures needed to reach climate neutrality 2030.

The analyses done in Malmö highlight the importance of systems level change and enabling infrastructure to drive emissions reduction work. The largest share of the remaining emissions reduction needs investment in physical assets as 80% of emissions is generated from transport and energy infrastructure. Behavioural change is in part enabled by infrastructure investment and makes up a smaller share of the overall potential emissions reduction.

The broad mobilisation is across city departments and disciplines, engages major infrastructure owners and businesses with a major climate impact and includes other businesses, community organisations, academia, and the community.

The City of Malmö has been working actively with a selected number of stakeholders in the early stages of Climate Transition Malmö and has explored different approaches to work with the business community who are critical to the climate transition. A number of businesses have been involved from the start in developing baseline analyses and roadmaps in informal collaborative processes. In 2021, the city launched Climate Contract Malmö. A selected number of businesses were invited to pledge their support and commit to actions to reach the climate neutrality 2030 goal. In 2023 this has been rolled out so that any business in the city can sign a climate contract with the city. In the meantime, as the work with roadmaps has proceeded, an increasing number of businesses and other stakeholders are becoming more intimately involved in the action planning and delivery models. Each of the six thematic roadmaps have a close relationship with a small number of businesses, and some have a more significant network. For example, Climate Neutral Building is working both internally with stakeholders in the city and with the LFM30 Climate Neutral Building Partnership, which mobilises over 200 businesses in Malmö, including 50 property developers who have committed that all of their construction, renovation and operations in Malmö will be climate-neutral by 2030.

The approach to working with the business community is under constant development based on the needs of the roadmap process, the capacity of the climate transition team and the potential for clear measures that can support transition and business development. The city has established a base on which to further co-create this process with the business community.

Malmö is also a partner along with other Net Zero Cities in the region in an initiative with the University of Lund to bring cutting-edge research into delivery and open up the transition process for researchers to follow and help learn from the transition process.

To better understand the drivers and barriers of the remaining steps of the transition, an analysis of the economic impact and financial demands has been undertaken. This identifies where investments need to be made, who will benefit directly and indirectly from those investments, and which innovations in business models need to be made to enable important strategic investments that do not follow conventional ROI models. Dialogue with national government and financial institutions are key parts of this enabling approach.

Local, regional, and European partnerships are a key part of this enabling capacity. Malmö engages on many levels to explore policy, financial and technical challenges in the climate transition. The regional cross-sectoral innovation council is one area in which research and development can be refined around the real-world needs of the local climate transition. Shared analyses of financial models and policy barriers through national partnerships such as Viable Cities provides an important forum at a national level. Work with the other EIT Climate-KIC Deep Demo cities further strengthens this perspective of innovation at the forefront of current policy and practice at an EU level.

Monitoring progress is essential, both in terms of quantitative results and qualitative processes. Learning loops are integrated to accelerate processes and share experiences with others. Simple learning processes are integrated into the transition process and are a key element to identify challenges, opportunities and scaling potential which feeds into the iterative development process. Organisational structure is in place to review the roadmaps based on evaluation and learning loops on at least an annual basis, although in the earlier years of development this may be more frequent.

5 Signatories

In 2021 Malmö launched Sweden's first local climate contract to align our leadership on the mutual ambition to keep global climate change contained in line with the Paris Agreement and the 1.5-degree goal. Below are some of the key signatories. The organisations individual climate contracts are attached.

Name of the institution	Sector/Area	Legal form	Name of the responsible person	Position of the responsible person
First phase key signatories				
Skanska Sverige AB	Building/Constructing Services/Asphalt//Foundation/Concrete/Technical expertise	Private Sector	Gunnar Hagman	CEO
Wihlborgs	Real Estate Company/Rental commercial real estates	Private Sector	Ulrica Hallengren	CEO
Enjay Systems	Greentech specialized in energy efficiency	Private Sector	Nils Lekeberg	CEO
Stena recycling	Recycling Company/Circular consulting services	Private Sector	Henrik Celander	Deputy Manager
Malmö FF	Owner of Eleda Stadium/Fotball Club	Non-profit association	Niclas Carlnén	CEO
VA Syd	Water and Sewerage Systems/Management of refuse/ Circular solutions/Drinking Water supply	Municipal association	Joel Olthed	Director
SYSAV	Waste company/Recycling/Circular Solutions	Limited company owned by 14 municipalities	Peter Engström	CEO
MKB Fastigeter	Public Housing Company	Limited company owned by the City of Malmö	Marie Thelander Dellhag	CEO
Granitor Properties	Property development and management/develop and manage properties	Private Sector	Peter Syrén	CEO
RISE	Independent state-owned Research Institute and innovation partner	Limited company owned by the Swedish state	Marco Lucisano	Division Manager

E.ON	Energy Company/Smart grid/Innovating energy solutions	Private Sector	Marc Hoffman	CEO
Stena fastigheter	Real Estate Owner/Construction/House Rentals	Private Sector	Unni Sollbe	CEO
Altitude Meetings	Conference Services/Sustainability partners	Private Sector	Yasemin Arhan Modéer	CEO
Martin & Servera Logistik	Warehouse and logistics for groceries and catering services	Private Sector	Stefan Bergström-Hedmark–	CEO
Rosengård Fastigheter	Real Estate Owner/House Rentals	Private Sector	Petra Sörling	CEO
Copenhagen Malmö Port - CMP	Port operator/Full-service port/	Limited liability part-owned by City of Malmö	Barbara Scheel Agersnap	CEO
Parkering Malmö	Building, managing and renting parking spaces/Mobility services	Limited company owned by the City of Malmö	Almir Hodzic	CEO
Carl F	Waste and recycling company	Private Sector	Carl Fredrik Jönsson	CEO
Second phase additional signatories				
Miljömatematik Malmö	Idea-based and non-profit company with focus on sustainable food systems.	Not-for-profit company	Lova Brodin	CEO
Malmö Lastbilscentralen	Logistic company	Private Sector	Anders Niclas Jönsson	CEO
Ram Silwal Adventures	Youth and eco-adventure company	Sole trader	Dharma Datta Silwal	Founder
Accus AB	Circular signs company	Private Sector	André Zandelin	CEO
inFrame Sweden AB	Visual communication and marketing company	Private Sector	Mikel Morueta Holme	CEO

ÅF Infrastructure AB	International technology consulting company	Private Sector	Malin Frenning	CEO
Typotopia AB	Letterpress and design studio	Private Sector	Andreas Albert Dahlström	CEO
Cirkulär Interiör Öresund AB	Circular interior design company	Private Sector	Mattias Feldt	CEO
Välfärden - kök & kaffe AB	Restaurant and catering company	Private Sector	Malte Rohlin	Owner
Folkets Hus i Malmö Aktiebolag	Premises for events and meetings	Private Sector	Johnny Persson	CEO
Mylla Matmarknad AB	Digital marketplace and distribution of locally produced food	Private Sector	Jens Thulin	Chairman and founder
Sydvatten Aktiebolag	Drinking water producer	Limited company owned by 17 municipalities	Jörgen Johansson	CEO
The Car Sverige AB	Private chauffeur service	Private Sector	Tord Rosenlund	CEO
Edgy Veggie AB	Sustainable food producer	Private Sector	Eva Katarina Furin	CEO
Robert & Blad Kommanditbolag AB	Environmental fashion brand	Private Sector	Helle Robertson	Owner
SWOP konsulten Sverige AB	Circularity expertise and reuse services	Private Sector	Jane Olsson	Owner
Scandinavian Water Technology	Washing system	Private Sector	Mats Marklund	CEO

6 Contract with signatures

On behalf of the City of Malmö, the undersigned, hereby commit to help make the city of Malmö climate neutral by 2030. We agree on the joint ambition and commitments, as formulated in the City Malmö's Climate City Contract as specified above.

For Malmö, Europe, and the planet.

13 september 2023

Katrin Stjernfeldt Jammeh

Mayor, City of Malmö