



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 the City
Liepāja

Liepāja





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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

In 2022, the City of Liepājas decided to apply and was also selected as one of the EU's "100 climate neutrals and smart cities by 2030", thus setting more ambitious targets - achieving climate neutrality, i.e. reducing CO₂ equivalent emissions (further – CO₂ emissions) by 80% compared to 2006. In line with joining the initiative of the EU mission "100 climate neutrals and smart cities by 2030", in 2023 the municipality of Liepājas updated its SECAP with concrete and targeted actions. The city of Liepājas has identified five key priorities: Energy efficiency, Digitalization, Renewable energy resources, Adaptation to climate change and education of society.

In order to achieve 80% CO₂ emissions reductions, key sectors were identified where this reduction can be achieved, how and to what extent:

- **Local government infrastructure:** energy efficient and environmentally friendly (share of the total CO₂ emission reductions – 6%):
 - Continuous maintenance of the energy management system;
 - Use of renewable energy resources in heating of local government buildings;
 - Green renewable electricity in municipal infrastructure;
 - Environmental friendly mobility and services;
 - E-services.
- **Centralised energy production:** green energy for all (share of the total CO₂ emission reductions – 29%):
 - Transition to 100% RES;
 - Attracting new thermal energy consumers to Liepājas DH.
- **Transport and mobility:** accessible and sustainable mobility for all (share of the total CO₂ emission reductions – 60%):
 - Calming and optimisation of transport flows;
 - Accessibility and popularisation of environmentally friendly public transport;
 - Promoting electromobility and micromobility.
- **Industry and services:** "green" urban industry (share of the total CO₂ emission reductions – 5%):
 - "Energy efficiency in the first place" principle;
 - Transition to renewable energy sources in industry and services sector.
- **Housing:** renovated and accessible housing for all:
 - Renewal of apartment buildings;
 - Educating the public;
 - Transition of private houses to RES.
- **Adaptation to climate change:** climate resilient city of Liepāja:
 - Adaptation to climate change;
 - CO₂ capture measures and nature-based solutions.

In order to achieve climate neutrality, the following horizontal aspects will be taken into account and integrated throughout the planning and implementation process:

1. Enhanced cooperation with all stakeholders, including industry, service providers, non-governmental organisations, citizens and others.
2. Principles such as "energy efficiency in the first place", "green procurement", "innovative financial instruments" will be integrated throughout the policy planning and implementation chain not only in the municipality, but also more broadly, such as industrial companies, etc.
3. The benefits and disadvantages of future policies and measures will be assessed from environmental, social, economic, financial and other aspects.



4. All planning, implementation and monitoring processes will ensure a cross-sectoral approach.

In addition to the CO₂ reduction targets, Liepaja sets quantitative and qualitative targets also in energy and adaptation to climate change sectors, as well as for the reduction of energy poverty by 2030.

In order to achieve the goal of achieving climate neutrality by 2030, the involvement of all groups of society will be more intensive than it has been up to now. In each of the sectors included in the plan, there are certain CO₂ reduction targets for which the Management and Monitoring Group will be responsible for the overall achievement, and for the sub-sectors, the local government commissions or groups responsible:

- Transport infrastructure commission;
- Plant monitoring commission; Environment commission and Public health commission;
- Energy efficiency group with 3 sub-groups;
- Tourism commission;
- The environmental communication group;
- Waste management advisory working group;
- CCC group;
- Public procurement commission.

It is important not only to improve and strengthen the organisational structure of the municipality in order to achieve the objectives, but to involve all stakeholders. The involvement of each of the parties involved will require targeted measures. The organisations mentioned above will be responsible for their implementation.

The funding needed to implement the measures included in SECAP2030 can be derived from a variety of funding sources: short-term and medium-term local government budget measures; private funds for long-term projects related to building renovation; EU structural funds for the rest of the RES and other long-term energy efficiency measures, and sustainable transport solutions, national co-financing, as well as other financial instruments such as EUCF. The financial envelope for now is EUR 229,23 million.

Future plans planned for the city of Liepāja:

- Approve the renewed SECAP2030 and sign the Climate City agreement.
- Establishing an organisational structure for the implementation and monitoring of the plan in accordance with the organisational framework described in the plan.
- Prepare a specific timetable for the implementation of action for 2023-2025, including the responsible persons and the necessary resources.
- Provide an organisational framework for the implementation and monitoring of the plan.
- The introduction and involvement of all groups of society in the implementation of priority measures, including the monitoring of activities.
- Evaluate and supplement the plan with a calculation for energy consumption and emissions from Liepaja City waste management.
- Review the plan at least every two years (next in 2025) and to evaluate both the progress and achievements of the implementation of the measures and to review the measures needed to achieve the objectives and to plan additional measures.



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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 or name) used in the Action Plan.

Abbreviations and acronyms	Definition
RES	renewable energy sources
DH	Centralized heating system (District heating)
CSB	Central Statistical Bureau
EU	European Union
SECAP	Sustainable energy and climate action plan
SEAP	Sustainable Energy Action Plan
LED	light emitting diodes
LEGMC	Latvian Environment, Geology and Meteorology Centre
CM	Cabinet of Ministers of Republic of Latvia
MEPRD	Ministry of Environmental Protection and Regional Development
GPP	Green Public Procurement
IPCC	The Intergovernmental Panel on Climate Change
GHG	greenhouse gases
EMS	Energy Management System
CSDD	Road Traffic Safety Directorate of Latvia
EV	electric vehicles



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

In Latvia, the development of a Sustainable Energy and Climate Action Plan (SECAP or Action plan) is not mandatory for municipalities, but the Energy Efficiency Law states that municipalities have the right to develop and adopt an energy plan as a separate document or as part of the municipality's spatial development programme, which includes certain energy efficiency targets and measures.

On 15 November 2012, the City of Liepāja joined the Covenant of Mayors initiative. This was the first political commitment of a municipality to implement and follow climate and energy policies at local level. It was a key driver for the municipality to develop and implement initially the Sustainable Energy Action Plan 2020 (SEAP2020) and now the Sustainable Energy and Climate Action Plan 2030 (SECAP2030). When the City of Liepāja initially joined the initiative, it committed to achieving at least a 20% reduction in CO₂ emissions by 2020. By 2022, the city had already reduced its CO₂ emissions by 45% compared to 2006, the baseline year. Since joining the Covenant of Mayors, awareness of climate and energy objectives has increased significantly at all levels.

In 2022, the City of Liepāja decided to apply and was selected as one of the 100 European Climate Neutral Cities ("Net Zero Cities"), thus setting much more ambitious targets - to reduce CO₂ emissions by 80% by 2030. In line with the 100 European Climate Neutral Cities initiative, Liepāja Municipality is updating its SECAP in 2023 with more specific and targeted actions. However, it is important to acknowledge that the successful attainment of these goals for the City of Liepāja depends on navigating and mitigating a multitude of external factors, some of which may be beyond the direct control of the city.



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

In 2008, the European Commission launched the Covenant of Mayors initiative to endorse and support the efforts of local authorities in implementing sustainable energy policies. The Covenant of Mayors is currently the only movement that brings together local and regional actors to achieve the EU's objectives.

The City of Liepāja made a significant step towards addressing climate and energy issues by joining the Covenant of Mayors initiative on November 15, 2012. This commitment served as a catalyst for the municipality to develop and execute the Sustainable Energy Action Plan 2020 (SEAP2020), and subsequently, the Sustainable Energy and Climate Action Plan 2030 (SECAP2030). The City of Liepāja pledged to achieve a minimum 20% reduction in CO₂ emissions by 2020. Remarkably, by 2022, the city had already surpassed this target, successfully reducing its CO₂ emissions by 45% compared to the baseline year of 2006. The impact of joining the Covenant of Mayors has been substantial, fostering heightened awareness of climate and energy objectives at all levels. This progress led to the City of Liepāja setting even more ambitious goals, now committing to attain climate neutrality by 2030, as of the year 2023.

Liepāja emerged as one of the pioneering municipalities in Latvia by implementing a certified energy management system in 2018. This system was designed to systematically curtail energy consumption in municipal infrastructure. The implementation of this system yielded substantial results, delivering energy savings of up to 5% in its initial years. Moreover, it stands out as a cost-effective measure that serves as an exemplary model for other municipalities to follow.

Since 2014, the local district heating company, "Liepājas enerģija," has undertaken various fuel switch projects, transitioning from natural gas to biomass. As a result of these initiatives, approximately 80% of the city's heat production in 2022 derived from sustainable wood chips. This commendable shift has led to 85% reduction in CO₂ emissions from the domestic energy sector, when compared to the year 2006.

Liepāja is at the forefront of Latvian municipalities that have made significant strides in renovating a substantial portion of their apartment buildings. By 2023, nearly 200 out of 600 apartment buildings connected to the Liepāja district heating system have been renovated. These renovations have yielded remarkable outcomes, with heat consumption decreasing by over 50%.

Recognising the importance of public transport, Liepāja has made noteworthy investments in expanding its tram lines by 1.7 kilometers. This development offers residents and visitors an environmentally friendly mode of transportation. Additionally, this measure has facilitated the replacement of fossil fuel-powered buses.

To illustrate the City of Liepāja's trajectory towards climate neutrality and its key objectives, actions, and outcomes, refer to Figure 1, which provides a comprehensive roadmap.

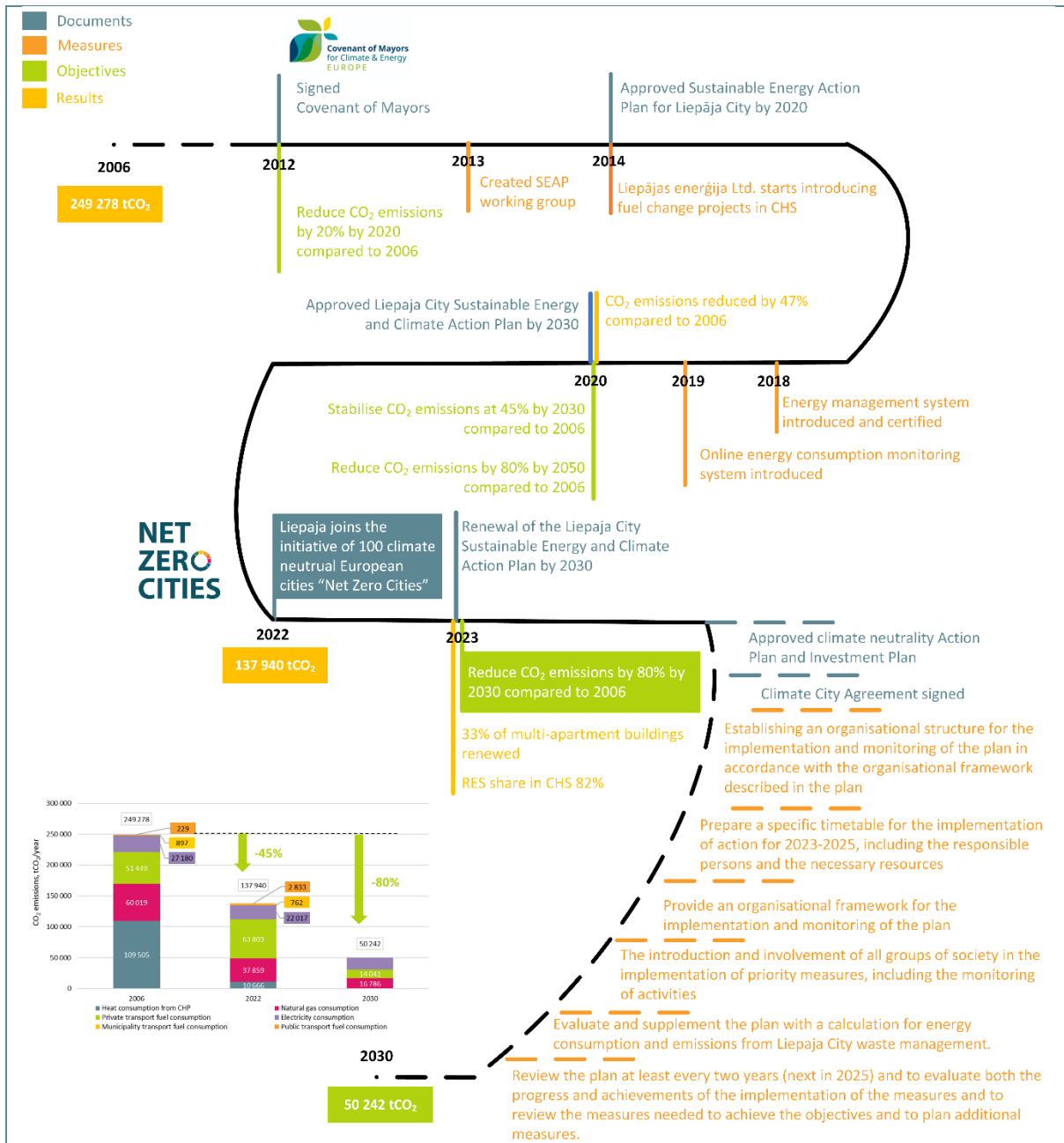


Figure 1: Liepāja's roadmap to climate neutrality

On 19 March 2020, the City of Liepāja Sustainable Energy and Climate Action Plan 2020-2030 was approved. It set a target of stabilising the city's CO₂ emissions at 45% level by 2030, compared to 2006. The updated SECAP included also a long-term vision to reduce CO₂ emissions by 80% by 2050. Notably, climate adaptation measures were also integrated into the plan, recognizing the importance of addressing the impacts of climate change.

In 2022, Liepāja decided to apply and was selected as one of the 100 European Climate Neutral Cities ("Net Zero Cities"), setting much more ambitious targets - to reduce CO₂ emissions by 80% by 2030, compared to 2006. In line with the 100 European Climate Neutral Cities initiative, city of Liepāja is currently in the process of updating its SECAP in 2023. This update will entail the formulation of more specific and targeted actions, ensuring a robust roadmap towards achieving these ambitious goals. The City of Liepāja has identified five key priorities that will guide its efforts towards climate neutrality. These priorities, summarized in Figure 2, serve as a strategic framework for implementing effective measures and fostering sustainable development in the city.

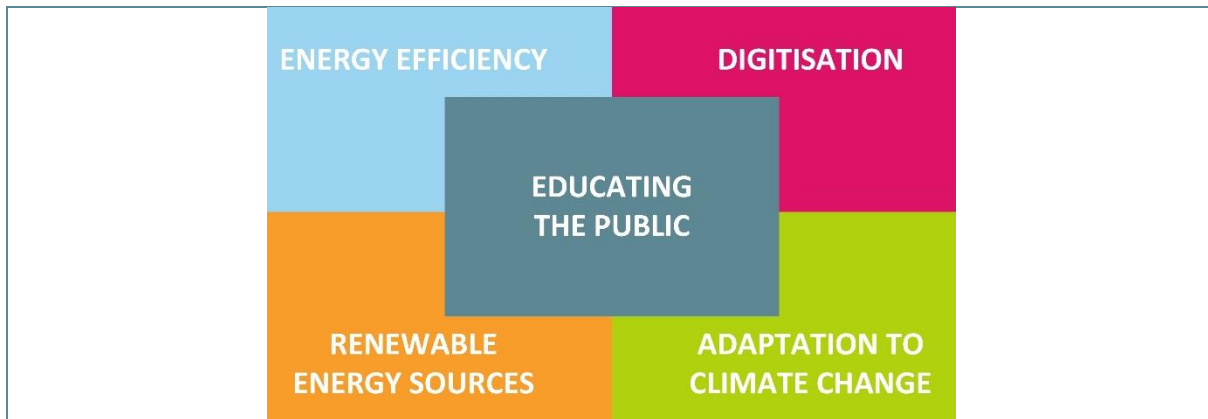


Figure 2: Liepāja's key priorities towards climate neutrality

During the development of the plan, public participation events were organised where participants actively discussed and expressed their views on Liepāja's goal to become one of the first 100 climate-neutral cities in Europe and how to achieve it. For example, hackathons, discussions with NGOs and ministries, organising Energy Efficiency Week, European Mobility Week, etc. The events discussed potential measures in the areas of transport, energy efficiency and climate change adaptation, among others. The ideas and recommendations from the events have been incorporated into the plan.

Considering the plan's focus on medium-term objectives, it is crucial to conduct regular reviews at least every two years. These reviews serve multiple purposes. Firstly, they enable an assessment of the progress made and achievements attained thus far. Secondly, they facilitate a thorough evaluation of the actions implemented to gauge their efficacy in meeting the set objectives. Lastly, the reviews provide an opportunity to plan additional actions that may be necessary to ensure the successful realization of the goals outlined in the plan. This iterative and adaptive approach ensures that the plan remains dynamic and responsive to the evolving needs and challenges of Liepāja's journey towards climate neutrality.

Future plans planned for the city of Liepāja:

- Approve the renewed SECAP2030 and sign the Climate City agreement.
- Establishing an organisational structure for the implementation and monitoring of the plan in accordance with the organisational framework described in the plan.
- Prepare a specific timetable for the implementation of action for 2023-2025, including the responsible persons and the necessary resources.
- Provide an organisational framework for the implementation and monitoring of the plan.
- The introduction and involvement of all groups of society in the implementation of priority measures, including the monitoring of activities.
- Evaluate and supplement the plan with a calculation for energy consumption and emissions from Liepāja City waste management.

The lack of a convincing and inclusive co-creation and co-implementation plan or strategy for now is a weakness in Liepāja's CCC. Liepāja still faces a potential threat due to insufficient focus on deeper citizen engagement. To address this, the city will continue to recognise citizens as distinct stakeholders, acknowledging their potential as powerful advocates and drivers of change. To mitigate this threat, a stronger emphasis on citizen involvement is crucial, fostering understanding and support for climate actions.

Introducing to the citizens the CCC's purpose, city vision, and what is at stake will make the commitment more robust. Emphasizing the role of the Mission and CCC is essential like it has been done with status Liepāja – European Capital of Culture 2027 which all citizens know about.

More detailed information is provided in the following sections.



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.

The City of Liepāja embarked on its sustainability journey by developing its first Sustainable Energy Action Plan (SEAP) in 2013, shortly after joining the Covenant of Mayors. In this process, detailed data on energy consumption and emissions since 2006 was collected, and 2006 was chosen as the base year for comparison. Subsequently, in 2020, Liepāja progressed to develop the Sustainable Energy and Climate Action Plan 2030 (SECAP2030), again utilizing 2006 as the base year.

Upon joining the Net Zero Cities initiative, the Liepāja SECAP2030 underwent an update, with the year 2030 established as the target for achieving climate neutrality. Notably, the base year for comparison remained consistent with the previous plans, retaining 2006 as the reference point.

To achieve the climate neutrality goal, Liepāja aims to reduce its CO₂ emissions by a significant 80% compared to the levels recorded in 2006. However, it is important to acknowledge that the successful attainment of these goals for the City of Liepāja depends on navigating and mitigating a multitude of external factors, some of which may be beyond the direct control of the city.

The emissions boundaries for Liepāja are confined to the city's territory, which spans 68 square kilometers. With a population of 67,088, Liepāja is positioned between the Baltic Sea to the west and Liepāja Lake to the east. Its northern and southern boundaries demarcate with the administrative region "Dienvidkurzemes novads." Understanding these geographical and demographic parameters is essential for effective emissions management and sustainable development strategies within the city.

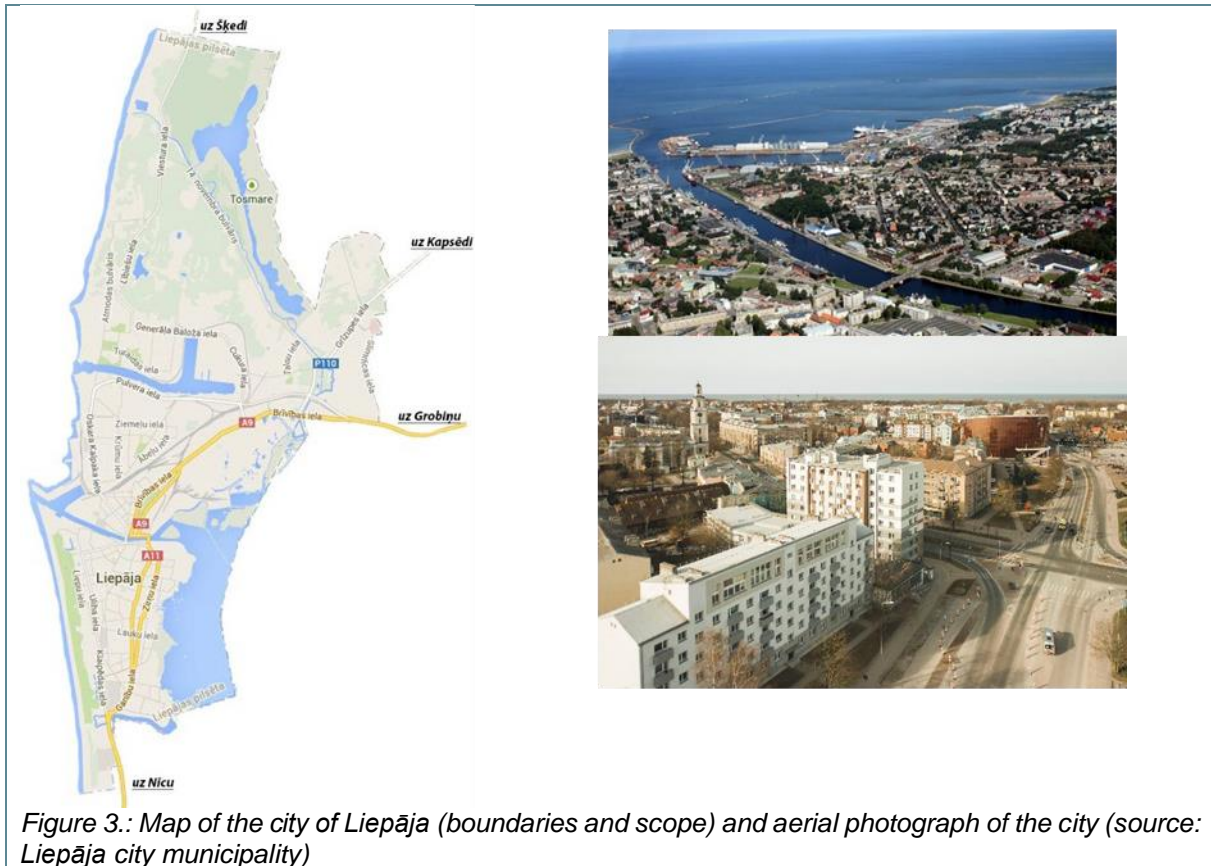


Figure 3.: Map of the city of Liepāja (boundaries and scope) and aerial photograph of the city (source: Liepāja city municipality)

A-1.1: Final energy use by source sectors				
Base year	2006			
Unit	MWh/year			
	Scope 1	Scope 2	Scope 3	Total
Stationary energy sources	563 701	247 157	Not listed	810 858
Energy from DH	266 577	-		266 577
Energy from natural gas	297 124	-		297 124
Electricity from the grid	-	247 157		247 157
Transport	198 468	4 303		202 771
Fuel	198 468	-		198 468
Electricity from the grid	-	4 303		4 303
Waste	Not listed			
Industrial Process and Product Use (IPPU)				
Agricultural, Forestry and Land Use (AFOLU)				



A-1.1: Final energy use by source sectors				
Last inventory year	2022			
Unit	MWh/year			
	Scope 1	Scope 2	Scope 3	Total
Stationary energy sources	397 900	201 012	Not listed	598 912
<i>Energy from DH</i>	210 478	-		210 478
<i>Energy from natural gas</i>	187 423	-		187 423
<i>Electricity from the grid</i>	-	201 012		201 012
Transport	261 127	3 499		264 626
<i>Fuel</i>	261 127	-		261 127
<i>Electricity from the grid</i>	-	3 499		3 499
Waste	Not listed			
Industrial Process and Product Use (IPPU)				
Agricultural, Forestry and Land Use (AFOLU)				

A-1.2: Emission factors applied		
<p>The City of Liepāja employed the methodology outlined in the Covenant of Mayors' guidelines on "How to develop a Sustainable Energy Action Plan" to ascertain greenhouse gas emissions. To quantify emissions accurately, a measurement unit of tonnes of CO₂ was adopted, with calculations based on aggregated energy consumption data. Specifically, in the context of heat, emissions were determined by considering the fuel consumption required for heat production.</p> <p>Emissions from "Liepājas enerģija" boiler houses are calculated based on the amount of fuel consumed. IPCC as well as the national emission factors listed in the table below have been used in the calculations:</p>		
Amount of natural gas consumed, lowest heat of combustion for natural gas (9.35 MWh/1000 m ³)	0.202 tCO ₂ /MWh	
Amount of coal consumed, lowest heat of combustion for coal (6 MWh/t)	0.340 tCO ₂ /MWh	
Diesel fuel consumption, diesel density (0.84 tonnas/m ³), lowest heat of combustion for diesel (11.8 MWh/t)	0.267 tCO ₂ /MWh	
Amount of petrol consumed, lowest heat of combustion for petrol (12.21 MWh/t)	0.249 tCO ₂ /MWh	
Amount of autogas consumed, lowest heat of combustion for autogas (12.65 MWh/t)	0.225 tCO ₂ /MWh	
Local heat production	In year 2006: 0.411 tCO ₂ /MWh	In year 2022: 0.051 tCO ₂ /MWh
Electricity	0.109 tCO ₂ /MWh	

A-1.3: Activity by source sectors			
For base year and last inventory year			
	Scope 1	Scope 2	Scope 3
Stationary energy sources	Heat consumption of buildings connected to DH	Consumption of electricity from the grid by residential, service sector, industrial, street lighting, water, agriculture and other stationary energy sources	Not included
	City natural gas consumption		



Transport	Fuel consumption of private, public and municipal fleets	Electricity consumption of public transport from the grid	
Waste	Not included (Waste management is ensured outside the boundaries of the city; data of the waste sector will be assessed and included in the CCC until December 2024. Emissions from waste transportation are included under Transport sector. Emissions from Industrial processes and product use are excluded as it is part of the EU Emission trading scheme and according Covenant of Mayors guidelines are outside the scope. No data are available on energy consumption in agricultural, forestry and land use sectors. Share of these sectors are unsubstantial against the sectors covered by the SECAP2030)		
Industrial Process and Product Use (IPPU)			
Agricultural, Forestry and Land Use (AFOLU)			

A-1.3: Activity by source sectors			
Other activities that as of now are not included in the SECAP, but are planned to be included			
	Scope 1	Scope 2	Scope 3
Stationary energy sources	<ul style="list-style-type: none"> Energy consumption of individual heating systems in Liepāja (unless natural gas) Amount of electricity generated in individual units and fed into the grid Consumption of heat energy (produced in the city) for waste management in the city 	<ul style="list-style-type: none"> Electricity consumed for the waste management within the city 	<ul style="list-style-type: none"> Distribution losses from supplying electricity
Transport	<ul style="list-style-type: none"> Port fuel consumption¹ 	<ul style="list-style-type: none"> Port electricity consumption 	<ul style="list-style-type: none"> Distribution losses from supplying electricity
Waste²	<ul style="list-style-type: none"> Emissions from waste produced in the city and managed within the city Emissions from urban wastewater managed within the city 		<ul style="list-style-type: none"> Emissions from waste produced in the city and managed outside the city boundaries Emissions from urban wastewater managed outside the city boundaries
Industrial Process and Product Use (IPPU)			
Agricultural, Forestry and Land Use (AFOLU)	<ul style="list-style-type: none"> Emissions from livestock farming within the city 		

¹ The Port of Liepāja is located in the city of Liepāja.

² Waste generated in the city of Liepāja is managed by "Eco Baltia vide" Ltd, "Vides pakalpojumi Liepājai". The unsorted municipal and industrial waste collected in the city of Liepāja is transported and managed in the regional municipal waste disposal landfill "Ķīvītes" in Grobiņa municipality. The landfill is managed by "Liepājas RAS" Ltd.



	<ul style="list-style-type: none"> Emissions from urban land use Emissions from forestry within the city 		
--	--	--	--

A-1.4: GHG emissions by source sectors					
Base year	2006				
Unit	tCO ₂ /year				
	Scope 1	Scope 2	Scope 3	Total	
Buildings	169 524	26 940	Not estimated	196 464	
Transport	52 346	469		52 815	
Waste	Not estimated			Not estimated	
Industrial Process and Product Use (IPPU)					
Agricultural, Forestry and Land Use (AFOLU)					
Total	221 869	27 409			249 278

A-1.4: GHG emissions by source sectors					
Last inventory year	2022				
Unit	tCO ₂ /year				
	Scope 1	Scope 2	Scope 3	Total	
Buildings	48 526	21 910	Not estimated	70 435	
Transport	67 123	381		67 505	
Waste	Not estimated			Not estimated	
Industrial Process and Product Use (IPPU)					
Agricultural, Forestry and Land Use (AFOLU)					
Total	115 649	22 292			137 940

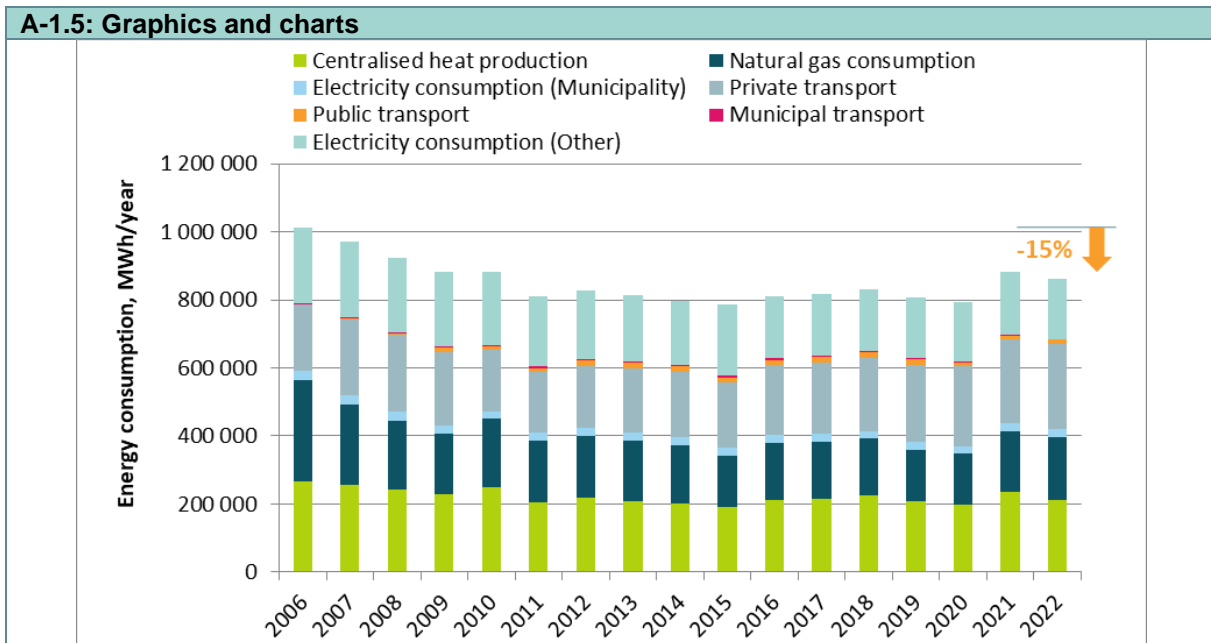




Figure A-1.5.1: Changes in energy consumption since 2006 (base year) in Liepāja

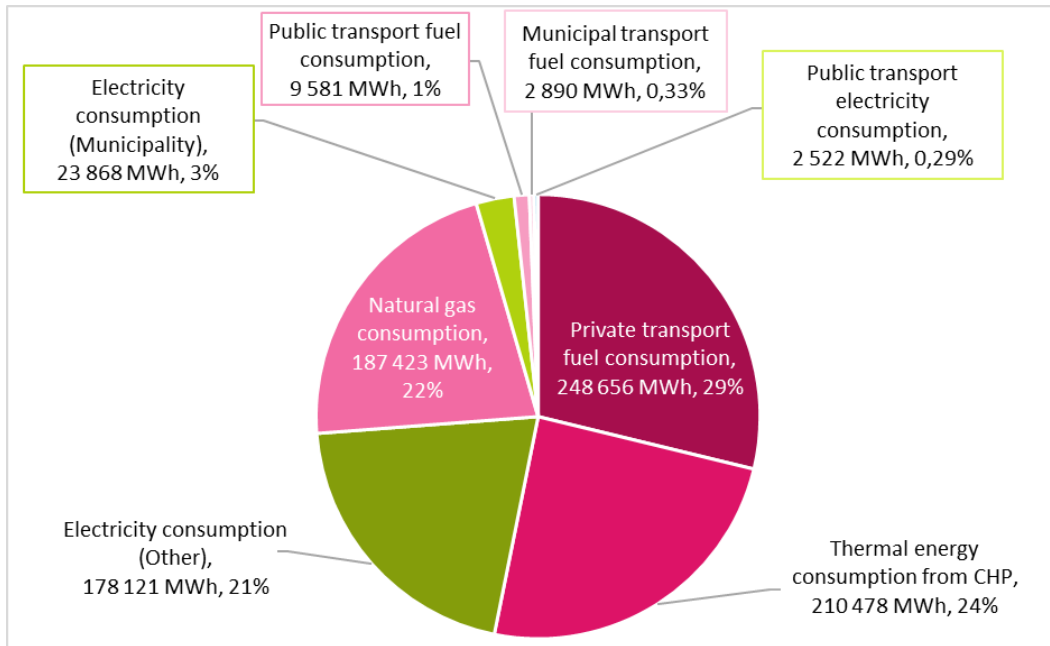


Figure A-1.5.2: 2022 energy consumption by major groups (red for Scope 1 and green for Scope 2)

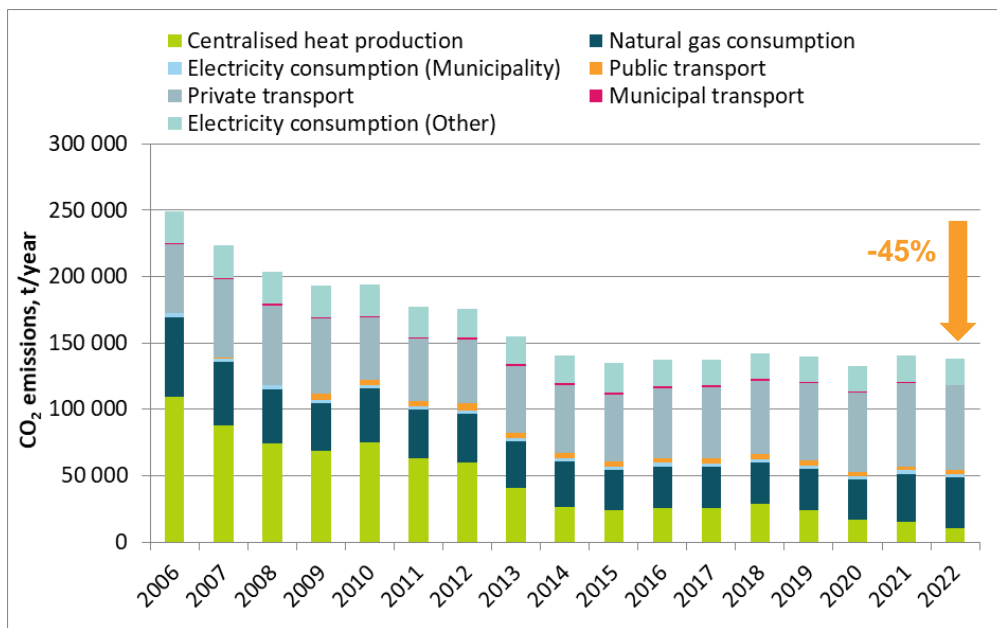


Figure A-1.5.3: CO₂ emissions in Liepāja 2006-2022

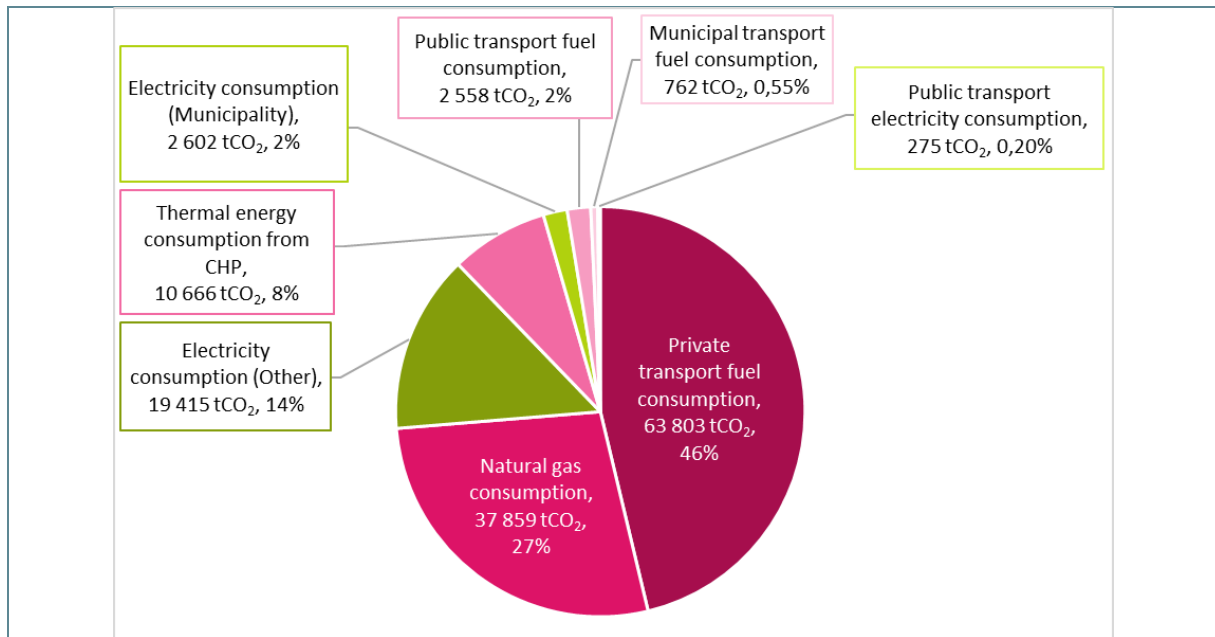


Figure A-1.5.4: Liepāja City 2022 emissions (Scope 1 emissions in red and Scope 2 emissions in green)

The assessment of other Greenhouse Gas (GHG) emissions has been addressed in a separate planning document, such as the City of Liepāja's Air Quality Improvement Program, designed to evaluate the current air quality situation in Liepāja and propose air quality improvement measures for the period 2021-2025. The Action Program for the Improvement of Air Quality in Liepāja for 2021-2025 (hereinafter referred to as the Action Program) is developed with the aim of ensuring and enhancing air quality in the city. Measurements taken at air quality monitoring stations indicate that the most significant air quality issues, including air quality not meeting World Health Organisation standards, are observed in Latvian cities such as Riga, Liepāja, and Rēzekne.

The Liepāja Air Quality Improvement Action Program is aligned with Latvia's Air Pollution Reduction Action Plan for 2020-2030, approved by the Cabinet of Ministers on April 16, 2020, with No. 197. The implementation of the planned measures will contribute to achieving the emission reduction goals set at the EU level for 2020, 2025, and 2030, promoting the attainment of air quality conducive to human health and ecosystem protection in Latvian cities. The execution of the measures outlined in the program will also contribute to the reduction of greenhouse gas emissions and mitigating climate impact.

The Action Program involves an analysis of the current situation, emission trends, emission forecasts, modeling, and information on key pollution sources. The planned actions for 2021-2025 are based on the research results. The existing air quality situation in Liepāja was assessed using measurements taken from February to June 2021, covering both heating and non-heating seasons. Household, transportation, and industrial impacts were examined, compliance with regulatory requirements was determined, measurement data were analyzed, and air pollution modeling was conducted. While the current situation does not indicate exceedances of air quality standards, the program considers urban development and proposes measures for air quality improvement and monitoring in Liepāja to maintain air quality indicators at least at the current level.

The Action Program for Air Quality Improvement in Liepāja includes the following main sections:

1. Section "Nature and Assessment of Air Pollution" provides information on legal regulations in Latvia and the European Union (EU), air quality standards, and describes the levels of nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), polycyclic aromatic hydrocarbon pollutant benz(a)pyrene, and heavy metal concentrations in Liepāja. The section also examines types of air pollution sources and stationary air pollution sources.



2. Section "Measurement Results" describes the results of air pollution measurements for pollutants covered during the development of this program, including nitrogen dioxide (NO₂), particulate matter (PM₁₀ and PM_{2.5}), polycyclic aromatic hydrocarbon pollutant benz(a)pyrene, and heavy metal concentrations.
3. Section "Atmospheric Pollution Modeling" and Section "Results of Atmospheric Pollution Modeling" provide information on the results of air pollution modeling.
4. Section "Territorial Maps of Air Pollution" displays air pollution maps showing the concentration and spatial distribution of air pollution in Liepāja.
5. Section "Measures for Air Quality Improvement" describes selected measures for air quality improvement in Liepāja and evaluates the effectiveness of air quality measures, considering overall societal benefits and summarizing the results of public consultations.

The Liepāja City Municipality, recognising the seriousness of climate change, has focused on reducing Greenhouse Gas (GHG) emissions, extending beyond carbon dioxide (CO₂) reduction. This is evident in the aforementioned Action Program. Future measures will include expanding emission reduction goals to encompass not only CO₂ but also other GHGs. Life cycle assessments will be conducted to identify and qualify emissions from various activities and sectors. Collaboration with other city municipalities has commenced to jointly address climate change challenges and share experiences.

A-1.6: Description and assessment of GHG baseline inventory

Figure A-1.5.1 shows the changes in the total energy consumption of the city of Liepāja since 2006. Since 2006, the city's energy consumption has decreased by 15%, reaching 863 538 MWh in 2022. In 2022, the largest share is accounted for by private transport (29%), heat consumption (24%) and natural gas consumption (22%).

Figure A-1.5.2 shows the energy consumption in Liepāja in 2022 by main groups.

Figure A-1.5.3 shows the total CO₂ emissions in Liepāja city from 2006 to 2022. Since 2006, CO₂ emissions have decreased by 45% and in 2022 they amounted to 137 940 tCO₂. The achieved reduction in CO₂ emissions is due to the implementation of fuel switch and energy efficiency measures in the district heating sector. As already mentioned above, Liepāja has also renovated most of its municipal buildings and carried out a number of other measures.

Figure A-1.5.4 shows the emissions of the city of Liepāja in 2022.



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
Strategy	EU	European Green Deal	Defines the main focus areas for EU climate and energy policy.	The headline target is to achieve climate neutrality at EU level by 2050.	There is a need for sufficient and targeted funding to implement measures not only for infrastructure projects but also for targeted educational activities for all groups of society.
Policy	EU	Roadmap for moving to a competitive low-carbon economy in 2050	Setting an EU-wide energy policy for 2050.	Three key aspects of achieving the energy targets are identified: improving energy efficiency, increasing the use of RES and reducing GHG emissions	
Policy	EU	Clean energy for all Europeans	Sets EU-wide energy policy for 2030.	-	
Package	EU	Fit for 55	Aligning existing European climate policy with new overarching objectives.	-	Targets set for all municipalities to prioritise and target investment at national level
Directive	EU	Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency	EU energy efficiency targets and measures to be taken at national level are defined.	The provisions of the Directive are aligned with the Energy Efficiency and Energy Performance of Buildings Laws	Sustainable housing policy and continued support for building renovation. Removed barriers to attracting third-party funding.
Strategy	EU	EU Climate Adaptation Strategy	Outlines how the EU can adapt to the inevitable consequences of climate change and become resilient by 2050.	Linked to the National Climate Change Adaptation Plan, which in turn includes measures for municipalities in this area	Need for awareness-raising, targeted funding for nature-based projects.
Strategy	National	Sustainable Development Strategy of Latvia until 2030	Supreme national long-term development plan.	The main objective in the energy sector is to ensure the State’s energy independence by increasing energy self-sufficiency and integrating into EU energy networks. In particular, coastal erosion and sand accumulation processes along the Baltic Sea coast are highlighted as climate change risks.	Update the needs of municipalities and the current changes to EU policies.



Action plan	National	National Development Plan of Latvia for 2021-2027	Supreme national medium-term development plan.	Sets out key priorities, including "Nature and Environment - A Green Deal", and mitigating the impacts of climate change through climate change adaptation measures.	There is a need for sufficient and targeted funding to implement measures not only for infrastructure projects but also for targeted educational activities for all groups of society.
Action plan	National	National Energy and Climate Plan for 2021-2030	A policy framework document that sets out Latvia's objectives and measures to achieve them, in terms of reducing GHG emissions and increasing CO ₂ sequestration, increasing the share of RES, improving energy efficiency, ensuring energy security, maintaining and improving energy market infrastructure, and improving innovation, research and competitiveness.	Latvia's national mandatory target for 2030 is 20 472.02 GWh of cumulative energy end-use savings. The total estimated (desired) amount of funding for the implementation of the measures proposed in the Action Plan is EUR 7 362.1 million.	There is a need for sufficient and targeted funding to implement measures not only for infrastructure projects but also for targeted educational activities for all groups of society. Introducing a clear policy in the transport sector to reduce the use of the old vehicle park.
Strategy	National	Long-term Strategy for Renovation of Buildings	The aim is to mobilise investment in the renovation of both public and private housing stock and commercial premises.	Identify cost-effective renovation approaches depending on building type and climate zone, as well as the necessary policy measures to promote cost-effective, complete renovation of buildings, including phased, complete renovation.	Sustainable housing policy and continued support for building renovation. Removed barriers to attracting third-party funding. Standardised contracts and less bureaucratic barriers for project implementation.
Strategy	National	Long-Term Energy Strategy of Latvia 2030 - Competitive Energy for the Society	The goal is a competitive economy through a balanced, efficient, market-based energy policy that ensures the further development of Latvia's economy, its competitiveness in the region and the world, and the well-being of society.	The following targets and performance indicators are set for 2030: <ul style="list-style-type: none"> • 50% RES in gross final energy consumption; • Average heating energy consumption is reduced by 50% compared to the current level. 	Examples of how municipalities can include requirements for homeowners to renovate their homes if energy consumption exceeds a certain level.
Policy	National	Latvia's Strategy to achieve climate neutrality by 2050	The overarching goal is to achieve climate neutrality in Latvia by 2050.	Two strategic objectives have been set: (1) reducing GHG emissions in all sectors of the economy; (2) increasing CO ₂ sequestration.	Targets have been set for all municipalities to prioritise and target investment at national level. Raising awareness of increasing CO ₂ capture.



Law	National	Energy Efficiency Law	The aim is to use and manage energy resources rationally to promote sustainable economic development and limit climate change.	Article 5 sets out the rights and obligations that apply to the Liepāja City municipality.	
Action plan	National	Latvian National Plan for Adaptation to Climate Change until 2030	The overarching objective is to reduce the vulnerability of Latvia's society, economy, infrastructure, built environment and nature to the impacts of climate change and to promote the use of climate change opportunities.	It requires (1) integrating climate change aspects, mitigation and adaptation into the development planning and sectoral policy documents at all levels; (2) ensuring the inclusion of detailed actions and necessary climate change adaptation measures in the development programmes of municipalities.	Sustainable housing policy and continued support for building renovation. Removed barriers to attracting third-party funding. Standardised contracts and less bureaucratic barriers to project implementation.
Policy	National	Environmental Policy Guidelines 2021-2027	The main sub-objectives are to ensure progress towards climate neutrality and to promote climate resilience and adaptation	By 2027, all municipalities must have developed and fully or partially implemented municipal climate change adaptation strategies.	Need for awareness-raising, targeted funding for nature-based projects.
Strategy	Regional	Sustainable Development Strategy 2030 of Kurzeme Planning Region	Defines the Kurzeme Planning Region as a smart, creative, green, internationally competitive and attractive region on the Baltic Sea.	One of the aspects highlighted in the development vision is "Ecologically based thinking and actions make Kurzeme an outpost of the green economy in Latvia and the Baltic Sea region".	
Strategy	Local	The Sustainable Development Strategy of the City of Liepāja and South Kurzeme Region until 2035	The main objective of the strategy is to serve as a long-term framework for the spatial planning and development programme, creating the preconditions for sustainable and integrated development of the city and the county and improving the quality of life of its citizens.	One of the priorities is "People in a harmonious environment", which focuses on creating friendly, accessible, green settlements for all, developing services and mitigating the effects of climate change.	Include development towards climate neutrality and climate resilience for municipalities in the Kurzeme Planning Region.
Program	Local	Liepāja City and South Kurzeme Region Development Program 2022-2027	Action lines identified to achieve long-term objectives and priorities.	The medium-term priorities are subordinated to the following action lines and targets, which must take into account energy efficiency and climate aspects:	



				<ul style="list-style-type: none"> • RV1: Living environment and nature: <ul style="list-style-type: none"> ○ 1.1. Improve public infrastructure. ○ 1.2. Develop the drainage system. ○ 1.3. Develop waste management systems ○ 1.4. Promote the development and improvement of real estate. ○ 1.5 Ensure the preservation and protection of natural assets, in particular by promoting the development, accessibility and diversified use of beaches and coastal areas. ○ 1.6 Develop a safe, sustainable and high quality outdoor environment. ○ 1.7. Contribute to climate change mitigation and adaptation. ○ 1.8. Promote public awareness, behavioural change and environmental education. • RV5: Transport infrastructure and mobility: <ul style="list-style-type: none"> ○ 5.1. Promote the development of digital and smart, sustainable and 	
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				<p>future-proof roads and streets, communication infrastructure.</p> <ul style="list-style-type: none"> ○ 5.2 Develop mobility infrastructure that is safe for pedestrians, cyclists and other low-energy vehicles, consistent with universal design. ○ 5.3 Develop a modern and sustainable public transport system (transport and infrastructure) and smart mobility points. 5.4 Develop modern, competitive and sustainable port, airport and rail infrastructure. 	
Program	Local	Liepāja City Action Programme for Improving Air Quality 2021-2025	Assessed the current air quality situation in Liepāja and proposed measures to improve air quality in the period 2021-2025.	For the measures listed, see section A-2.2.	Align the measures included in both the Air Quality Improvement Programme and the SECAP2030.

**A-2.2: Description & assessment of policies****European Union and global politics:**

In 2015, the United Nations (UN) General Assembly adopted the 2030 Agenda for Sustainable Development, which sets out 17 Sustainable Development Goals and 169 sub-goals to be achieved in order to reduce global poverty and make global development more sustainable (see Figure 1.1). The inclusion of these goals is also important for the future development of the City of Liepāja in the areas of energy and climate change adaptation.

European Union and global politics: energy and climate mitigation

To achieve these goals, the European Union (EU) strategy "European Green Deal" was adopted on 11 December 2019, setting out the main orientations for EU climate and energy policy.

At EU level, energy policy for the period up to 2050 is set out in the EC declaration "Roadmap for moving to a competitive low-carbon economy in 2050". For the period up to 2030, energy policy is set out in the EC declaration "Clean energy for all Europeans".

The European Climate Law sets a headline target for 2050 to achieve climate neutrality at EU level and increase the GHG reduction target for 2030. In addition, on 14 July 2021, the European Commission launched the "Fit for 55" package to align existing European climate policy with the new headline targets, as every legislative proposal and planned action needs to comply with the "green oath: do no harm", i.e. a commitment that no planned action will harm (but preferably - will contribute to) the Green Deal objectives.

The EU's energy efficiency targets are set out in Directive 2023/1791 of the European Parliament and the Council, which also specifies measures to be taken at the national level. The directive was developed in 2012 (initially numbered as 2012/27/EU) and revised in 2023. According to the new directive, member states collectively must ensure a reduction in final energy consumption of at least 11.7% by 2030 compared to 2020.

The revised directive further strengthens the exemplary role of the public sector in improving energy efficiency practices. The directive sets an annual target of a 1.9% reduction in energy consumption for the entire public sector. Additionally, an annual 3% obligation for building renovations applies to all levels of government. In addition to its obligations, the public sector will play a leading role in the development of the energy efficiency services market. Priority will be given to energy efficiency projects in the public sector when entering into energy performance contracts whenever possible. When making procurement decisions, government authorities will continue to consider energy efficiency requirements, promoting systematic improvements.

Furthermore, countries are compelled to prioritise energy efficiency improvements for vulnerable consumers, households with low incomes, and individuals in social housing.

European Union and global politics: adaptation to climate change

On 24 February 2021, the European Commission adopted the new European Union strategy for adapting to climate change. The strategy sets out how the EU can adapt to the unavoidable consequences of climate change and become resilient by 2050.

At municipal level, the development of the energy sector and the mitigation of climate impacts are promoted by the Covenant of Mayors initiative, which started in 2008 after the adoption of the EU climate and energy package. In 2014, the Mayors Adapt initiative was launched to promote and support municipal adaptation to climate change. In 2015, these two initiatives were merged into one initiative called the "Covenant of Mayors for Climate & Energy".

National policy: energy and climate mitigation

The State's supreme national long-term development planning document, "Sustainable Development Strategy of Latvia until 2030", sets as a key objective in the energy sector to ensure energy independence by increasing energy self-sufficiency and integrating into EU energy networks.

The State's supreme national medium-term development planning document, the National Development Plan of Latvia for 2021-2027, sets out key priorities, including "Nature and Environment – A Green Deal".



Its main objectives are to move towards low-carbon, resource-efficient and climate-resilient development, as well as biodiversity conservation.

The Cabinet of Ministers approved the planning document "National Energy and Climate Plan 2021-2030" (NECP2030) by its Order No 46 of 4 February 2020. According to NECP2030: The long-term vision of the Plan is to contribute to the development of a sustainable economy in a sustainable, competitive and secure manner.

In 2023, the new Directive 2023/1791 on energy efficiency was revised and adopted by the European Parliament and the Council, establishing more ambitious goals for the reduction of energy consumption. Member states, including Latvia, are obligated to update their National Energy and Climate Plans (NECPs), specifying indicative national contributions and trajectories towards achieving the set targets. The final version of the updated plan must be submitted by June 2024.

In line with Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency, a long-term strategy for the renovation of buildings was developed in 2017 and revised in 2020. The aim of the strategy is to mobilise investment in the renovation of both public and private stock of residential buildings and commercial premises.

On 28 May 2013, the Cabinet of Ministers reviewed and approved the information report of the Ministry of Economics "Long-Term Energy Strategy of Latvia 2030 -

Competitive Energy for the Society". The Strategy is designed to offer a new energy policy scenario that not only focuses on the development of the energy sector, but also views it in the context of climate policy - the EU's binding framework for reducing GHG emissions.

On 28 January 2020, the Cabinet of Ministers examined the informational report "Latvia's Strategy to achieve climate neutrality by 2050" elaborated by the Ministry of Environmental Protection and Regional Development, which is a long-term policy planning document to be implemented by horizontally integrating GHG and climate resilience targets in all sectors of the economy. The overarching objective of the Strategy is to achieve climate neutrality for Latvia in 2050.

Latvia's indicative target under Directive 2012/27/EU of the European Parliament and of the Council on energy efficiency and the other requirements of the Directive have been incorporated into the Energy Efficiency Law, which entered into force on 29 March 2016. The Energy Efficiency Law will be revised in line with the European Parliament and Council Directive 2023/1791 on energy efficiency and the updated National Energy and Climate Plan (NECP) for 2030. Article 5 of the Law on Energy Efficiency in the State and Local Government Sector sets out the following rights and obligations that apply to the Liepāja City Municipality:

- 1) State institutions, municipalities and other derived public persons shall have the right:
 - a. develop and adopt an energy efficiency plan as a stand-alone document or as part of the municipal spatial development programme, which includes defined energy efficiency targets and improvement measures;
 - b. implement an energy management system, either separately or as part of the implementation of its energy efficiency plan;
 - c. use energy efficiency services and energy efficiency service contracts to implement energy efficiency improvement measures.
- 2) National municipalities implement and maintain a certified energy management system.
- 3) A state authority, municipality or other derived public body that has implemented an energy management system shall inform the responsible authority annually of the energy savings resulting from the operation of the energy management system. The procedure for reporting energy savings achieved after the implementation of an energy management system by a public body, municipality or other public derivative entity shall be determined by the Cabinet of Ministers.
- 4) When assessing projects which will be implemented in whole or in part through payments from the state budget, state guarantees, interest rate subsidies on loans or other financial assistance granted or provided from state or European Union budget funds and foreign financial assistance funds, public authorities, municipalities and other public derivative entities which have implemented an energy management system, the maximum number of points to be obtained



according to the quality assessment criteria shall be increased, following the procedure laid down in the regulatory act on granting the relevant funding.

The provisions of the Law on the Energy Performance of Buildings derive from Directive 2010/31/EU of the European Parliament and of the Council on the energy efficiency of buildings. The aim of this law is to promote the rational use of energy resources by improving the energy performance of buildings and by informing the public about the energy consumption of buildings.

Another important aspect to consider in the energy and climate fields is energy poverty. The Energy Law defines energy poverty as "the inability of a household user to maintain an adequate temperature in the home or to use or pay for services provided by energy utilities because of low energy efficiency or because the payment for these services is a high proportion of the household income". The National Energy and Climate Plan of Latvia sets a target of reducing energy poverty in Latvia below the EU average by 2030, i.e. to reach below 7.5% by 2030.

National policy: adaptation to climate change

In the State's supreme national long-term development planning document, "Sustainable Development Strategy of Latvia until 2030", climate change is identified as one of the most important challenges related to global processes, affecting the economy and ecosystems, ecosystem services, natural and human capital. The Strategy highlights in particular coastal erosion and sand accumulation processes along the Baltic Sea coast in relation to climate change risks.

The National Development Plan of Latvia for 2021-2027 sets as one of its action objectives to mitigate the impacts of climate change by implementing climate change adaptation measures, achieving improvements in physical and infrastructure provision in the management of economic sectors, and sustainable management of rainwater, taking into account the latest scientific data and projections on achieving and strengthening climate resilience.

On 17 July 2019, Latvian National Plan for Adaptation to Climate Change until 2030 was approved. The plan sets out potential climate adaptation actions for local governments, including:

- 1) integrate climate change, mitigation and adaptation considerations into the preparation and updating of spatial development planning and sectoral policy documents at all levels;
- 2) ensure that detailed actions and necessary adaptation measures are included in the development programmes of municipalities.

On 31 August 2022, the Cabinet of Ministers approved the planning document "Environmental Policy Guidelines 2021-2027" (EPG2027) by Order No 583, with the main sub-objectives to ensure progress towards climate neutrality and to promote climate resilience and adaptation to climate change. The EPG2027 requires that by 2027 all municipalities should have developed and fully or partially implemented municipal climate change adaptation strategies.

Regional framework

At the regional level, the supreme long-term development planning document is the Sustainable Development Strategy of Kurzeme Planning Region (KPR) 2030, which defines the KPR as a smart, creative, green, internationally competitive and attractive region on the Baltic Sea coast. One of the aspects highlighted in the development vision is "Ecologically based thinking and actions make Kurzeme an outpost of green economy in Latvia and the Baltic Sea Region". One of the long-term priorities of the Sustainable Development Strategy of KPR 2030 is the efficient use of resources.

Liepāja City Municipality development planning documents

The vision of the Sustainable Development Strategy of the City of Liepāja and the South Kurzeme Region until 2035 is "Liepāja - an internationally recognised, green and smart port city on the Baltic Sea coast", while the strategic goal is "An achievable and smartly managed economically active environment in sustainable natural and human harmony on the Baltic Sea coast".

The Liepāja City and South Kurzeme Region Development Program 2022-2027 sets out the courses of action to achieve the long-term objectives and priorities.

In order to assess the current air quality situation in Liepāja and to plan measures to improve air quality, the Liepāja City Action Programme for Improving Air Quality 2021-2025 has been developed. According to the measurements carried out within the framework of the programme, the current situation does not



indicate any exceedances of air quality standards, therefore the programme sets out measures for improvement and monitoring of air quality in the city of Liepāja, with the aim of maintaining air quality indicators at least at the level of the existing situation.

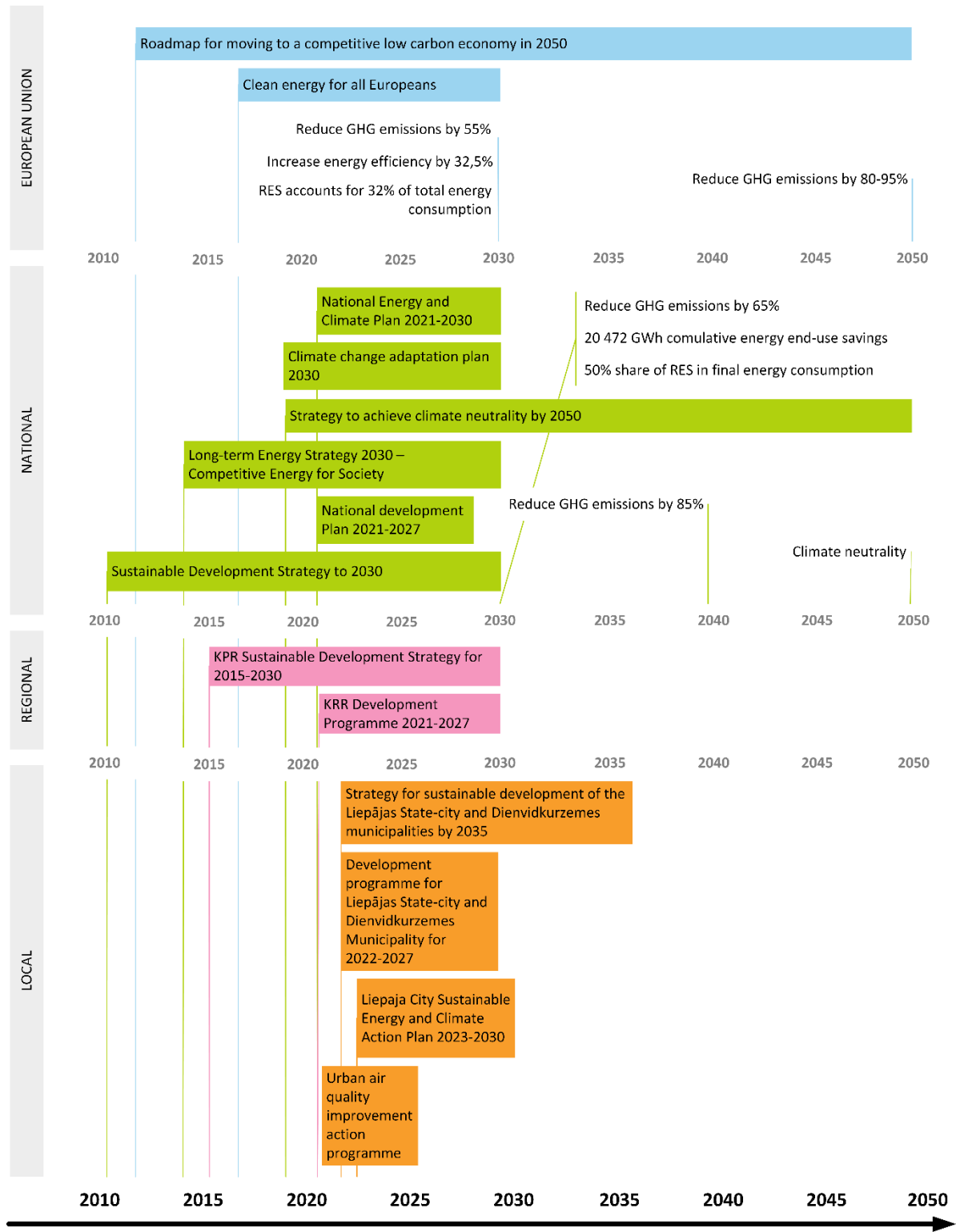


Figure A-2.2.1: Review of EU, national, regional, local planning documents and targets related to the energy and climate sector



A-2.3: Emissions gap										
	Baseline emissions (2006)		Residual emissions / offsetting ¹		Baseline emissions reduction target ²		Emissions reductions in existing strategies ³		Emissions gap (to be addressed by action plan) ⁴	
	tCO ₂	%	tCO ₂	%	tCO ₂	%	tCO ₂	%	tCO ₂	%
Stationary energy sources	196 704	72	-	-	160 503	82	88 517	45	160 503	82
Transport	52 574	28	-	-	38 534	73	23 658	45	38 534	73
Waste	-	-	-	-	-	-	-	-	-	-
Industrial Process and Product Use (IPPU)	-	-	-	-	-	-	-	-	-	-
Agricultural, Forestry and Land Use (AFOLU)	-	-	-	-	-	-	-	-	-	-
Total	249 278	100	-	-	199 037	80	112 175	45	199 037	80

¹ Residual emissions consist of those emissions which can't be reduced through climate action and are being offset. Residual emission 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.

In 2020, on March 19, the Sustainable Energy and Climate Action Plan for the city of Liepāja for the period 2020-2030 was approved. The plan established the goal to stabilize the city's CO₂ emissions at a level 45% lower than in 2006 by the year 2030.

The challenge may arise from insufficient information regarding the expected emission reductions associated with the identified policies and regulations, coupled with a lack of standardised methodologies for quantifying such reductions.

While Table A-2.3 indicate reductions in existing strategies and a gap equal to the target, it's important to consider the comprehensive nature of this Action Plan. One important part is in section B-2.1 which provides detailed information on action portfolios, and within the Action Plan, there are explicit efforts outlined in other sections to change policies in order to reduce the emissions gap.

Moreover, it's crucial to recognise the collaborative role of the European Commission and NetZeroCities in facilitating communication with national governments regarding policy changes. In many instances, municipalities face limitations in implementing certain changes without the active involvement and support of the national government. European Commission, along with NetZeroCities, should play a pivotal role in advocating for environmentally friendly policies at higher levels of governance that leads to reduce emissions gap.

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
Municipality	Municipal management	High	High	High
Municipal buildings	Building owners, heads of institutions, municipal staff	Medium	High	Medium
Residential buildings	Building managers, apartment owners	Medium	High	Low
Private houses	Owners and residents	Non	High	Low
District heating	"Liepājas enerģija" Ltd	High	High	High
Local electricity generation	"Liepājas enerģija" Ltd	High	High	Medium
Municipal transport	Municipal staff	Non	Medium	Low
Public transport	Municipal agency "Liepājas sabiedriskais transports", residents	Low	High	High
Private transport	Gas station companies, businesses, car owners	No	High	Low
Services	Businesses	No	Medium	Low
Manufacturing	Businesses	No	High	Low
Water management	"Liepājas ūdens" Ltd	No	Medium	Medium
Street lighting	Municipal organisation "Komunālā pārvalde"	No	Medium	Medium
Waste management	"Liepājas RAS" Ltd	Medium	Low	Low
Green and blue zones	Municipal organisation "Komunālā pārvalde"	No	High	Low

A-3.2: Description of systemic barriers – textual elements

The stakeholder mapping serves as a foundational step in recognising the intricate dynamics influencing climate initiatives. By acknowledging the influence and interest levels of diverse stakeholders, the municipality gains insights into potential barriers and opportunities.

Climate mitigation and adaptation actions in the city of Liepāja are targeted at six main focus groups:

- The municipal infrastructure domain includes a set of measures to address energy efficiency in municipal buildings, street lighting and municipal transport.
- The housing sector includes measures for housing renovation and a wider shift towards RES.
- The Transport and Mobility section plans measures to promote sustainable and environmentally friendly transport use and solutions in the municipality.
- The district energy sector includes measures to switch to RES and attract new consumers.
- The manufacturing and servicing sector includes measures to improve the energy efficiency of enterprises and to switch to RES.
- In the area of climate change adaptation, measures are planned to contribute to the resilience of the municipality to climate change, including measures to promote nature-based solutions and CO₂ sequestration.



For each of these sectors, the following challenges were defined:

Municipal infrastructure:

- 100% green electricity consumption
- Cost-effectiveness for vehicle replacement
- Change in commuting habits of municipal employees
- E-services needs assessment
- Prioritisation of digitisation solutions
- Involvement of enterprises in the energy management system

District energy production:

- Energy taxes for individual heat producers
- Replacement of DH boiler houses with RES and innovative solutions
- Capacity to connect new consumers
- Organisational and financial challenges of connecting new consumers
- Ensuring a competitive DH tariff
- DH zoning
- Chimney safety, fuel quality, environmental pollution
- Ability of low-income to pay for energy

Transport and mobility:

- Reducing the number of private vehicles
- Providing opportunities for people to substitute private transport:
 - Adhering to the principles of the mobility pyramid
 - Development of cycling and pedestrian infrastructure
 - Promoting access to and use of public transport
 - Development of electric car infrastructure
- Changing the commuting habits of the population:
 - Increase the number of public transport passengers
 - Increase the proportion of the population cycling and walking
 - Increase the number of registered electric cars in the city
- Ensure monitoring of transport users
- Encourage the decommissioning (priority) or replacement of old vehicles

Housing:

- Increasing knowledge, responsibility and motivation among homeowners
- Increasing the competence of building managers, developing standardised documents
- Promotion of associations
- Share of fossil fuels in private houses, quality of biomass
- Legal and organisational aspects of energy communities
- Capacity of construction to renovate buildings
- Capacity of the low-income to pay energy bills

Industry and services:

- Detailed availability of energy data by subsector
- Involvement of industry and service companies in the SECAP
- Facilitating dialogue with industry and service companies
- Identification of the needs of industry and service enterprises in relation to the achievement of the SECAP objective
- Developing the business case for industry and service companies for RES solutions or for connecting to DH

Adaptation to climate change:

- Institutionalising climate change adaptation
- Ensuring the health and comfort of residents under extreme conditions, including, the implementation of anti-flood measures on Amatas Street



- Infrastructure resilience
- Integration of adaptation aspects into all aspects of urban planning
- Prioritisation of nature-based solutions

In conclusion, the city of Liepāja has developed a comprehensive and focused strategy for climate mitigation and adaptation, targeting six key sectors. The plan encompasses a wide range of measures, from improving energy efficiency in municipal infrastructure to promoting sustainable transport solutions, embracing renewable energy sources, enhancing housing renovation, and adapting to climate change. Each sector is confronted with specific challenges that highlight the complexity of the city's transition. These challenges include issues such as 100% green electricity consumption, cost-effective vehicle replacement, changing commuting habits, and ensuring the resilience of infrastructure under extreme conditions. The plan not only addresses technical and operational aspects but also emphasises the need for behavioral changes, stakeholder involvement, and the consideration of socioeconomic factors. By delineating these challenges, Liepāja's Action Plan sets up approach for targeted interventions, fostering collaboration, innovation, and resilience in the face of climate change.

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

In order to achieve the goal of achieving climate neutrality by 2030, the involvement of all groups of society will be more intensive than it has been up to now. In each of the sectors included in the plan, there are certain CO₂ reduction targets for which the Management and Monitoring Group will be responsible for the overall achievement, and for the sub-sectors, the local government commissions or groups responsible.

Until now, the Energy Task Force has been responsible for achieving the CO₂ emissions targets in Liepāja, but in view of the fact that the municipality will sign the Climate city agreement with more ambitious objectives, the organisational structure needs to be revised. The general organizational scheme is given in Figure A-3.3.1.

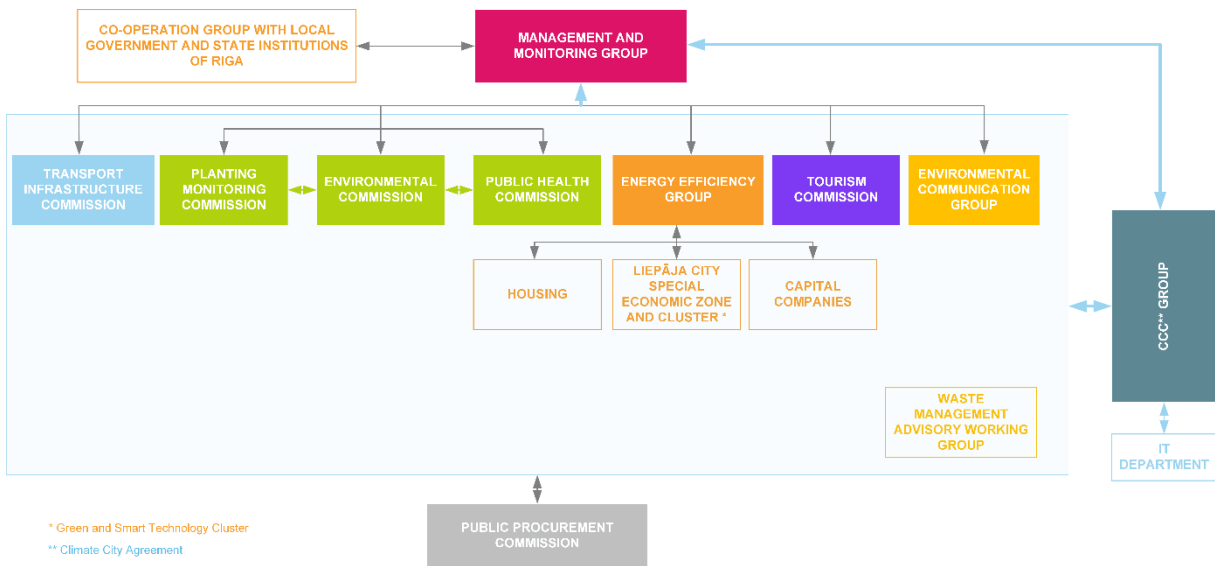


Figure A-3.3.1: Structure of the Action Plan Working Group

Table A-3.3.1 summarises the main roles and responsibilities of all the commissions and groups involved.

Table A-3.3.1. Roles and responsibilities of commissions and groups involved in the organisational structure



Group	Main roles and responsibilities
Management and Monitoring Group (newly formed)	<ul style="list-style-type: none"> • Monitoring of SECAP2030 measures • Development of cooperation with Riga municipality and state institutions • Decision-making and monitoring of measures in the DH sector
Transport Infrastructure Commission (existing)	<ul style="list-style-type: none"> • Organising and monitoring mobility and transport activities • Delegation of measures to the responsible authorities • Cooperation with other groups and commissions, in particular the Environmental Communications Group and the Environment Commission • Ensure feedback to the CCC group
Planting Monitoring Commission; Environment Commission and Public Health Commission (existing)	<ul style="list-style-type: none"> • Organising and monitoring adaptation measures and nature-based solutions • Delegation of measures to the responsible authorities • Cooperation between commissions on adaptation issues and other commissions and groups • Ensure feedback to the CCC group
Energy efficiency group with 3 sub-groups (newly formed)	<ul style="list-style-type: none"> • Organise and monitor the implementation of measures in the municipal, housing and industrial and service sectors • Setting up sub-groups and organisation of work • Delegation of measures to the responsible authorities • Developing close cooperation with other groups and commissions • Ensure feedback to the CCC group
Tourism Commission (existing)	<ul style="list-style-type: none"> • Organising and monitoring activities in the tourism-related sectors • Delegation of measures to the responsible authorities • Cooperation with other groups and commissions, in particular the Environmental Communication Group • Ensure feedback to the CCC group
Environmental Communication Group (newly formed)	<ul style="list-style-type: none"> • Developing close cooperation with all other groups to identify key needs • Organisation and monitoring of environmental communication activities • Delegation of measures to the responsible authorities • Ensure feedback to the CCC group
Waste Management Advisory Working Group (existing)	<ul style="list-style-type: none"> • Assess and calculate CO₂ emissions from the waste management sector • Identify measures to reduce CO₂ emissions from the waste management sector
CCC group (informal and existing)	<ul style="list-style-type: none"> • Ensure that the conditions of NetZeroCities are met and communicated with the representatives of the initiative • Monitoring the implementation of joint measures • Ensure annual inventory of CO₂ emissions • Provide feedback to the Management and Monitoring Group • Organise renewal/updating of SECAP and other NetZeroCities initiative documents
Public Procurement Commission (Existing)	<ul style="list-style-type: none"> • Include energy-related aspects (energy efficiency and RES) and adaptation to climate change, including the nature-based solution • Cooperation with all groups and commissions

Most of the commissions and groups listed in Table A-3.3.1. have already been established, but their mandate should be extended and the task of implementing measures included in SECAP2030, which will allow the municipality of Liepāja to achieve the objective of climate neutrality. A number of groups will need to be re-established and their potential composition is listed below:

- Management and Monitoring Group: City Council Chairman and his deputy(-ies), Executive Director, two Deputy Executive Directors, Liepājas Special Economic Zone Manager, Chairman of «Liepājas



- enerģija» Ltd, Executive director's Advisor on IT and Smart Digital Solutions, project manager (climate change and energy efficiency);
- Energy Efficiency Group: Deputy Executive Director for Property, Head of the Municipal Administration, Head of Development Administration, Head of Environment Division, Head of Construction Board;
 - Environmental Communication Group: Head of Education Management, Head of Public Relations and Marketing, Non-Governmental Organisations;
 - CCC Group: Project Manager (Climate Change and Energy Efficiency), Deputy Head of Development Management, Project Manager of the Development Administration Project Enforcement Division, Senior Environment Protection Officer, Head of IT Division IT Services Management.

These committees, integral to the municipal structure, fall under the oversight of the Liepāja Central administration. Recognising the pivotal role they play in implementing identified actions, a comprehensive set of guidelines will be outlined. This framework will meticulously define the authority, functions, and reporting mechanisms for each committee, elucidating their roles and responsibilities. Emphasizing transparency and accountability, this approach seeks to establish clear communication channels and collaborative processes between the committees and the Liepāja Central administration. By refining the delineation of authority and responsibilities, we aim to fortify the effective functioning of these committees within the municipal framework, ensuring their alignment with overarching policy goals.

Roles and responsibilities of groups and commissions also are described and connected to each activity in action portfolio.

It will be very important to develop feedback and cooperation with the CCC group in the organisational structure, which will be the responsible unit for assessing how CO₂ emissions are changing in Liepaja and how it moves towards climate neutrality. The existing and newly established groups are within the framework of Liepāja Central administration and fall under its responsibility.

It is important not only to improve and strengthen the organisational structure of the municipality in order to achieve the objectives, but to involve all stakeholders. The local government of Liepājas will not be able to achieve climate neutrality objectives without extensive involvement of all groups of society. Figure A-3.3.2 identifies the main stakeholders, taking into account their interest and influence in achieving climate neutrality objectives.

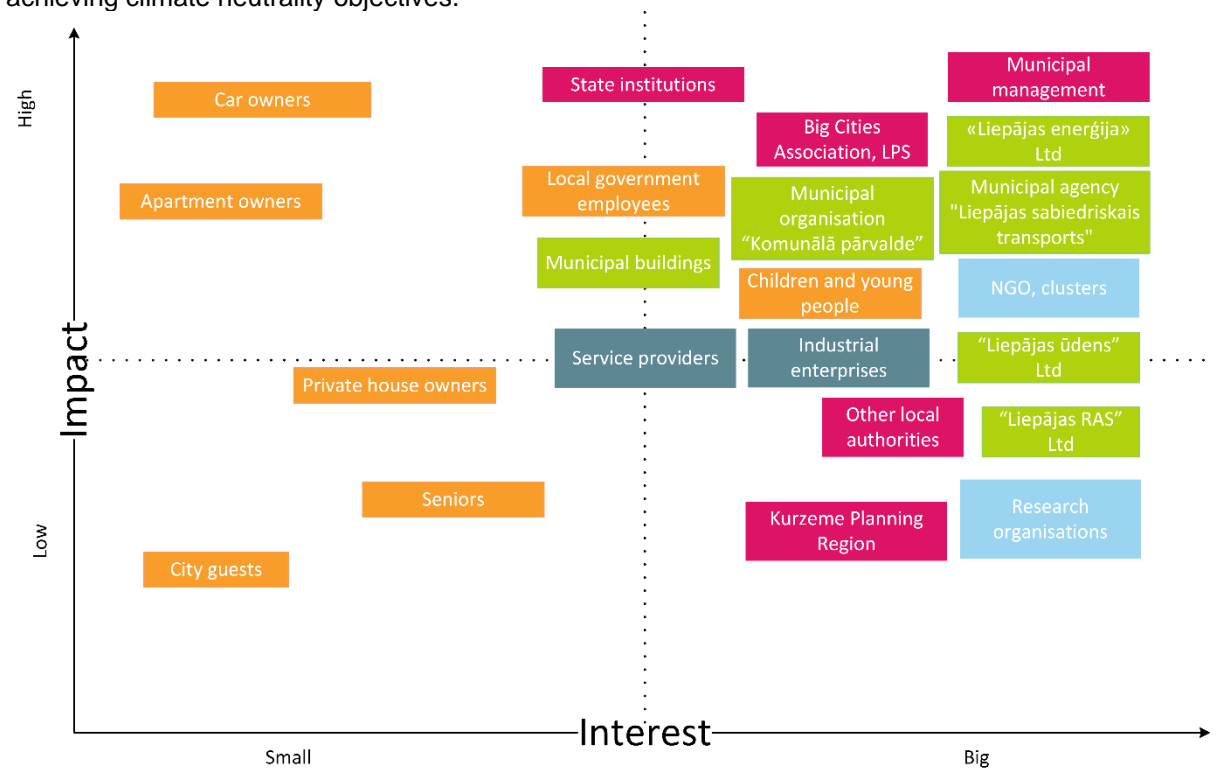




Figure A-3.3.2: Mapping stakeholders to climate neutrality goals

Breakdown of the parties involved (Figure A-3.3.2):

- The red-coloured schedule identifies those parties who decide and/or may influence decisions at political level, including the necessary changes to the regulatory framework.
- The green colors include those local government organisations and departments responsible for one of the sectors included in the plan, such as « Liepājas enerģija» Ltd, which are responsible for the DH sector.
- Prange highlights a variety of population groups and they are separately divided according to a variety of conditions, such as car owners, apartment and private house owners. Each of these groups plays an important role and each of them must also put forward certain measures.
- Dark grey identifies industrial companies and service providers.
- Blue - NGO and other organisations.

As regards the involvement of stakeholders, at least the following key challenges have been identified:

- Involvement of stakeholders in public processes, including climate neutrality and the introduction of measures.
- Low support at national level to introduce effective policies and measures at local level to achieve climate neutrality in some sectors.
- Lack of funding to ensure investment in all planned measures to achieve climate neutrality.

The involvement of each of the parties involved will require targeted measures. The organisations mentioned in Figure A-3.3.1 will be responsible for their implementation. For the involvement of the Parties, the municipality will use these and other methods used by the other 100 NetZeroCities municipalities in Europe:

- Targeted surveys to identify the needs of target groups and the necessary support and/or incentive mechanisms, such as the abandonment or replacement of vehicle owners to a more environmentally friendly vehicle.
- Regular thematic discussions using, for example, a design thinking approach to involve target groups in the implementation of measures.
- Information and support measures such as Energy Efficiency Week, European Mobility Week, etc.
- Sharing good practice examples such as the introduction of nature-based solutions more broadly.

Alignment and coherence between the public engagement narrative and the public-led action plan

Similarly, there are plans to actively engage the community in improving and supplementing SECAP and CCC, as well as implementing various activities. Some of these measures include hackathons organised by the Education Administration on the development of smart urban environments, digitalisation, and other topics, surveys of residents on climate change and mobility, seminars on energy efficiency, and more. It should be noted that not only the municipality and its capital companies are involved in informing and engaging the public but also NGOs (including through funding competitions announced by the municipality), Liepāja University, LSEZ, and other companies. One of the main tasks in this part is to attract finances for public campaigns focusing on climate change, mobility, adaptation etc.

Furthermore, in the Latvian context, a notable cultural barrier exists, wherein individuals exhibit a marked resistance to change and a reluctance to actively participate in the development of pivotal documents. This cultural trait sharply contrasts with the societal norms prevalent in Western Europe, where a greater predisposition toward adaptability and open communication is observed. Also cultural trait about resistance to change, rooted in the historical context of Soviet occupation, presents a significant challenge. The resistance to changes and improvements is slowly fading away, and there's hope that situation with this tough barrier will keep getting better with each new generation.

Just transition

An important aspect we're examining is how inclusive and accessible the development process of the Action Plan is for all members of the community. We aim to identify any efforts made to remove obstacles for the involvement of marginalised groups.



Liepāja embraces the principle of "just transition" as a guiding force in its commitment to climate action. Recognising the importance of fairness and inclusivity, we strive to ensure that CCC activities are navigated in a socially equitable manner. While our commitment to "just transition" is firm, we acknowledge the need to elaborate on its practical implementation within the commitments document.

Liepāja Central administration is already involving marginalised communities in discussions for specifically tailored needs and it covers all topics not only climate change mitigation.

Here is some information about the ongoing programs and support opportunities offered by Liepāja municipality:

1. Liepāja municipality runs financial support competitions for various sectors. These competitions likely provide funding to initiatives or projects in different areas, contributing to the development and well-being of the community.

2. The mayor, along with other specialists, actively engages with citizens by visiting every local community. This direct interaction is a valuable approach to understanding the needs, concerns, and aspirations of the residents, fostering a sense of community involvement and collaboration.

3. For economically vulnerable residents in Liepāja, the municipality offers a range of support options, including:

- One-time health care allowance annually.
- 70% reduction in property tax.
- 50% reduction in meal costs in preschool educational institutions.
- 100% reduction in meal costs in general education schools.
- Municipal assistance in resolving housing issues.
- State-provided legal aid.
- Exemption from co-payment fees for students from low-income families in educational institutions implementing professional and interest-based education.
- EU-funded food packages for those with incomes not exceeding 327 euros.

In order to promote citizen participation in the decision-making process, every interested party was invited to express their opinion on the draft binding regulations "On the income threshold for low-income households in the Liepāja City Municipality". The objective of the binding regulations "On the income threshold for low-income households in the Liepāja City Municipality" is to establish the income threshold for low-income households. These binding regulations are essential to enable more residents with low incomes to qualify for municipal social benefits.

These support measures cover a wide spectrum, addressing health, housing, education, and legal needs of the residents, particularly focusing on those facing financial challenges. They demonstrate the municipality's commitment to social welfare and inclusivity, creating a safety net for vulnerable populations.

In the context of citizen engagement, we are dedicated to be more accessible for the participation of marginalised groups in the development of the participation budget. We recognise that inclusivity is paramount to the success of our climate initiatives, and we aim to actively involve all segments of society, particularly those facing challenges.

Our commitment goes beyond acknowledgment, as we provide specific details on initiatives and strategies designed to foster inclusivity. We understand the importance of ensuring that everyone in our community has a meaningful role in shaping Liepāja's sustainable and climate-resilient future.

Moving forward, we are going to provide more explicit details on how the principle of "just transition" is practically implemented in our climate action initiatives. We will try to transparently report on the measures taken to lower barriers for marginalised groups and ensure their active participation in shaping the trajectory of our city's sustainable future.

Demographic data



To enrich the depth and inclusivity of CCC, we recognise the significance of integrating demographic data. While the plan also acknowledges specific societal groups, we commit to refining our engagement strategy by harnessing the insights provided by demographic information.

Understanding the nuanced composition of our community is pivotal in tailoring our outreach efforts to address the distinct needs and challenges faced by various demographic segments. This data-driven approach serves several purposes.

This extends to customising our broader engagement strategies. Events, platforms, and outreach methods will be adapted to suit the unique characteristics and preferences of different demographic groups. In doing so, we aspire to create an environment that is not only accessible but also relatable for all community members.

Crucially, by incorporating demographic data, we commit to addressing participation barriers. This involves proactive measures based on identified demographic trends, ensuring that our engagement initiatives are not only diverse but also accessible to every citizen.

In our ongoing commitment to inclusivity, Liepāja Central administration Development department is already actively implementing regular updates to demographic data across various documents. This established practice is integral to our monitoring and evaluation process, providing an iterative approach to track changes over time and assess the effectiveness of our engagement strategies. In Figures A-3.3.3 till A-3.3.6 can be seen some of the demographic data in Liepāja.

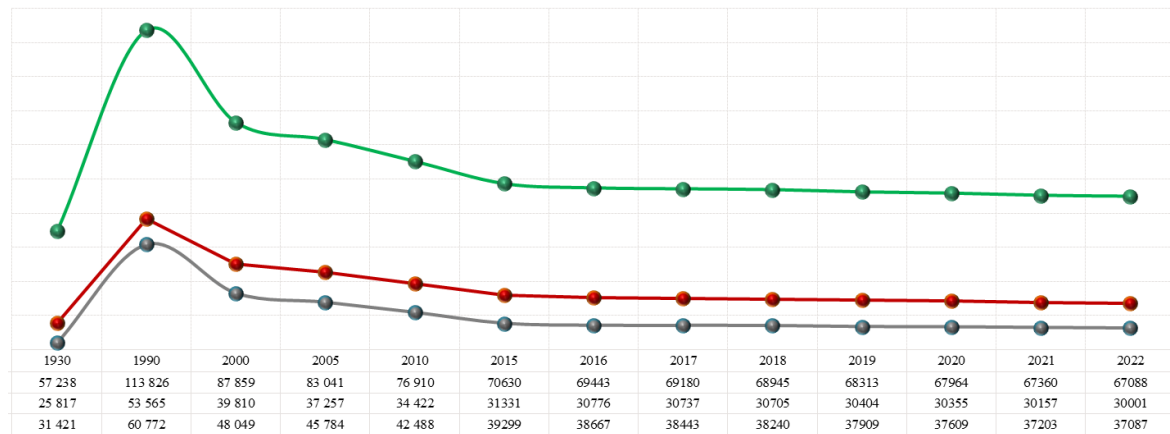


Figure A-3.3.3: Population of Liepāja (green), incl. women (red) and men (grey)

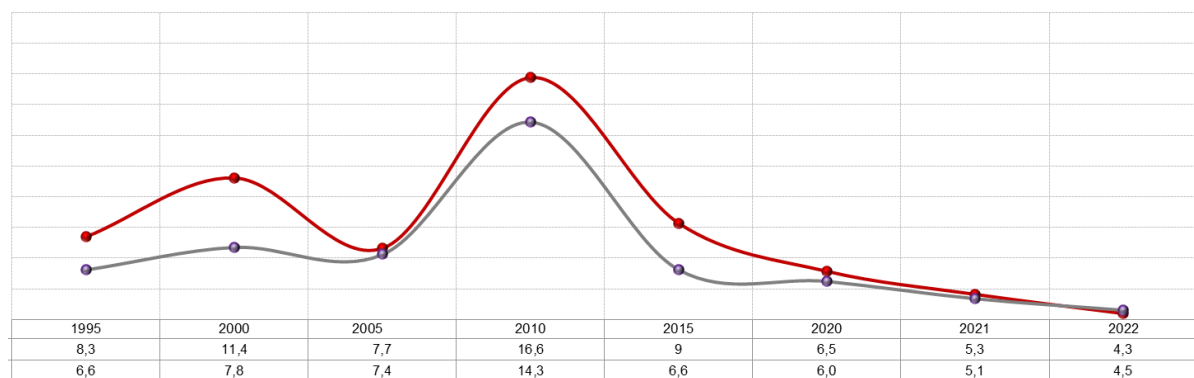


Figure A-3.3.4: Unemployment rate of Liepāja (red) and Latvia (grey)

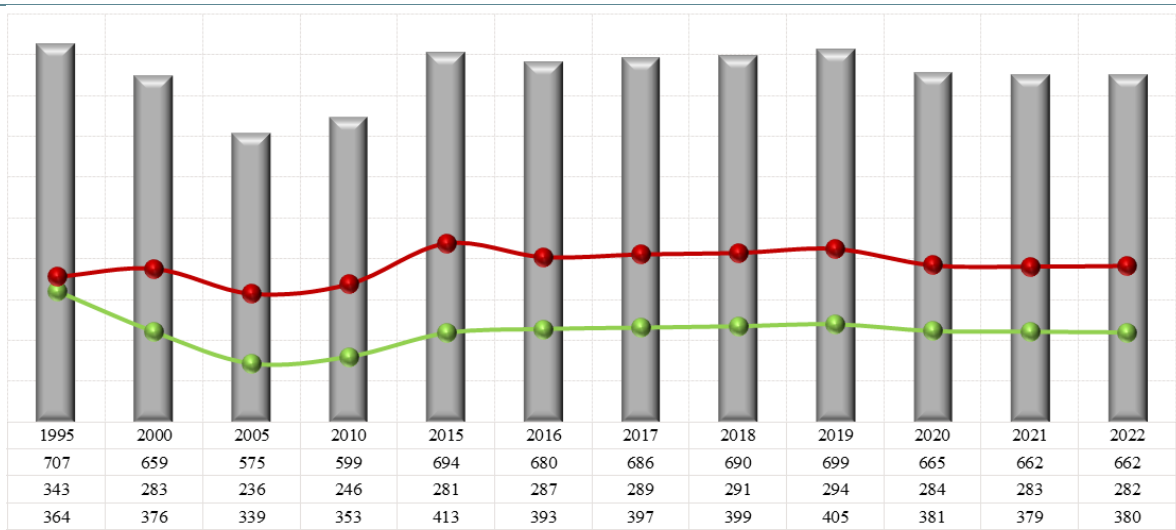


Figure A-3.3.5: Demographic load in Liepāja (number of children and pensioners per 1000 working-age population) (grey), below working-age (green) and above working-age (red)

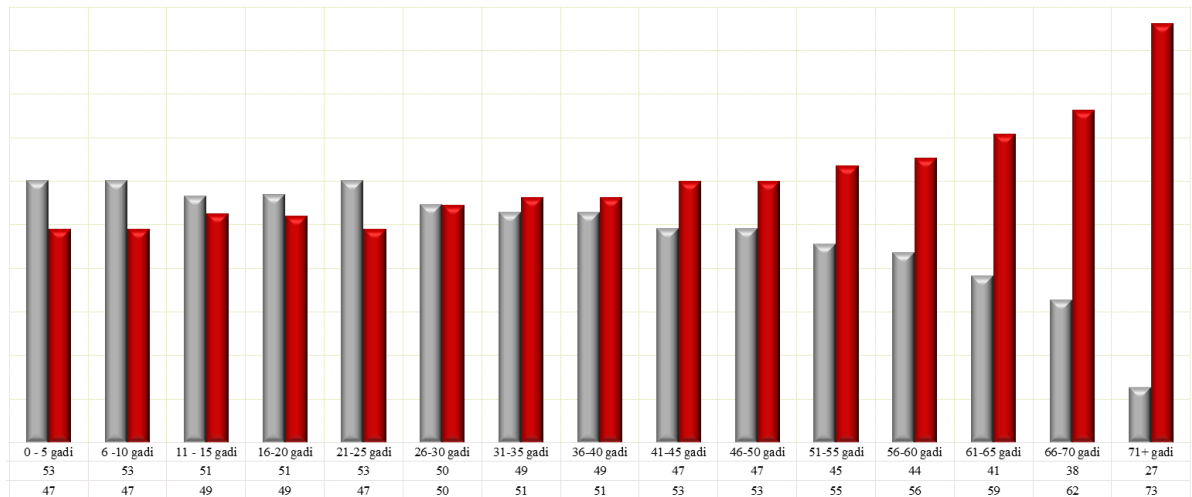


Figure A-3.3.6: Gender and age composition of the population of Liepāja in 2022 (%), men (grey), women (red)



4 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.

4.1 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 (3-4/5+ years)	Direct impacts (Emission reductions)	Indirect impacts (co-benefits)
Energy systems	Technology/ infrastructure		Transition to 100% renewable energy in DH (3-4)	10 666 tCO ₂ /year	<ul style="list-style-type: none"> • Reduction of environmental and climate impacts • Increased use of renewable energy • Fuel diversification • Innovative solutions for DH • Creating a "green image" • Creation of new highly skilled jobs
			Attracting new heat consumers to Liepāja DH (5+)	13 845 tCO ₂ /year	<ul style="list-style-type: none"> • Reduction of environmental and climate impacts • Fewer individual sources of pollution (chimneys) in the city • Competitiveness of the heating company and the heat tariff are maintained
		Renewable energy sources for heating municipal and captial company buildings		1 976 tCO ₂ /year	<ul style="list-style-type: none"> • The condition and energy efficiency of municipal buildings and their ventilation systems are assessed • The municipality reduces energy costs, climate impact and CO₂ emissions • Improved air quality and indoor comfort in municipal buildings • Risk of disease and illness reduced • Renovated and visually attractive building for the whole community • The municipality sets a good example in achieving climate neutrality objectives • Possibility of third-party financing, which guarantees long-term energy savings throughout the contract and allows the municipality to account for liabilities off-balance sheet
		Using green renewable electricity in municipal infrastructure		2 472 tCO ₂ /year	<ul style="list-style-type: none"> • Reduced energy consumption and energy costs • Reduced impact on climate change • Opportunity to show good practice to citizens



	Governance & policy		Transition to renewable energy in industry and services (5+)	1 998 tCO ₂ /year	<ul style="list-style-type: none"> • Reduction of environmental and climate impacts • Increased use of RES and creation of a "green image" • Diversification of energy production • Involvement of entrepreneurs in municipal activities
			Transition of private homes to renewable energy (5+)	923 tCO ₂ /year	<ul style="list-style-type: none"> • Reducing environmental and climate impacts • Awareness of the situation regarding individual heating supply in the city • Promoting the use of RES • Reduction of energy consumption and costs for the population • Improving air quality
Mobility & transport	Technology/ infrastructure		Development and promoting electromobility and micro-mobility (3-4)	43 350 tCO ₂ /year	<ul style="list-style-type: none"> • Increase in the number of electric cars • Reduced air pollution, fuel consumption and climate change impacts • Reduced fuel costs
		Access to and promotion of environmentally friendly public transport		6 023 tCO ₂ /year	<ul style="list-style-type: none"> • Quality and efficiency of existing transport services • Improved service to citizens • Reduced need for citizens to use private transport • Reduced fuel consumption and impact on climate change • Reduced fuel costs
			Traffic calming and optimisation (3-4)	3 190 tCO ₂ /year	<ul style="list-style-type: none"> • Public transport, cycling and pedestrian flows and infrastructure adapted to the population • Promotion of environmentally friendly modes of travel • Reduced fuel consumption and climate change impacts • Reduced fuel costs • Positive impact on human health
		Development of e-services and digital solutions		64 tCO ₂ /year	<ul style="list-style-type: none"> • Reduced fuel consumption and impact on climate change • Reduced air pollution from transport • Saved commute time • Improving the quality, efficiency and accessibility of municipal services



					<ul style="list-style-type: none"> • Increased efficiency of municipal work • Reduction of paper circulation • Strengthening digital skills of citizens and municipal staff
		Environmentally friendly commute and services for municipal employees		762 tCO ₂ /year	<ul style="list-style-type: none"> • Reduced CO₂ emissions and climate impact • Reduced fuel costs • The municipality sets a good example for citizens • Increased use of RES in the transport sector • More cycling and walking improves health
Waste & circular economy	-	-	-	-	-
Green infrastructure & nature based solutions	Technology/ infrastructure		Climate Change Adaptation Package (5+)	-	
			CO ₂ sequestration and nature-based measures	-	<ul style="list-style-type: none"> • Reduced impact on climate change • Improved air quality • Temperature reduction • Biodiversity • Reduced noise pollution • Prevention of erosion • Tree planting measures for public involvement
Built environment	Technology/ infrastructure		Renovation of apartment buildings (5+)	-	<ul style="list-style-type: none"> • Residents have access to high quality, reliable and easily accessible information as a prerequisite for implementing energy efficiency measures in housing • Raising awareness of municipal residents about energy consumption, costs and their ability to influence them, and their ability to renovate their apartment buildings • Municipal environment and territory cleaned up, urban image and social environment improved • Reduced energy costs for citizens, environmental and climate impacts
		Continuous maintenance of the		130 tCO ₂ /year	<ul style="list-style-type: none"> • The municipality knows, manages, forecasts and is able to influence energy consumption and related costs



		energy management system			<p>in municipal and capital buildings, street lighting and municipal transport</p> <ul style="list-style-type: none"> • Savings of at least 3-8 % per year on energy costs • EMS independently assessed, implemented and systematically improved
	Finance & funding		"Energy efficiency first" principle in the industry and services sector (5+)	2 220 tCO ₂ /year	<ul style="list-style-type: none"> • Mitigation of environmental and climate impacts • Promoting business • Increasing competitiveness • Creating a "green image"
	Learning & capabilities		Raising public awareness (3-4)	-	<ul style="list-style-type: none"> • Promoting the involvement of the city's citizens • Raising awareness of municipal residents about energy consumption, costs and their ability to influence them, opportunities to renovate their apartment buildings • Reduced energy costs for residents, environmental and climate impacts



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

The city of Liepāja aims to achieve climate neutral status by 2030, i.e. to reduce CO₂ emissions by 80% compared to 2006. However, it is important to acknowledge that the successful attainment of these goals for the City of Liepāja depends on navigating and mitigating a multitude of external factors, some of which may be beyond the direct control of the city.

The City of Liepāja's vision and key actions to 2030 are summarised in Figure B-1.2.1. In order to achieve 80% CO₂ equivalent emission reductions, the figure identifies the key sectors where these reductions can be achieved and to what extent, and lists the key measures. Around the center it can be seen how this target (80% CO₂ equivalent emission reductions) is divided by sectors (target = sectors summed (100%)).



Figure B-1.2.1.: City of Liepāja CO₂ emission reduction targets in key sectors and measures to be implemented

Integration and horizontal aspects

To achieve climate neutrality, the following horizontal aspects will be taken into account and integrated throughout the planning and implementation process:



1. Closer cooperation with all stakeholders, including industry, service providers, NGOs, citizens and others.
2. Principles such as "energy efficiency first", "green procurement", "innovative financial instruments" will be integrated throughout the policy planning and implementation chain, not only in the municipality, but also much more widely, e.g. in industry, etc.
3. The advantages and disadvantages of future policies and measures will be assessed from environmental, social, economic, financial and other perspectives.
4. A cross-sectoral approach will be ensured in all planning, implementation and monitoring processes.

Liepāja city values in its robust citizen engagement efforts, exemplified by the inclusive development of the Action Plan. Our commitment extends beyond this initiative, serving as a positive example for other municipalities. We have successfully incorporated citizen input into various decisions, rules, and regulations, showcasing a dedication to participatory governance and transparent decision-making. This experience positions Liepāja as a model for effective citizen engagement, contributing to the overall success of our municipality's initiatives.

In addition to CO₂ emission reduction targets, Liepāja sets quantitative and qualitative targets in the energy and climate change adaptation sectors, as well as for energy poverty reduction by 2030.

Energy poverty becomes an increasingly relevant issue every year. In Section 1 of the Energy Law, the following definition is provided: energy poverty - the inability of a household consumer to maintain an appropriate temperature in the dwelling or to use the services of energy suppliers provided services, or the settlement for them, may be affected by low energy efficiency or because the cost of these services constitutes a high proportion of household income. So far, at the municipal (and also national) level, the number of energy-poor households has not been specified; therefore, the baseline value is determined according to Sections 120 and 121 of the Energy Law, which, according to data from the Social Service of the Liepāja City Council, is 6.6% (national planning documents set a target level of 7.5%). However, it should be noted that the definition of energy poverty is broader and includes those residents who are not registered as needy or low-income and do not use municipal social assistance but still face difficulties in paying bills for the received energy or, for the purpose of savings, maintain the temperature in the dwelling significantly below the comfort level.

Objectives for reducing energy poverty: 1) Thoroughly assess and identify the groups of energy-poor residents in the city of Liepāja and specify their proportion; 2) Develop and implement tools to reduce energy poverty in the city of Liepāja; 3) Ensure that the level of energy poverty does not exceed the existing (6.6%) threshold in the city of Liepāja.

This issue becomes particularly significant when residents need to make a collective decision on the renovation of multi-apartment buildings. Often, during the building renovation process, the less affluent groups of residents are those who, due to financial reasons, are reluctant to support such projects, and as a result, they are not implemented, affecting not only themselves but also the well-being and energy payments of other residents. The goals for reducing energy poverty are summarized in Table 2.7.

Measures to mitigate and adapt to climate impacts in the city of Liepāja are focused on six main focus groups (see Figure B-1.2.2. and Figure B-1.2.3.):

- In the municipal infrastructure, a set of measures is included that address issues related to the rational use of energy in municipal buildings, street lighting, and municipal transport.
- In the housing sector, measures for housing renovation and broader energy efficiency are included.
- In the transport and mobility section, planned measures will promote sustainable and environmentally friendly transportation usage and solutions in the municipal territory.
- The DH energy production sector includes measures aimed at transitioning to RES and attracting new consumers.
- In the manufacturing and services sector, measures are included to increase the energy efficiency of businesses and transition to RES.



- In the climate change adaptation field, measures are planned to enhance the municipality's resilience to climate change, including initiatives that promote nature-based solutions and CO₂ sequestration.

Priorities

We were the first municipality in Latvia to implement an energy management system

Among the state cities in Latvia, our city stands at the forefront in the renovation of public and multi-apartment housing

However, it's not just about being the first, it's about achieving substantial results because we believe in the impact it can make

We set the main project headlines as – ensure safe environment, care for people's health, and create comfortable living

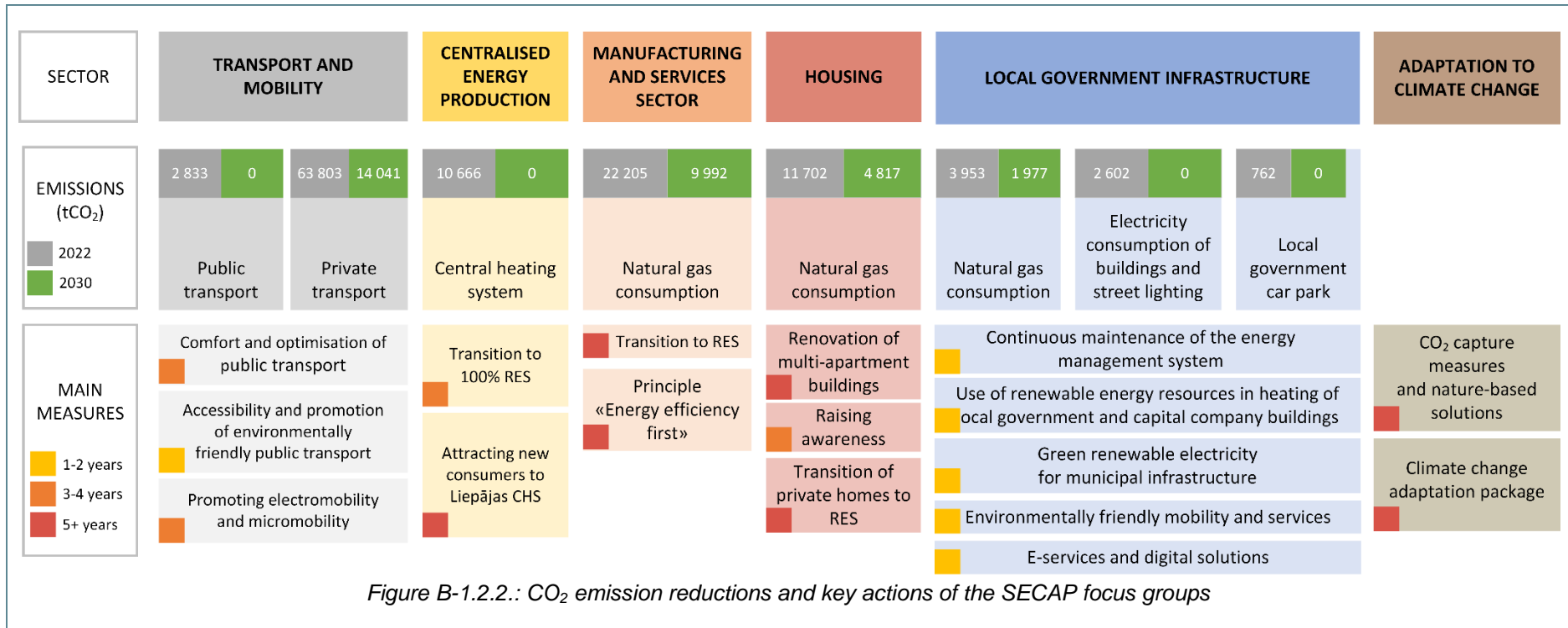
Strategic priorities – promote the use of environmentally friendly means of mobility, energy efficiency first, digitalisation, RES usage, adaption to climate change and public education

Milestones

We have developed a system with 111 indicators to check if we are reaching this milestone in year 2030 or not. "Figure 1: Liepāja's roadmap to climate neutrality" shows our way and milestones in this project. Every year we update our CCC and try to set milestones for each activity more precisely.

Timeline

In "Figure B-1.2.2.: CO₂ emission reductions and key actions of the SECAP focus groups" it can be seen the timeline and priorities of our activities. Figure B-1.2.2 summarises the CO₂ emissions of year 2022 and projected emissions of year 2030 for each sector and identifies the key actions to achieve reductions, while Figure B-1.2.3 also lists the first actions for each measure.



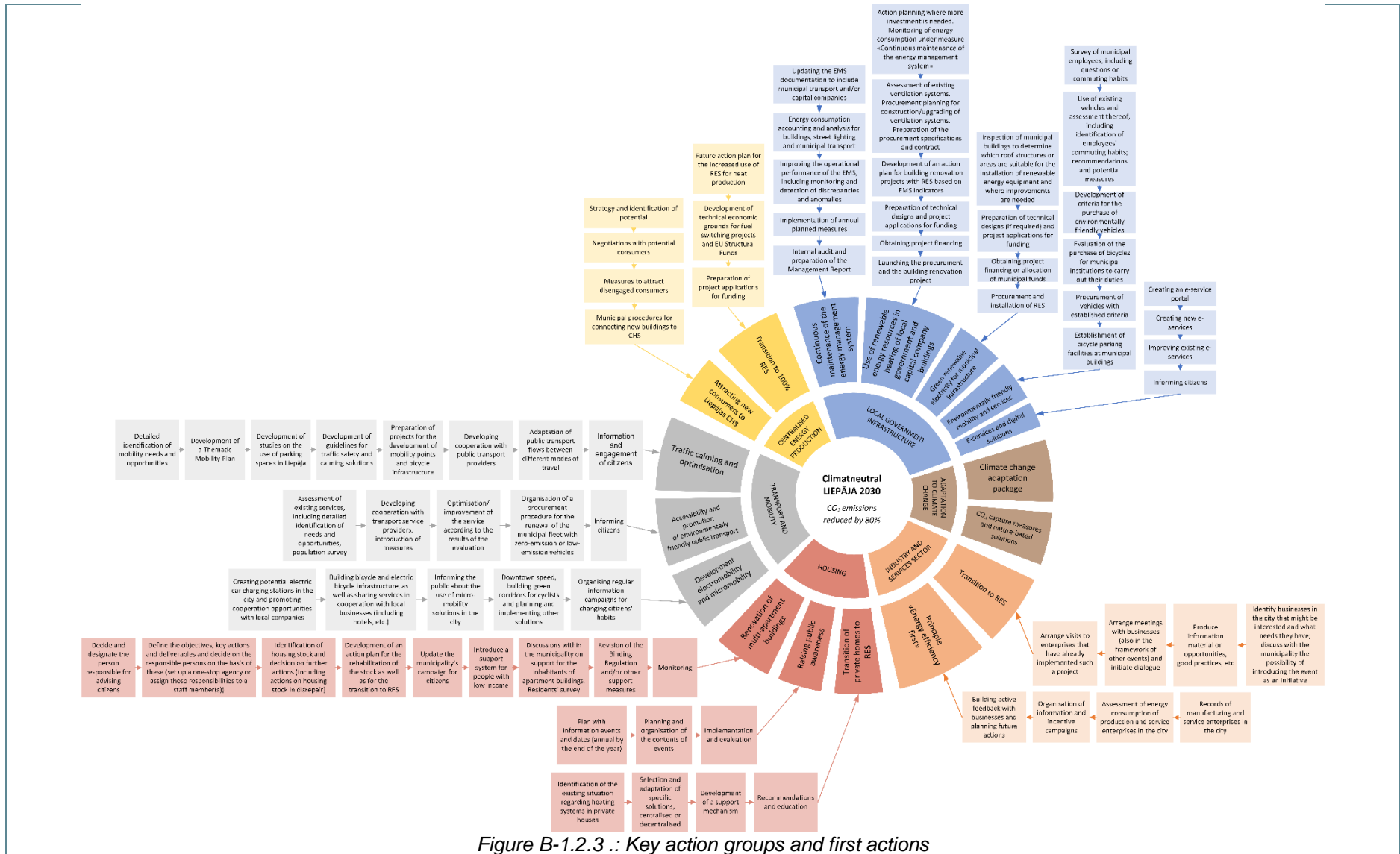


Figure B-1.2.3.: Key action groups and first actions



4.2 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
Energy systems	<ul style="list-style-type: none"> • Transition to 100% renewable energy in DH • Connecting new consumers to DH • Use of renewable energy for heating of municipal buildings • Use of green renewable electricity in municipal infrastructure • Transition to renewable energy in the industrial and service sectors • Transition of private homes to renewable energy 	CO ₂ emissions will be reduced by switching to 100% RES in Liepāja city DH, and by reducing the city's natural gas consumption by 56%.
Mobility & transport	<ul style="list-style-type: none"> • Promoting electromobility and micro-mobility • Access to and promotion of environmentally friendly public transport • Traffic calming and optimisation • Development of e-services • Environmentally friendly mobility and services for municipal employees 	CO ₂ emissions will be reduced by reducing the number of private vehicles in the city by 16,000, optimising and modernising public transport, and replacing the municipal fleet with 100% electric vehicles.
Waste & circular economy	-	-
Green infrastructure & nature based solutions	<ul style="list-style-type: none"> • Climate Change Adaptation Package • CO₂ sequestration and nature-based measures 	A set of climate change adaptation measures will be implemented. Nature-based solutions will be prioritised in urban development. A plan for CO ₂ sequestration measures will be developed.
Built environment	<ul style="list-style-type: none"> • Renovation of apartment buildings • Energy management system • “Energy efficiency first” principle in the manufacturing and service sectors • Educating the public on reducing energy consumption in housing 	CO ₂ emissions will be reduced by reducing the city's energy consumption through various energy efficiency measures.



B-2.2: Individual action outlines		
Action outline	Action name	Transition to 100% renewable energy in DH
	Action type	Long-term
	Action description	<p>“Liepājas enerģija” Ltd is a private equity company preparing a business plan until 2030. Taking into account that the share of natural gas boiler houses in the district heating system of Liepāja is still relatively high and that the demand for heat energy will decrease in the coming years as buildings will be increasingly insulated, it is necessary to develop a long-term concept for the district heating system, assessing various alternatives for the wider use of renewable energy sources in the district heating system, with the aim of producing 100% energy from RES in 2030.</p> <p>EU policy in the sustainable energy sector is strongly oriented towards reducing energy consumption and increasing the use of renewable energy sources, with funding also earmarked for these measures. Liepājas enerģija needs to anticipate the impact of existing and planned legislation and its future business model in order to be able to provide energy at a competitive price in the long term. It is necessary to develop energy efficiency measures and monitoring plan in order to adequately prepare for and implement the targets set by the EU Energy Efficiency Directive.</p>
Reference to impact pathway	Field of action	Energy system
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	“Liepājas enerģija” Ltd – implementation of the measure
	Action scale & addressed entities	Central electricity and heat supply system
	Involved stakeholders	Boiler houses that still use fossil fuels
	Comments on implementation	<ul style="list-style-type: none"> • Future action plan for the increased use of RES for heat production • Development of feasibility studies for fuel switching projects and for EU Structural Funds • Preparation of project applications for funding
Impact & cost	Generated renewable energy (if applicable)	52 765 MWh/year
	Removed/substituted energy, volume or fuel type	Natural gas - 52 765 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	10 666 tCO ₂ /year
	Total costs and costs by CO ₂ unit	30,66 million EUR 2 875 EUR/tCO ₂



B-2.2: Individual action outlines		
Action outline	Action name	Attracting new heat consumers to Liepāja DH
	Action type	Long-term
	Action description	<p>In 2022, natural gas consumption accounted for 26% of the city's total CO₂ emissions. In the future, it is necessary to encourage these natural gas consumers to connect to DH.</p> <p>In the future, along with energy efficiency projects that will contribute to the reduction of natural gas consumption, it is necessary to find solutions to attract new consumers to the DH. This measure should also be considered in the long-term concept of the district heating system.</p> <p>However, it is not always economically viable to add new consumers to an existing heating system. In such cases, municipalities can use indicators to make an initial decision on further research. In practice, two indicators are used for the planning of district heating systems:</p> <ul style="list-style-type: none"> • heat load density (which should be at least 1.05 MW/km); • heat density (target: 2,5 MWh/m). <p>The main objective of the measure is to promote and ensure cost-effective connection of new heat consumers to the existing heat supply networks in all settlements.</p> <p>The aim of “Liepājas enerģija” customer service is to connect new objects every year, ensuring an annual heat sales of at least 200 GWh. The connection of new facilities shall at least compensate for the decrease in heat consumption of customers as a result of energy efficiency measures and possible climate change during the business plan period.</p> <p>In addition, as part of this measure, “Liepājas enerģija” Ltd in cooperation with the Liepāja State City Administration is to develop an action plan to ensure the connection of customers to the DH who have been disconnected in recent years. This is particularly important to ensure that the existing heating system is not dismantled and that apartment owners do not install individual heating solutions that have not been approved by the Construction Board, which will affect the long-term safety of the building.</p> <p>By 2030, natural gas consumption will be reduced by connecting 50% of households and utility users and 40% of service and industrial users to DH.</p>
Reference to impact pathway	Field of action	Energy system
	Systemic lever	Governance and policy
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> • Management and Monitoring Group - Monitoring of the measure • Liepājas enerģija Ltd - implementation of the measure
	Action scale & addressed entities	The whole city where the heat network is located and all potential consumers ready to connect to DH heat networks
	Involved stakeholders	Building board - informing existing and potential consumers
	Comments on implementation	<ul style="list-style-type: none"> • Strategy and identification of potential • Negotiating with potential consumers



		<ul style="list-style-type: none"> Measures to attract disengaged consumers Municipal procedures for connecting new buildings to DH
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	Natural gas - 68 538 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	13 845 tCO ₂ /year
	Total costs and costs by CO ₂ e	22,5 million EUR 1 625 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Continuous maintenance of the energy management system
	Action type	Long-term
	Action description	Energy management is the systematic management of energy consumption with the aim of reducing it, resulting in the most technically and economically efficient solutions for the management of municipally owned facilities, improving energy efficiency and reducing financial costs and GHG emissions in the long term. The City of Liepāja has already implemented and certified an EMS according to ISO 50001 standard. The boundaries of the EMS are municipal buildings and street lighting. It is necessary to extend the borders of the EMS, including capital companies, as well as to evaluate the inclusion of the local government car fleet.
Reference to impact pathway	Field of action	Building
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Energy and CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> Energy Efficiency Group - Organising and implementing the measure Capital companies - the introduction of energy management system
	Action scale & addressed entities	City-wide: all municipalities and capital company buildings, street lighting and municipal transport
	Involved stakeholders	Working Group - provides data and other information Companies - provide data and other information
	Comments on implementation	<ul style="list-style-type: none"> Updating the EMS documentation to include municipal transport and/or capital companies Energy consumption accounting and analysis for buildings, street lighting and municipal transport Improving the operational performance of the EMS, including monitoring and detection of discrepancies and anomalies Implementation of annual planned measures Internal audit and preparation of the Management Report
Impact & cost	Generated renewable energy (if applicable)	



	Removed/substituted energy, volume or fuel type	1 193 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	130 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	100 thousand EUR 769 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Renewable energy sources for heating municipal and capital company buildings
	Action type	Short-term
	Action description	<p>Increasing the use of RES in heat generation is an effective way to reduce CO₂ emissions in cities. Before installing RES equipment, the heat consumption of the building must be reduced as much as possible, increasing the energy efficiency of the building.</p> <p>The remaining uninsulated municipal and capital company buildings will be subject to energy efficiency improvement measures. Procurements should not only include an energy performance guarantee, but also a number of other preconditions for the successful implementation of the building renovation project and the management of the building after renovation, such as a single control system for all equipment.</p> <p>In addition, the ventilation systems (or lack thereof) and management of municipal institutions, in particular educational institutions, should be assessed. Both renovated and non-renovated buildings should be assessed and the results included in future renovation projects. In the future, when renovating municipal buildings, but in particular educational establishments, the municipality should foresee and include the construction and installation of ventilation systems in the technical design.</p> <p>Regardless of the renovation projects, the municipality should consider installing RES equipment or connecting to DH those buildings that are currently heated by individual natural gas boilers. By 2030, 50% of the municipality's an capital company buildings will have converted to RES for heat production or will be connected to CH.</p>
Reference to impact pathway	Field of action	Energy system
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> Energy Efficiency Group - Planning and further delegation of the measure to the responsible authorities; monitoring Capital companies - introduction of measures
	Action scale & addressed entities	Municipal buildings
	Involved stakeholders	Managers of municipal authorities, agencies and capital companies - Organising the operation of buildings



	Comments on implementation	<ul style="list-style-type: none"> Action planning where more investment is needed. Monitoring of energy consumption under measure «Continuous maintenance of the energy management system» Assessment of existing ventilation systems. Procurement planning for construction/upgrading of ventilation systems. Preparation of the procurement specifications and contract Development of an action plan for building renovation projects with RES based on EMS indicators Preparation of technical designs and project applications for funding Obtaining project financing Launching the procurement and the building renovation project
Impact & cost	Generated renewable energy (if applicable)	9 784 MWh/year
	Removed/substituted energy, volume or fuel type	Natural gas - 9 784 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	1 976/CO ₂ year
	Total costs and costs by CO ₂ e unit	25 million EUR 12 650 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Green renewable electricity municipal infrastructure
	Action type	Long-term
	Action description	<p>A high potential for reducing CO₂ emissions is the production of electricity from RES, which would cover the electricity consumption of both municipal buildings and street lighting. The municipality should consider installing RES equipment or introducing a CO₂ offsetting mechanism, e.g. by purchasing renewable electricity with zero CO₂ emissions.</p> <p>Often it is in municipal buildings, where offices are located, that energy consumption occurs during daylight hours, which is also when the solar energy potential is highest, allowing solar energy to be captured and used for self-consumption. There are a large number of municipal buildings in the city of Liepāja where the potential for deploying solar systems should be determined.</p> <p>Solar energy projects can be implemented not only for municipal buildings, but also for street lighting and water management. In both sectors, energy efficiency measures should be taken first to minimise electricity consumption.</p> <p>By 2030, all electricity consumed by municipal institutions and street lighting will be generated from RES.</p> <p>Similarly, depending on the relevant Cabinet of Ministers regulations, a municipal energy community must be established, ensuring electricity supply for buildings, processes, lighting, transportation, etc. The operation of</p>



		the energy community should be linked to the exploration of hydrogen production, storage, and utilisation potential. The Liepāja Special Economic Zone should also be involved in this process.
Reference to impact pathway	Field of action	Energy system
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> Energy Efficiency Group - Planning and further delegation of the measure to the responsible authorities; monitoring Public Procurement Commission – responsible for announcing procurement
	Action scale & addressed entities	All municipal buildings and street lighting; potentially also capital companies
	Involved stakeholders	Local government capital company SIA “Liepājas tramvajs” – takes over experience in announcing green electricity procurement
	Comments on implementation	<ul style="list-style-type: none"> To ensure comprehensive technical and economic feasibility studies to establish a unified energy community in the Liepāja city territory, with operational principles based on the use of renewable energy sources (RES). Following the approval of relevant Cabinet of Ministers regulations – legal establishment of the energy community, followed by attracting investors and the actual commencement of the energy community's operations. Simultaneously, it is necessary to conduct inspection of municipal buildings to determine which roof structures or areas are suitable for the installation of renewable energy equipment and where improvements are needed Preparation of technical designs (if required) and project applications for funding Obtaining project financing or allocation of municipal funds Procurement and installation of RES
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	Grid electricity - 22 675 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	2 472 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	6,6 million EUR 2 672 EUR/tCO ₂

B-2.2: Individual action outlines

Action outline	Action name	Environmentally friendly municipal transport and services
	Action type	Short-term
	Action description	Municipality's transport



		<p>In 2022, 30 municipal authorities owned vehicles. Their total fuel consumption was 81% diesel and 19% petrol, with emissions of 762 tCO₂ in 2022.</p> <p>In order to reduce emissions from municipal transport, it is necessary to understand and change the daily commuting habits of municipal authorities and their employees. It is not only about understanding what means of transport employees currently use, but also what stops them from using a more environmentally friendly option, such as walking or cycling. This includes looking at the situation with bicycle parking outside municipal buildings.</p> <p>Once the situation is understood, improvements should be made, such as ensuring that every municipal building has a bicycle rack. Employees who live in close proximity and travel in the same direction should be encouraged or incentivised to carpool.</p> <p>By improving the e-services offered by the municipality and enabling employees to work remotely, the need for them to travel can be reduced.</p> <p>Moving towards climate neutrality requires increasing the share of environmentally friendly vehicles in the municipal fleet. The procurement of new vehicles and/or the assessment of the need and use of existing vehicles should further identify opportunities for the purchase of electric or other more environmentally friendly vehicles. By 2030, Liepāja City Municipality plans to provide the entire municipal fleet with electricity (if feasible). When procuring vehicles, consider options for shared use among administrative units and institutions.</p> <p>Innovations and technologies</p> <p>Continue to utilise and introduce other environmentally friendly and innovative services in areas such as waste collection, street and beach cleaning, watering of green spaces, etc.</p> <p>To test various innovative solutions in the city, it would be necessary to identify suitable locations and establish pilot areas. Therefore, one of the priorities should be the creation of such areas.</p> <p>In municipal operations, when purchasing new equipment, for example, landscaping and maintenance, explore the possibility of acquiring electrically powered and environmentally friendly equipment.</p>
Reference to impact pathway	Field of action	Mobility and transport; Education and capacity building
	Systemic lever	Technology and infrastructure; Education and capacity development
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	Transport Infrastructure Commission - planning of the measure and further delegation to the responsible authorities; supervision
	Action scale & addressed entities	Municipal employees and their commuting habits



	Involved stakeholders	<ul style="list-style-type: none"> Public Procurement department - Procurement of new environmentally friendly vehicles Development department - Improving infrastructure for environmentally friendly travel Administration and authorities of the municipality of Liepāja, in the use of which local government transport has been transferred - use of vehicles Public relations and marketing department – education and motivation Department of the environment, health and public participation – education and motivation IT department - directing the innovation implementation process and securing funding. Municipal organisation “Komunālā pārvalde”- directing the innovation implementation process and securing funding.
	Comments on implementation	<ul style="list-style-type: none"> Survey of municipal employees, including questions on commuting habits Use of existing vehicles and assessment thereof, including identification of employees' commuting habits; recommendations and potential measures Development of criteria for the purchase of environmentally friendly vehicles Evaluation of the purchase of bicycles for municipal institutions to carry out their duties Procurement of vehicles with established criteria Survey of departments, agencies, and institutions regarding the future acquisition of necessary new vehicles. Establishment of bicycle parking facilities at municipal buildings
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	Fuel - 2 890 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	760 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	600 thousand EUR 788 EUR/tCO ₂

B-2.2: Individual action outlines

Action outline	Action name	E-services and digital solutions
	Action type	Short-term
	Action description	<p>Digitalisation</p> <p>Transport sector emissions can be reduced not only by encouraging the use of environmentally friendly means of transport, but also by reducing the need to travel. The municipality should develop its e-services, thus reducing the need for citizens to physically go to municipal offices to get the services they need.</p> <p>Municipal spatial and development planning also needs to take into account the commuting needs of residents, for</p>



		<p>example in the location of schools, kindergartens, interest education and cultural institutions, social and other services, to reduce the need for residents to travel long distances.</p> <p>Given that the municipality is planning to introduce various measures to promote mobility and environmentally friendly travel, it is also important to inform both residents and visitors at the same time. The municipality can do this through information campaigns, which can be organised in cooperation with partners including Elektrum, electric car dealers, Latvian Railways, neighbouring municipalities, MEPRD, tourism organisations, local businesses, etc.</p> <p>Digital twin</p> <p>One of the smart city plans is to establish a real-time visualization of the city, allowing tracking of air quality, traffic flows, ongoing construction works, building energy efficiency levels, and other parameters. This would aid in forecasting urban development, making data-driven long-term decisions, saving finances and resources, and responding more promptly to issues. Any resident could monitor the current situation, fostering a responsible attitude towards the city's ongoing developments.</p> <p>Moving forward, decision-making and budgeting should also align with the United Nations Sustainable Development Goals and the Green Deal objectives. Until now, criteria such as compliance with the UN Sustainable Development Goals, impact on climate and the environment, public health, etc., have not been adequately considered in budgeting, decision-making, and the development of binding documents. Similarly, the carbon footprint left by various activities, such as infrastructure construction, maintenance services, or event organising, has not been sufficiently taken into account.</p>
Reference to impact pathway	Field of action	Mobility and transport
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	CCC group - planning of the measure and further delegation to the responsible authorities; monitoring
	Action scale & addressed entities	E-services provided by the municipality, municipality's decisions; target group: recipients of services, decision makers
	Involved stakeholders	<ul style="list-style-type: none"> IT Department - Enhancing existing e-services and introducing new e-services IT Department - securing funding and outsourcing services for the establishment of the digital twin. Public Relations and Marketing - Informing citizens about the availability and benefits of e-services Financial Department / Executive Director's Office - incorporating UN goals into budgeting and decision-making.



	Comments on implementation	<ul style="list-style-type: none"> • Creating an e-service portal • Creating new e-services • Improving existing e-services • Informing citizens about available e-services. • Establishing the foundation of the digital twin. • Adhering to UN Sustainable Development Goals in every decision, project, and budgeting process.
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	Fuel - 250 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	64 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	500 thousand EUR 7 837 EUR/tCO ₂



B-2.2: Individual action outlines		
Action outline	Action name	Energy efficiency first
	Action type	Short-term
	Action description	<p>In 2022, the manufacturing and services sector consumed 110 GWh of natural gas, which emitted 22 ktCO₂. This represents 16% of the city's total energy consumption and 19% of the city's total CO₂ emissions. This means that this sector is key to the city's climate sustainability.</p> <p>Businesses need to assess their current level of energy efficiency and define measures to improve it. All companies included in the list of large companies or large electricity consumers are required by the Energy Efficiency Law to carry out an annual energy audit or to implement a certified energy management system or an environmental management system with an addendum. Such measures are desirable for any enterprise in the City of Liepāja with the potential to improve its energy efficiency.</p> <p>By 2030, natural gas consumption in the manufacturing and service sectors will be reduced by 10% through energy efficiency measures.</p> <p>Once energy consumption has been reduced as much as possible, consideration should be given to the possibility of connecting to DH or switching to RES.</p>
Reference to impact pathway	Field of action	Building
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	Energy reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> Energy Efficiency Group - Planning and further delegation of the measure to the responsible authorities; monitoring Liepājas Special Economic Zone and cluster sub-group – implementation of the event
	Action scale & addressed entities	Urban Production and Services Sector Infrastructure
	Involved stakeholders	<ul style="list-style-type: none"> Public Relations and Marketing - to inform about opportunities, good practices Industrial enterprises and service providers - in project implementation Construction State Control Office - Control of compliance with the requirements of the Energy Efficiency Law in Latvia
	Comments on implementation	<ul style="list-style-type: none"> Records of manufacturing and service enterprises in the city Assessment of energy consumption of production and service enterprises in the city Organisation of information and incentive campaigns Building active feedback with businesses and planning future actions
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	Natural gas - 10 992 MWh/year
	GHG emissions reduction estimate	2 220 tCO ₂ /year



	(total) per emission source sector	
	Total costs and costs by CO2e unit	1,5 million EUR 676 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Transition to renewable energy in industry and services
	Action type	Long-term
	Action description	For those consumers who are not able to connect to the DH, fuel switching to RES should be considered, with energy efficiency improvement measures being taken first. By 2030, natural gas consumption in the industry and services sector will be reduced by 10% through a switch to RES.
Reference to impact pathway	Field of action	Energy system
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	Emission reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> Energy Efficiency Group - Planning and further delegation of the measure to the responsible authorities; monitoring Liepājas Special Economic Zone and cluster sub-group – implementation of the event
	Action scale & addressed entities	Energy supply for city industry and services
	Involved stakeholders	<ul style="list-style-type: none"> Public Relations and Marketing - to inform about opportunities, good practices Industrial enterprises and service providers - in project implementation
	Comments on implementation	<ul style="list-style-type: none"> Identify businesses in the city that might be interested and what needs they have; discuss with the municipality the possibility of introducing the event as an initiative Produce information material on opportunities, good practices, etc. Arrange meetings with businesses (also in the framework of other events) and initiate dialogue Arrange visits to enterprises that have already implemented such a project
Impact & cost	Generated renewable energy (if applicable)	9 893 MWh/year
	Removed/substituted energy, volume or fuel type	Natural gas - 9 893 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	1 998 tCO ₂ /year
	Total costs and costs by CO2e unit	2 million EUR 1 001 EUR/tCO ₂



B-2.2: Individual action outlines

<p>Action outline</p>	<p>Action name</p>	<p>Traffic calming and optimisation</p>
	<p>Action type</p>	<p>Short-term</p>
	<p>Action description</p>	<p>Mobility (quick and easy movement) is one of the most important basic needs not only for the residents of Liepāja, but also for its visitors. The aim of the municipality is to provide convenient solutions for residents and visitors when transferring from car/van to train/bus and vice versa. Thus, within the framework of this measure, a mobility plan for Liepāja and the Dienvidkurzeme municipality will be developed, covering the following aspects:</p> <ul style="list-style-type: none"> • Analyse the existing situation, taking into account information on traffic and road conditions. This includes monitoring of traffic volumes. • Determine the most efficient means of travel between the city and nearby settlements. • Develop transport development alternatives, including: <ul style="list-style-type: none"> ○ Access to, organisation, optimisation, modernisation and promotion of public transport; ○ Development of micro-mobility infrastructure, (including mobility points); ○ Electromobility; ○ Improving traffic flow through traffic light efficiency solutions; ○ Improving road quality; ○ Develop a study on the use of parking spaces in Liepāja; ○ Development of guidelines for traffic safety and calming solutions; ○ Measures to promote teleworking and increase access to e-services; ○ Information campaign on environmentally friendly mobility, including the development of an informative and interactive platform on different mobility options and appropriate routes; ○ Enhancing city's mobile application with information on various mobility options and corresponding routes. ○ Placing tourism navigation signs for motorists based on the "Tourism Information and Navigation Sign Placement Strategic Plan and Design" <p>The main objective of the event is to make environmentally friendly commuting a key priority for the development of the city's transport sector and urban planning.</p> <p>Low emission zones</p> <p>Low emission zones in the city can be introduced to improve air quality and reduce the negative impact on the environment and public health. Such zones help decrease emissions from transportation. The establishment of zones should be planned considering the current and projected levels of air pollution. To prepare for and create low emission zones, the following measures can be taken:</p> <ul style="list-style-type: none"> • Initially, drivers of certain vehicles could be informed in some way that entering with such a vehicle contributes to increased pollution and negatively affects human health.



		<ul style="list-style-type: none"> • After a certain period and depending on the situation, access of certain vehicles to the zone can be restricted during specific time periods, encouraging a transition to more environmentally friendly modes of transportation. • Simultaneously, informational campaigns and educational initiatives would be conducted to inform residents about the benefits of low emission zones and foster public support for these measures. • Companies are encouraged to participate by promoting their employees' transition to more environmentally friendly commuting solutions and offering incentives for those who choose eco-friendly modes of transportation.
Reference to impact pathway	Field of action	Transport and mobility
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	Transport Infrastructure Commission - planning and further delegation of the measure to the responsible authorities; monitoring
	Action scale & addressed entities	Municipal road infrastructure
	Involved stakeholders	<ul style="list-style-type: none"> • Development Administration – Developing a mobility plan with stakeholders, urban planning • Liepāja Public Transport Agency - represents the development of public transport • Municipal organisation “Komunālā pārvalde”- optimisation of traffic lights • Environment, Health and Public Participation Division - Informational campaigns • Companies - Introduction of innovative environmentally friendly modes of transport
	Comments on implementation	<ul style="list-style-type: none"> • Detailed identification of mobility needs and opportunities • Development of a Thematic Mobility Plan • Development of studies on the use of parking spaces in Liepāja • Development of guidelines for traffic safety and calming solutions • Preparation of projects for the development of mobility points and bicycle infrastructure • Developing cooperation with public transport providers • Adaptation of public transport flows between different modes of travel • Placement of tourism navigation signs for motorists based on the "Tourism Information and Navigation Sign Placement Strategic Plan and Design" • Development of the concept and map of low emission zones • Installation of air quality sensors in various locations across the city



		<ul style="list-style-type: none"> Fundraising for the establishment of low emission zones Information and engagement of citizens
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume or fuel type	Fuel - 12 433 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	3 190 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	15 million EUR 4 702 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Access to and promotion of environmentally friendly public transport
	Action type	Short-term
	Action description	<p>According to the Local Government Law (amendments in force from 01.01.2023), one of the functions of a municipality is to organise public transport services. In order to reduce the use of private vehicles, the municipality must provide citizens with alternative mobility solutions, including high-quality and efficient public transport.</p> <p>Liepāja has an extensive public transport system covering most of the city. Public transport plays an important role in the life of the city. Its increased use reduces air pollution, noise and environmental impact, as residents and visitors can use their private transport less. At the same time, the public transport system must meet the mobility requirements of society.</p> <p>The mobility plan will be developed by identifying the commuting habits of the population. An in-depth assessment of the city's public transport services will also be carried out, assessing accessibility, efficiency and citizen satisfaction. This will be followed by improving the accessibility of public transport, improving the quality of the public transport service and modernising the rolling stock. As well as future projections of potential changes in the number of public transport users and the provision of existing infrastructure. A review and optimisation of the public transport route network in line with demand and urban development trends will be continued to carry out to reduce duplication of routes, public transport mileage and fleet.</p> <p>Liepāja's main streets are already one-way, and several smart traffic lights have been installed. One of the measures would be to create a "green" wave in the city. This would include at least the following actions:</p> <ul style="list-style-type: none"> A study on the mobility of people during the daily season. Adaptation of the existing traffic light system to the results of the study.



		<ul style="list-style-type: none"> • Development of a digital sensor system. • Development of other/new technologies. • Establishment of a control centre. • Construction of an overpass. <p>Liepāja will use traditional buses that meet the Euro 6 standard until 2024, but there are already other solutions that could be taken into account when planning Liepāja's public transport.</p> <p>One option would be to take an integrated approach, including both long-term waste management issues and the provision of an environmentally friendly public transport service. As the latest technologies allow the use of biomethane from waste production for transport, this option is relevant for Liepāja from a sustainability point of view. Other options would be to use compressed gas, hydrogen, hybrid or electric buses (battery).</p> <p>In addition, the city should also plan for the extension of the tram network and provide a "green" corridor for trams, and further development of the single electronic settlement system.</p>
Reference to impact pathway	Field of action	Transport and mobility
	Systemic lever	Technology and infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	Transport Infrastructure Commission - planning of the measure and further delegation to the responsible authorities; supervision
	Action scale & addressed entities	City public transport infrastructure
	Involved stakeholders	<ul style="list-style-type: none"> • Liepājas public transport agency - organizing public transport service procurement and introducing a new electronic settlement system • Development department - development of a mobility plan • Public relations and marketing: keep track of developments and improvements in the transport system • Environment, Health and Public Participation - Organising the European Mobility Week and educating different groups of society on mobility • Public administration - traffic organisation
	Comments on implementation	<ul style="list-style-type: none"> • Assessment of existing services, including detailed identification of needs and opportunities, population survey • Developing cooperation with transport service providers, introduction of measures • Optimisation/improvement of the service according to the results of the evaluation • Organisation of a procurement procedure for the renewal of the municipal fleet with zero-emission or low-emission vehicles • Informing citizens
Impact & cost	Generated renewable energy (if applicable)	11 498 MWh/year



	Removed/substituted energy, volume or fuel type	Fuel - 12 796 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	6 023 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	600 thousand EUR 100 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Development of micro-and-electrical mobility
	Action type	Short-term
	Action description	<p>One of the goals of the City of Liepāja is to provide its residents and visitors with convenient, fast and easy transport within the city at an attractive price. Thus, the development of electric bicycles is one of the medium-term development directions, which is also taking place in other European cities such as Tartu.</p> <p>The main users of e-bikes would be students, residents of neighbourhoods and the city centre, commuters and visitors to the city.</p> <ul style="list-style-type: none"> • To successfully implement convenient, fast, and easy mobility, it would be necessary to implement at least the following activities: Limiting private traffic in the city centre; • Speed reduction and experimental temporary closure of streets to traffic (or giving priority to pedestrians/cyclists); • Identifying the needs of residents and visitors; • Development of Park&Bike, including racks for all bicycles; • introduction of bike-sharing services in the city; • Linking with the public transport network and the possibility of a combined ticket; • Developing cycling infrastructure (pavement quality, network); • Service points in the city; • Adapting the rules for the use of electric bicycles, electric scooters and electric cars to the needs of the city; • solutions for secure bicycle storage in multi-apartment buildings or nearby. <p>In addition, the municipality sees the possibility of extending the electric bicycle system throughout the municipality, integrating it with public transport tickets.</p> <p>Taking into account the development of electric transport, the development of convenient, well thought out and accessible electric charging stations at important sites in the city should be planned in cooperation with public authorities and other key stakeholders such as petrol station operators, shopping centres, etc. The possibility of technically linking charging stations to tram infrastructure should also be considered.</p>



		<p>In addition to this measure, cooperation should also be developed to take over or test the most successful solutions of Riga municipality in inter-city transportation efficiency. For the development of electricity charging infrastructure, the municipality of Liepājas State has developed a plan for the deployment of charging stations and organises auctions for the construction of charging stations. A map of electric car charging points is also available in the city's mobile app.</p> <p>Also, the use of various other innovative mobility solutions implemented by other cities and municipalities in Europe and elsewhere in the world should be further studied.</p> <p>By 2030, it is planned to reduce the use of private vehicles by 15 000 vehicles.</p>
Reference to impact pathway	Field of action	Transport and mobility
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	Transport Infrastructure Commission - planning of the measure and further delegation to the responsible authorities; supervision
	Action scale & addressed entities	City Electromobility Infrastructure
	Involved stakeholders	<ul style="list-style-type: none"> • Development management - planning the necessary infrastructure • Public relations and marketing – awareness campaigns • The environmental, health and public participation – public education • The agency “Liepāja sabiedriskais transports ” – cooperation with other institutions
	Comments on implementation	<ul style="list-style-type: none"> • Creating potential electric car charging stations in the city and promoting cooperation opportunities with local companies • Building bicycle and electric bicycle infrastructure, as well as sharing services in cooperation with local businesses (including hotels, etc.) • Implementation of a bicycle sharing service in the city • Informing the public about the use of micro-mobility solutions in the city • Downtown speed, building green corridors for cyclists and planning and implementing other solutions • Organising regular information campaigns for changing citizens' habits
Impact & cost	Generated renewable energy (if applicable)	
	Removed/substituted energy, volume or fuel type	
	GHG emissions reduction estimate (total) per emission source sector	43 350 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	15 million EUR 346 EUR/tCO ₂



B-2.2: Individual action outlines

Action outline	Action name	Renovation of multi-apartment buildings
	Action type	Long-term
	Action description	<p>In the city, a large number of residential buildings are apartment blocks that are deteriorating and reaching the end of their useful life and need to be renovated. Studies show that apartment buildings in Latvia are in need of comprehensive renovation. Based on the information provided by the Liepāja City Council, out of a total of about 600 apartment buildings to be renovated, 200 buildings will have been renovated by 2024.</p> <p>In 2023, the pace of renovation of multi-apartment buildings has significantly decreased, including due to the interruption of the support program of the Ministry of Economy and the unattractive conditions. Although Liepāja has the largest proportion of renovated buildings compared to other national cities, its purpose does not end there. On the contrary, this process should be accelerated and promoted, which is why Liepāja is involved in the development of new national support mechanisms.</p> <p>The municipality of Liepāja, in cooperation with building managers, energy efficiency service providers (ESKO), as well as financial institutions and other interested parties, discusses and offers solutions to the responsible ministry on how to jointly promote and achieve the renovation of apartment buildings and the reduction of energy consumption not only in the city, but throughout the country.</p> <p>At the same time, the issue of how to provide residents with new, energy-efficient and comfortable housing, both as a low-rent option and for purchase, is being addressed.</p> <p>A more in-depth analysis of the current situation of the city's apartment buildings is needed and the priority buildings that need to be renovated should be identified. Higher priority should be given to buildings with higher energy consumption and/or with a higher proportion of the population exposed to energy poverty.</p> <p>Although there is a lot of information available on the internet and in local government, experience and research shows that people are more likely to trust and work with those from within their own communities or NGO. It is therefore important that the municipality has one such body/personnel or NGO to whom apartment owners can turn without having to call in outside consultants every time. The main issues that should be the responsibility of the body/personnel are:</p> <ul style="list-style-type: none"> • Information and advice on measures to reduce heat and electricity consumption in dwellings, and on the possibilities of receiving support for the use of RES technologies, in cooperation with proven experts and research institutions in Latvia. • Information and advice on the renovation of multi-apartment buildings (including the establishment of associations, support for the preparation of



		<p>documentation for project applications, support for the socially disadvantaged, etc.).</p> <ul style="list-style-type: none"> • Preparation and regular distribution of information material for residents, cooperation with building managers. • Organisation of informational events. <p>While apartment buildings are the responsibility of the apartment owners, the municipality plays an important role in their renovation. The Liepāja City Municipality should consider opportunities to provide financial support, including:</p> <ul style="list-style-type: none"> • energy audits for multi-apartment dwellings • technical inspection reports; • construction projects. <p>In addition, the municipality should also look for instruments to motivate apartment owners not only with support instruments, but also with the obligation to clean up their homes (e.g. through binding regulations for buildings with consumption above 150 kWh/m² year). In addition, the municipality should also consider the impact of energy poverty and support for vulnerable groups.</p> <p>210 buildings (35 buildings/year) are to be renovated by 2030.</p> <p>In addition, the possibility of installing solar energy installations on the roofs of apartment buildings to generate electricity and heat should be considered, as well as support the preparation of a technical conclusion (also for only installation of solar panels).</p> <p>Restoration of historical buildings The municipality must continue to support the restoration of historical buildings</p>
Reference to impact pathway	Field of action	Building
	Systemic lever	Technology/infrastructure
	Outcome (according to module B-1.1)	Energy consumption reduction
Implementation	Responsible bodies/person for implementation	Energy efficiency group Housing sub-group
	Action scale & addressed entities	Unrenovated multi-apartment buildings in the city area
	Involved stakeholders	<ul style="list-style-type: none"> • House managers - organise the process of building renovation • Associations: identifying needs and removing barriers • Ministries - remove barriers and support building renovation • Altum and other financial institutions - provide financing for building renovation • Public relations and marketing – inform the public
	Comments on implementation	<ul style="list-style-type: none"> • Continue to provide the person responsible for advising citizens • Improve to define the objectives, key actions and deliverables and decide on the responsible persons on the basis of these (set up a one-stop agency or assign these responsibilities to a staff member(s))



		<ul style="list-style-type: none"> • Identification of housing stock and decision on further actions (including actions on housing stock in disrepair) • Development of an action plan for the rehabilitation of the housing stock as well as for the transition to RES • Support for residents to prepare a technical documentation before installing solar panels on roofs • Update the municipality's campaign for citizens • Introduce a support system for people with low income • Discussions within the municipality on support for the inhabitants of apartment buildings. Residents' survey • Revision of the Binding Regulation and/or other support measures • Monitoring of activities' implementation • Involvement in improving and developing new housing support programs of the Ministry of Economics
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	8 750 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	8 227 tCO ₂ /year (210 buildings in Liepaja, an average of 39,18 tCO ₂ per year for 1 building according to data from the Altum programme)
	Total costs and costs by CO ₂ e unit	110 million EUR 13 371 EUR/tCO ₂

B-2.2: Individual action outlines		
Action outline	Action name	Raising public awareness
	Action type	Short-term
	Action description	<p>Regular information days/events/seminars on various energy consumption and environmental issues are an important aspect in motivating and informing citizens. Awareness-raising events may include, for example, the organisation of an Energy Day and/or a Mobility Day in the municipality, as well as competitions and competitions for energy users. Events should be organised not only for adults, but also for schoolchildren and pre-school children.</p> <p>In order to more effectively involve citizens in the future, and not only those who are already interested in these topics, it is necessary to create a different approach to the event format.</p> <p>The municipality and other stakeholders should inform the public about the observance of circular economy principles in daily processes. Likewise, the local government should also try to comply with these principles and set an example of rational use of energy and resources, encourage residents of the neighborhood and tourists to get involved in solving environmental issues. The creation of the planned public participation budget and its connection with the goals of climate neutrality should also be taken into account.</p>



		In connection with the goals of the monitoring matrix of Liepāja as the European Capital of Culture in 2027, it is planned to develop and implement eco-design principles in organising events and providing services.
Reference to impact pathway	Field of action	Building
	Systemic lever	Social innovation
	Outcome (according to module B-1.1)	Energy consumption reduction
Implementation	Responsible bodies/person for implementation	Environmental communication group - planning and further delegation of the measure to the responsible authorities; monitoring
	Action scale & addressed entities	Urban multi-apartment building infrastructure
	Involved stakeholders	<ul style="list-style-type: none"> Public relations and marketing – development of key guidelines for the education campaign Environment, health and public participation commission: ensuring adequate content on nature-based solutions, adaptation to climate change Development department– building up the necessary content and organising events Education department – building up the necessary content and working with educational institutions House management companies and associations in the city of Liepājas - involvement in educational activities
	Comments on implementation	<ul style="list-style-type: none"> Plan with information events and dates (annual by the end of the year) Planning and organisation of the contents of events Implementation and evaluation of the events New or improved event formats Inform the public and for the municipality to observe the principles of the circular economy, to use resources more rational Develop and implement eco-design principles in organising events and providing services (as one of the goals of the Liepāja2027 monitoring matrix) Encourage neighborhood residents and tourists to get involved in solving environmental issues Creating a citizen participation budget
Impact & cost	Generated renewable energy (if applicable)	-
	Removed/substituted energy, volume or fuel type	Natural gas - 548 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	111 tCO ₂ /year
	Total costs and costs by CO ₂ e unit	315 thousand EUR 2 844 EUR/tCO ₂



B-2.2: Individual action outlines		
Action outline	Action name	Transitioning private homes to renewable energy
	Action type	Long-term
	Action description	<p>Based on a study entitled “Identifying heating equipment used in households and developing solutions for information storage”, 61% of all buildings in Liepaja are one or two apartment buildings, which mostly use solid fuel (wood), electricity, natural gas or other fuels and potentially out-of-date equipment for heating purposes, resulting in both higher air pollution and inappropriate use of renewable energy sources. In order to improve air quality as well as to ensure rational use of energy resources, the following actions should continue under this measure:</p> <ul style="list-style-type: none"> • The choice and adaptation of the specific solution in a centralised or decentralised manner; • Use of the state support program to connect to DH or install RES mechanisms;The renovation of private houses; • Advice and education. <p>By 2030, natural gas consumption in the housing sector will be reduced by 20%, with private homes switching to RES.</p>
Reference to impact pathway	Field of action	Building
	Systemic lever	Governance and policy
	Outcome (according to module B-1.1)	CO ₂ emission reduction
Implementation	Responsible bodies/person for implementation	<ul style="list-style-type: none"> • Energy Efficiency Group - Planning and further delegation of the measure to the responsible authorities; monitoring • Energy Efficiency group Housing sub-group – implementation of the measure
	Action scale & addressed entities	Private houses
	Involved stakeholders	<ul style="list-style-type: none"> • Environment, Health and Public Participation - Implementation of the Air Improvement Plan • Public relations and marketing – creating and implementing information materials and campaigns • Development management – development and implementation of the support mechanism
	Comments on implementation	<ul style="list-style-type: none"> • Identification of the existing situation regarding heating systems in private houses • Selection and adaptation of specific solutions, centralised or decentralised • Development of a support mechanism • Recommendations and education • Promote the use of support program opportunities
Impact & cost	Generated renewable energy (if applicable)	4 570 MWh/year
	Removed/substituted energy, volume or fuel type	Natural gas - 4 570 MWh/year
	GHG emissions reduction estimate (total) per emission source sector	923 tCO ₂ /year



	Total costs and costs by CO _{2e} unit	6,5 million EUR, including the replacement of heating equipment in 20% of private homes 7 042 EUR/tCO ₂
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B-2.3: Summary strategy for residual emissions

Liepāja will achieve climate neutrality by 2030 by reducing CO₂ emissions by 80% compared to 2006 and sequestering the remaining 20% by implementing CO₂ sequestration measures. However, it is important to acknowledge that the successful attainment of these goals for the City of Liepāja depends on navigating and mitigating a multitude of external factors, some of which may be beyond the direct control of the city.

A study "Assessment, Projections and Proposals for the City of Liepāja Greenhouse Gas (GHG) Emissions and Carbon Dioxide (CO₂) Sequestration" has been prepared for the City of Liepāja in 2023.

The study concluded that Liepāja's forests remain a source of CO₂ binding up to year 2050, including carbon accumulation in living and non-living woody biomass, while wood products are a minor source of emissions. CO₂ sequestration in Liepāja forests is expected to gradually decrease due to changes in the age structure of forests and an increase in the proportion of older stands. Currently, the City's forests can offset about 7% of cumulative GHG emissions, so additional measures will be introduced to achieve climate neutrality.

City's forests can provide small (on average 1.4 tonnes CO₂ eq ha⁻¹ yr over 7-15 years) but significant GHG emission reductions by promoting climate change mitigation measures outside the city.

The most promising mitigation measures, which are not constrained by land availability or legislative restrictions, are afforestation, especially on organic soils, and the establishment of fast-growing tree plantations on agricultural land. To gradually offset all GHG emissions in the city, without taking into account GHG emission reductions from organic soils, 5,300 ha would need to be afforested and 1,800 ha would need to be reforested by afforestation of organic soils. Planting tree crops would require 3,500 ha. In addition, to gradually replace GHG emissions from deforestation, 0.3 thousand ha of mineral soils or 0.1 thousand ha of organic soils or 0.2 thousand ha of fast-growing tree plantations should be afforested by 2050.

It is necessary to promote the creation and development of green infrastructure, which includes both the creation of greenery in the urban environment, which creates shade, and other nature-based solutions.

The action will seek and assess the possibilities of increasing CO₂ emissions with new technologies and innovation, as well as their cost-effectiveness.

4.3 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).

Data sufficiency:

In terms of data sufficiency, Liepāja should made commendable efforts to gather comprehensive information across various fields of action related to climate change. The city should implement robust data collection mechanisms, involving both internal and external stakeholders. The finance department should also play a specific role in this process, analysing data to design climate budgeting decisions. The availability of sufficient and reliable data enhances the city's ability to monitor progress, assess the impact of interventions, and make informed adjustments to its climate policies.



Currently, Liepāja municipality employs a traditional data collection approach, primarily involving regular inquiries to essential entities such as the district heating company, electricity distribution operator, capital companies, and fuel and gas providers. The existing system aligns with the Covenant of Mayors template, and additional data on various indicators is obtained through surveys and specific infrastructure project results. While this method has been effective in generating relevant information, there is a recognition that the process could be further modernised. The municipality aspires to transition towards a more convenient and automated indicator monitoring and data gathering system in the future. This shift aims to enhance efficiency, accuracy, and timeliness in data collection, allowing for more dynamic and responsive decision-making processes.

Plan monitoring and oversight:

Monitoring is a very important part of the implementation of the SECAP. Regular data collection and analysis allows to better track progress and determine whether the objectives will be achieved on time. Monitoring also provides feedback - plan implementers can assess whether the desired results of the implemented measures are being achieved and, if not, take preventive action.

Two types of monitoring of measures and actions can be distinguished in the framework of the SECAP:

- Monthly monitoring activities under the EMS;
- Annual monitoring activities relating to the monitoring of the other actions and targets included in the Action Plan.

The Management and Monitoring Group is responsible for the performance monitoring. The necessary monitoring data shall be prepared and submitted upon request by the responsible local government specialists/departments/organisations. In the Action Plan, the implementation process is assessed using the indicators set out in Table B-3.1.1. In addition, the organisation, management and social innovation intervention measures shall be monitored.

Indicators fall into three categories:

- Direct impact indicators (shown in Table B-3.1.1, shaded in dark orange)
- Non-direct impact indicators.
- Indicators for monitoring the implementation of the Plan:
 - The monitoring indicators for the measures listed in section B-2.2 are shown in Table B-3.1.1, coloured in light orange;
 - The monitoring indicators for the organisation, governance and social innovation interventions are listed in Table B-3.1.2.

Monitoring data shall be published on the Liepāja City website www.liepaja.lv. Monitoring of consumption data of municipal institutions should be carried out and published on a monthly basis in order to:

1. municipal employees are more motivated to pay attention to energy consumption;
2. the municipality sets an example for the citizens of the city.

It is desirable to publish data for apartment buildings as well as for the transport sector on an annual basis, so that citizens are also informed about the results achieved. Monitoring data can also be used to identify the winners of various competitions.

Based on the monitoring data, the energy savings and CO₂ emission reduction targets set for the measures included in the SECAP should be reviewed annually and corrective action taken if necessary.



B-3.1.1.: Impact Pathways - Performance indicators for implementation and monitoring							
Outcomes/ impacts addressed	Action/ project	Indicator No.	Indicator name	Target values			Unit of measurement
				2025	2027	2030	
Reduction of CO ₂ emissions from district heating		1	Reduction of CO₂ emissions in the central power generation sector:	-3520	-7040	-10666	tCO ₂ /year
	Transition to 100% renewable energy in district heating	2	• CO ₂ emissions from district heating	7146	3626	0	tCO ₂ /year
		3	• Heat energy produced by DH	-	-	↑	MWh/year
		4	• Number and capacity of DH boiler houses	-	-	↑	Qty and kW
		5	• Number and capacity of installed RES systems	-	-	↑	qty/kW
		6	• Heat produced by RES in DH	-	-	↑	MWh/year
		7	• Share of RES in Liepāja city DH	88%	94%	100%	%
Reduction of CO ₂ emissions from city natural gas consumption		8	Reduction of CO₂ emissions from natural gas consumption:	-6955	-13910	-21074	tCO ₂ /year
		9	• CO ₂ emissions from natural gas consumption	30904	23949	16786	tCO ₂ /year
	Attracting new heat consumers to Liepāja DH	10	Reduction of CO₂ emissions from natural gas consumption by attracting new consumers to DH:	-4569	-9138	-13845	tCO ₂ /year
		11	• Number of consumers connected to DH by type	-	-	↑	qty
		12	• Heating area of new customers	-	-	-	m ² /year
		13	• Heat transferred to new customers	-	-	↑	MWh/year
		14	• Consumers disconnected during the year	-	-	↓	qty/m ²
		15	• Consumers reconnected during the year	-	-	↑	qty/m ²
	16	• Length of newly constructed heat networks	-	-	↑	m	
Reduction of CO ₂ emissions from city natural gas consumption	Renewable energy for heating municipal buildings	17	Reduction of CO₂ emissions from natural gas consumption in district heating:	-652	-1304	-1976	tCO ₂ /year
		18	• CO ₂ emissions from natural gas consumption in municipal buildings	3301	2649	1976	tCO ₂ /year
		19	• Municipal buildings heat consumption by energy source	-	-	↓	MWh/year
		20	• Specific heat consumption in municipal buildings	-	-	↓	kWh/m ²



"Energy efficiency first" in services and manufacturing	21	<ul style="list-style-type: none"> Specific heat consumption with climate correction (CC) in municipal buildings 	-	-	↓	kWh/m2
	22	<ul style="list-style-type: none"> Number of buildings with valid energy performance certificates 	-	-	↑	qty
	23	<ul style="list-style-type: none"> Number of municipal buildings renovated 	-	-	↑	qty
	24	Reduction of CO₂ emissions from natural gas consumption in the manufacturing and service sectors through energy efficiency measures:	-733	-1465	-2220	tCO ₂ /year
	25	<ul style="list-style-type: none"> CO₂ emissions from manufacturing and services³ 	18175	14144	9992	tCO ₂ /year
	26	<ul style="list-style-type: none"> Heat consumption by energy source in the industry and services sector 	-	-	↓	MWh/year
	27	<ul style="list-style-type: none"> Electricity consumption in the industry and services sector 	-	-	↓	MWh/year
	28	<ul style="list-style-type: none"> Number of large enterprises in the city 	-	-	-	qty
	29	<ul style="list-style-type: none"> Number of large energy consumers in the city 	-	-	-	qty

³ From the measures "Energy efficiency first" in services and industry" and "Transition to renewable energy in industry and services" and "Attracting new heat consumers to Liepāja's CHS".



Reduction of CO ₂ emissions from city natural gas consumption	Transition to renewable energy in industry and services	30	Reduction of CO₂ emissions from natural gas consumption in the manufacturing and service sectors by switching to RES:	-659	-1319	-1998	tCO ₂ /year
		31	<ul style="list-style-type: none"> Number and capacity of installed RES systems in the manufacturing and services sector by type 	-	-	↑	qty/kW
		32	<ul style="list-style-type: none"> Energy produced from RES in the manufacturing and services sector by type 	-	-	↑	kWh/year
		-	<ul style="list-style-type: none"> See indicators 25, 26, 27. 	-			
	Transitioning private homes to renewable energy	33	CO₂ emissions from natural gas consumption in private homes reduced by switching to RES:	-305	-609	-923	tCO ₂ /year
		34	<ul style="list-style-type: none"> CO₂ emissions from private homes ⁴ 	7366	5502	3581	tCO ₂ /year
		35	<ul style="list-style-type: none"> Energy consumption of private homes by energy source 	-	-	↓	MWh/year
		36	<ul style="list-style-type: none"> Specific heat consumption of private houses 	-	-	↓	kWh/m ²
Reduction of CO ₂ emissions from electricity consumption of municipal infrastructure	Continuous maintenance of the energy management system	37	Reduction of CO₂ emissions from municipal infrastructure electricity consumption:	-859	-1717	-2602	tCO ₂ /year
		38	CO₂ emission reductions from EMS:	-43	-86	-130	tCO ₂ /year
		39	<ul style="list-style-type: none"> CO₂ emissions from municipal infrastructure in electricity consumption ⁵ 	1743	885	0	tCO ₂ /year
		40	<ul style="list-style-type: none"> Municipal infrastructure electricity consumption 	23474	23789	22675	MWh/year
		41	<ul style="list-style-type: none"> CO₂ emissions from electricity consumption in municipal buildings 	1437	718	0	tCO ₂ /year
		42	<ul style="list-style-type: none"> Electricity consumption in municipal buildings 	-	-	18974	MWh/year
Reduction of CO ₂ emissions from	Continuous maintenance of	43	<ul style="list-style-type: none"> Specific electricity consumption in municipal buildings 	-	-	↓	kWh/m ²

⁴ From the measures "Transition of private houses to renewable energy sources", "Attraction of new heat consumers to Liepāja's CHS" and "Public awareness".

⁵ From the measures "Continuous maintenance of the energy management system" and "Green renewable electricity for municipal infrastructure".



electricity consumption of municipal infrastructure	the energy management system	44	• CO ₂ emissions from electricity consumption in street lighting	281	140	0	tCO ₂ /year	
		45	• Electricity consumption for street lighting	-	-	3700	MWh/year	
		46	• Specific energy consumption for street lighting	-	-	↓	kWh/luminaire	
		47	• Number of street lighting sections renovated/number of luminaires replaced	-	-	↑	qty	
		48	• Number of measures implemented	-	-	↑	qty	
		49	• Green procurement as a share of all municipal procurement	-	-	↑	%	
	Green renewable electricity for municipal infrastructure	50	CO₂ emission reductions from electricity generation/procurement from RES for municipal infrastructure:		-816	-1632	-2472	tCO ₂ /year
		-	• See indicators 39 and 40.		-			
		51	• Number and capacity of installed RES systems to generate electricity for municipal infrastructure		-	-	↑	qty
		52	• Renewable electricity generated in municipal infrastructure		-	-	↑	MWh/year
		53	• Electricity purchased from RES for municipal infrastructure	-	-	↑	MWh/year	
Reduction of CO emissions in the transport sector	Environmentally friendly commuting and services for municipal employees	54	Reduction of CO₂ emissions from municipal transport:	-251	-503	-762	tCO ₂ /year	
		55	• CO ₂ emissions from municipal transport	511	259	0	tCO ₂ /year	
		56	• Number of vehicles and fuel consumption by type of vehicle (cars, light trucks, lorries, other) and type of fuel (incl. alternative fuels)	-	-	-	qty/litre or kWh	
		57	• Specific fuel consumption of municipal vehicles	-	-	↓	l/100 km	
		58	• Share of electricity in municipal transport fuel consumption	-	-	↑	%	
		59	• Average age of municipal vehicles	-	-	↓	years	
		60	• Annual mileage of vehicles	-	-	↓	km/year	



		61	• Number of low/no emission vehicles purchased	-	-	↑	qty
		62	• Number of EV charging points at municipal buildings	-	-	↑	qty
		63	• Proportion of cyclists among municipal employees	-	-	↑	%
Reduction of CO ₂ emissions in the transport sector		64	Reduction of CO ₂ emissions from private transport:	-14 929	-29 857	-49 762	tCO ₂ /year
	Access to and promotion of environmentally friendly public transport	65	Reduction of CO₂ emissions from private transport due to the development and promotion of public transport	-1053	-2105	-3190	tCO ₂ /year
		66	Reduced CO₂ emissions from public transport:	-935	-1870	-2833	tCO ₂ /year
		67	• CO ₂ emissions from public transport	1898	963	0	tCO ₂ /year
		68	• Number of public transport vehicles by type	-	-	-	qty
		69	• Number of public transport routes	-	-	-	qty
		70	• Public transport fuel/energy consumption by type	-	-	-	Litres(kWh)/year
		71	• Number of passengers carried by type	-	-	↑	qty
		72	• Annual mileage of public vehicles	-	-	↑	km/year
		73	• Residents' satisfaction with public transport	-	-	↑	%
		74	• Adapted/new public transport routes	-	-	↑	qty
	75	• Proportion of zero-emission vehicles in the bus fleet	-	-	↑	qty	
	E-services	76	CO₂ emissions reduction for private transport from e-services:	22	-42	-64	tCO ₂ /year
		77	• CO ₂ emissions from private transport ⁶	52150	40497	28491	tCO ₂ /year

⁶ From the measures “Access to and promotion of environmentally friendly public transport”, “E-services”, “Traffic calming and optimisation”, “Developing micro- and electro-mobility”.



		78	• Number of e-services offered	-	-	↑	qty
		79	• Residents' satisfaction with municipal e-services	-	-	↑	%
Reduction of CO ₂ emissions in the transport sector	Traffic calming and optimisation	80	CO2 emissions reduction for private transport from traffic calming and optimisation:	-1053	-2105	-3190	tCO ₂ /year
		-	• See indicator No 77	-			
		81	• Number of registered and roadworthy vehicles by fuel type and age	-	-	↓	qty
		82	• Average fuel consumption of vehicles	-	-	↓	l/100 km/ kWh/100 km
		83	• Annual mileage of vehicles	-	-	↓	km/year
		84	• Average age of vehicles	-	-	↓	years
		85	• Breakdown of travel by type: (1) private car, (2) public transport, (3) cyclists, (4) pedestrians	-	-	-	qty/%
		86	• Number of mobility points	-	-	↑	qty
		87	• Number of Mobility Point users per day/month/year	-	-	↑	qty
	88	• Number of traffic lights optimised	-	-	↑	qty	
	Developing micro- and electro-mobility	89	CO2 emissions reductions for private transport from the development of micro-mobility and electro-mobility:	-13 005	-26 010	-43 350	tCO ₂ /year
		-	• See indicators 77, 81.	-			
		90	• Number of electric cars in the city	-	-	↑	qty
		91	• Number of charging stations in the city	-	-	↑	qty
		92	• Length of cycle paths	-	-	↑	km
93		• Number of cycle racks	-	-	↑	qty	



		94	• Number of vehicles (intensity) on reference streets per year or month	-	-	-	qty/year /month	
Reducing energy consumption in the residential sector	Renovation of apartment buildings	95	• Heat consumption of apartment buildings connected to DH	-	-	↑	MWh/year	
		96	• Specific heat consumption of apartment buildings connected to DH	-	-	↓	kWh/m ²	
		97	• Number of renovated buildings per year	35	35	35	qty/year	
		98	• Specific heat consumption in renovated buildings after the project	-	-	-50%	kWh/m ²	
		99	• Municipal support for building renovation	-	-	↑	EUR/year	
		100	• Number of households supported	-	-	↑	qty	
		Public awareness	101	• Efficiency of the funding used	-	-	↑	%
	102		• Number of nearly zero-energy buildings	-	-	↑	qty	
	103		• Number of measures implemented	-	-	↑	qty	
	104		• Number of residents informed	-	-	↑	qty	
	105		• Number of inhabitants/households participating in the competitions	-	-	↑	qty	
		106	• Energy savings from competitions	-	-	↑	kWh	
		107	• Number of households informed through energy bills	-	-	↑	qty	
CO ₂ sequestration		108	CO₂ sequestered:	14941	29883	45277	tCO ₂ /year	
		109	• Afforested area	-	-	↑	ha/year	
		110	• Established fast-growing tree plantations	-	-	↑	ha/year	



B-3.1.2.: Impact Pathways - Monitoring indicators for organisational, management and social innovation interventions		
Category	Description	Indicators
Democracy and Participation		
Generating Awareness and Communicating Climate Transition Efforts	A necessary step for people's involvement in decision-making process to transition to net zero is knowledge and awareness of the need for changes in the city that can help achieve climate neutrality	<ul style="list-style-type: none"> • % of citizens who agree that it is a priority for cities to make changes to reach climate neutrality • % of citizens who agree they understand what reaching climate neutrality means • Representativeness of citizens who understand what reaching climate neutrality means • % of citizens who agree that it is important to make changes e.g., to the transport and mobility/retrofitting of their buildings/energy production ect., for the city to address climate change
Assessing Participation	Assessing the level and quality of participation is important to demonstrate public engagement as part of the transition plans.	<ul style="list-style-type: none"> • # of civil society organizations and other stakeholders (i.e. Schools, business associations) who have taken part in participatory and deliberative processes related to the transition plans, policies and actions to reach climate neutrality • # of engagement processes that involved co-design and co-creation of changes and/or policies • Representativeness of citizens who have taken part in participatory processes • % of citizens who think they have a say in how the city will reach climate neutrality • Proportions of citizens by socio-economic strata who feel they have a say in how the city will reach climate neutrality • % of citizens involved in participatory and deliberative process who agree their opinion was listened to and respected
Levels of Trust in city's willingness to engage	Trust is essential in processes of collective change.	<ul style="list-style-type: none"> • % of citizens who agree that their city provides opportunities for participation in relation to decisions on climate neutrality • % of citizens who think that their city is committed to involving citizens in decisions related to reaching climate neutrality
Power/Efficacy	Public engagement can help empower citizens to be involved in the transition to climate neutrality.	<ul style="list-style-type: none"> • % of citizens who agree that they have a role to play in helping the city reach climate neutrality • % of citizens who think it is important for them to be involved in decisions related to climate neutrality in the city
Responsiveness	For citizens to feel that the city is genuine about listening to people's needs and suggestions, and for citizens to feel empowered and willing to	<ul style="list-style-type: none"> • Instances of feedback and engagement spaces and/or mechanisms to respond to citizens' input in decision-making processes • # of cases in which recommendations made in participatory and deliberative processes are followed up and responded to



	change behavior themselves, it is important that there can be spaces for reflection and response from governments on how decisions are being followed up and implemented.	<ul style="list-style-type: none"> • # of public engagement processes that include a roadmap and communications plan for • informing citizens throughout of the actions taken after
Enabling equity & thriving transitions for all	Exposure and vulnerability to climate related impacts, from energy poverty to extreme weather events are driven by demographics, socio-economic development, and ecosystem degradation.	<ul style="list-style-type: none"> • % of citizens participation from marginalised and underrepresented groups • % of citizens from marginalised and underrepresented groups who agree that they have a role to play in helping the city reach climate neutrality • % of citizens from marginalised and underrepresented groups perceived their recommendations were taken into account and reflected on the Portfolios interventions
Social Innovation (SI)		
Skills and capacity building	What is the level of skills and knowledge of citizens and public officials about social innovation for sustainability?	<ul style="list-style-type: none"> • # of civil servants with increased knowledge of SI • # of citizens and organizations with increased knowledge of SI • # of participants completing social innovation training • Establishment of SI task force
Empowerment and inclusion	What is the level of involvement of citizens and urban stakeholders in the formulation and implementation of initiatives and policies for social innovation for climate neutrality?	<ul style="list-style-type: none"> • # of policies co-creation activities • # of participants to co-creation activities • # of citizens with increased perception of empowerment • # of participants to co-creation activities • # of SI hubs • # of new SI initiatives • # of new networks that collaborate for climate neutrality • # of citizens willing to change their behavior toward sustainable practices • # of participants to behavioral changes activities leading sustainability
Regulation and support	How does the city mobilize resources to support community-led initiatives of social innovation for sustainability?	<ul style="list-style-type: none"> • # of social innovators supported • # of supported social entrepreneurs • # of social innovation initiatives experimentations • # of small-scale social innovation experimentations funded • # of social innovation activities scaled up • # of SI/SE accelerator activities • # of new social innovation funding tools implemented • # of small-scale social innovation experimentations funded



		<ul style="list-style-type: none"> • # of social innovation services procured • # of public procurement procedures implemented
SI systemic approaches	Are systemic innovations for climate neutrality that involve social innovation implemented at city-wide level?	<ul style="list-style-type: none"> • Extent of urban planning systemic solutions implemented by the city • Extent of resource circularity solutions implemented by the city

B-3.2: Indicator Metadata

Table B-3.2.1.: Reduction of CO₂ emissions in the central power generation sector

Indicator	Reduction of CO ₂ emissions in the central power generation sector
Unit of measurement	tCO ₂ /year
Explanation	Annual reduced CO ₂ emissions from heat production with DH
Identification	Calculation - Subtract the current year's CO ₂ emissions from the production of heat with DH from the previous year's CO ₂ emissions from the production of heat with DH
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	Transition to 100% renewable energy in district heating
Required data	
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	"Liepājas enerģija" Ltd

Table B-3.2.2.: Monitoring indicators for the implementation of the measure "Transition to 100% renewable energy in district heating"

Indicator	CO ₂ emissions from DH
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from district heating during the year
Identification	Calculation - Heat output (MWh) by energy source multiplied by the emission factor (tCO ₂ /MWh) of the specific energy source
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Heat energy produced by DH
Unit of measurement	MWh/year
Explanation	Annual heat production in district heating
Identification	Meter readings
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group



Indicator	Number and capacity of DH boiler houses
Unit of measurement	Quantity and kW
Explanation	Number and capacity of boiler houses in district heating
Identification	Information from the equipment's technical documentation
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	"Liepājas enerģija" Ltd

Indicator	Number and capacity of installed RES systems
Unit of measurement	Quantity and kW
Explanation	Number and capacity of boiler houses in district heating system producing energy from RES
Identification	Information from the equipment's technical documentation
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Heat produced by RES in DH
Unit of measurement	MWh/year
Explanation	Amount of heat produced with RES in DH
Identification	Meter readings
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Share of RES in Liepāja city DH
Unit of measurement	%
Explanation	Share of heat produced from RES in total heat produced in DH
Identification	Calculation - The amount of heat produced from RES divided by the total amount of heat produced in the DH, expressed as a percentage
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Easily accessible
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group



Table B-3.2.3.: Reduction of CO₂ emissions from natural gas consumption

Indicator	Reduction of CO ₂ emissions from natural gas consumption
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from natural gas consumption reduced per year
Identification	Calculation - Subtract the current year's CO ₂ emissions from natural gas consumption from the previous year's CO ₂ emissions from natural gas consumption
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	<ul style="list-style-type: none"> • Attracting new heat consumers to Liepāja's DH • Use of renewable energy sources in heating of municipal buildings • 'Energy efficiency first' principle in the services and industry sector • Transition to renewable energy in the industrial and service sectors • Conversion of private homes to renewable energy
Required data	
Intended data source	"Gasol" LLC
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.4.: Reduction of CO₂ emissions from natural gas consumption by attracting new consumers to DH

Indicator	Reduction of CO ₂ emissions from natural gas consumption by attracting new consumers to DH
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from natural gas consumption reduced by the measure "Attraction of new heat consumers to Liepāja's DH"
Identification	Assumption - Annual heat consumption of all new DH customers (assuming they all previously consumed natural gas)
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	Attraction of new heat consumers to Liepāja's DH
Required data	
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group



Table B-3.2.5.: Monitoring indicators for the implementation of the measure “Attraction of new heat consumers to Liepāja’s DH”

Indicator	Number of consumers connected to DH by type
Unit of measurement	Quantity
Explanation	Number of consumers connected to DH, by type (municipalities/businesses/apartment buildings/private houses/etc.)
Identification	Information on connections
Intended data source	“Liepājas enerģija” Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Heating area of new customers
Unit of measurement	m ² /year
Explanation	Annual heating area of new connections by type of consumer
Identification	Information on connections
Intended data source	“Liepājas enerģija” Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Heat transferred to new customers
Unit of measurement	MWh/year
Explanation	Annual amount of heat received from DH by new connections, by type of consumer
Identification	Information on connections
Intended data source	“Liepājas enerģija” Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	“Liepājas enerģija” Ltd

Indicator	Consumers disconnected during the year
Unit of measurement	Quantity/m ²
Explanation	Number and area of consumers disconnected from DH during the year by type
Identification	Information on connections
Intended data source	“Liepājas enerģija” Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Consumers reconnected during the year
Unit of measurement	Quantity/m ²
Explanation	Number and area of customers reconnected to DH during the year, by type
Identification	Information on connections
Intended data source	“Liepājas enerģija” Ltd
Expected availability	Available



Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Indicator	Length of newly constructed heat networks
Unit of measurement	m
Explanation	Length of DH heat networks constructed per year
Identification	Data on measures taken
Intended data source	"Liepājas enerģija" Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Management and Monitoring Group

Table B-3.2.6.: Reduction of CO₂ emissions from natural gas consumption in district heating

Indicator	Reduction of CO ₂ emissions from natural gas consumption in district heating
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from natural gas consumption reduced by the measure "Renewable energy for heating municipal buildings"
Identification	Calculation - Previous year's CO ₂ emissions from natural gas consumption of municipal authorities minus current year's CO ₂ emissions from natural gas consumption of municipal authorities
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	Renewable energy for heating municipal buildings
Required data	
Intended data source	EMS, Heads of institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.7.: Monitoring indicators for the implementation of the measure "Renewable energy for heating municipal buildings"

Indicator	CO ₂ emissions from natural gas consumption in municipal buildings
Unit of measurement	tCO ₂ /year
Explanation	Annual consumption of natural gas for heat production in municipal buildings with individual heating solutions
Identification	Natural gas consumption of municipal authorities multiplied by natural gas emission factor
Intended data source	EMS, Heads of institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Deputy Executive Director in Property matters



Indicator	Municipal buildings heat consumption by energy source
Unit of measurement	MWh/year
Explanation	Municipal buildings heat consumption by source
Identification	Meter readings, fuel accounting
Intended data source	EMS, Heads of institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Specific heat consumption in municipal buildings
Unit of measurement	kWh/m ²
Explanation	Municipal buildings heat consumption divided by the heated area of the building
Identification	Annual heat consumption of the building divided by the building area
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Specific heat consumption with climate correction (CC) in municipal buildings
Unit of measurement	kWh/m ²
Explanation	Specific heat consumption of municipal buildings, adjusted using the climate correction factor for the specific year. The climate correction allows the normalisation of the reading for a correct comparison with previous years.
Identification	Specific heat consumption of municipal buildings multiplied by annual climate correction factor
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Number of buildings with valid energy performance certificates
Unit of measurement	Quantity
Explanation	Number of municipal institutions with up-to-date energy performance certificates. Energy performance certificates assess the quality of a building in terms of its energy efficiency. They are compulsory for municipal buildings with a total floor area of more than 250 m ² .
Identification	Collection of information from heads of authorities or from the Building Information System
Intended data source	Heads of institutions, Building Information System
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Number of municipal buildings renovated
Unit of measurement	Quantity
Explanation	Number of municipal buildings renovated



Identification	Collecting information from heads of institutions
Intended data source	Heads of institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.8.: Reduction of CO₂ emissions from natural gas consumption in the manufacturing and service sectors through energy efficiency measures

Indicator	Reduction of CO ₂ emissions from natural gas consumption in the manufacturing and service sectors through energy efficiency measures
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from natural gas consumption reduced by the "Energy Efficiency First" measure in the services and industry sector
Identification	Collection of data on energy efficiency measures implemented by companies in Liepāja
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	"Energy efficiency first" in services and manufacturing
Required data	
Intended data source	Liepāja city manufacturing and service companies
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.9.: Monitoring indicators for the implementation of the measure "Energy efficiency first" in services and manufacturing"

Indicator	CO ₂ emissions from manufacturing and services ⁷
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from natural gas consumption by manufacturing and service companies
Identification	Natural gas consumption in the manufacturing and services sector multiplied by a natural gas emission factor
Intended data source	"Gasol" LLC, calculation methodology
Expected availability	Total urban natural gas consumption available from "Gasol" LLC, breakdown by type to be calculated based on assumptions
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

⁷ This indicator measures the total emission reductions from measures "Energy efficiency first" in services and manufacturing", "Transition to renewable energy in industry and services" and "Attracting new heat consumers to Liepāja CHS".



Indicator	Heat consumption by energy source in the industry and services sector
Unit of measurement	MWh/year
Explanation	Annual consumption of heat by energy source for manufacturing and service companies
Identification	Information request and data collection from companies, Liepājas enerģija Ltd, "Gasol" LLC, LEGMC public report "Air Summary-Fuels" database
Intended data source	Data from Liepājas enerģija Ltd on companies connected to DH, data from Gasol LLC on companies consuming natural gas, data from companies and LEGMC public report "Air Summary-Fuels" database on all companies
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Electricity consumption in the industry and services sector
Unit of measurement	MWh/year
Explanation	Annual electricity consumption of manufacturing and service companies
Identification	Request for information "Sadales tīkls" LLC
Intended data source	"Sadales tīkls" LLC
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Number of large enterprises in the city
Unit of measurement	Quantity
Explanation	Number of large companies in the city. According to Article 10(1) of the Energy Efficiency Law, a large enterprise is a utility: <ul style="list-style-type: none"> • employing more than 249 workers, or • with a turnover for the year under review of more than EUR 50 million and an annual balance sheet total of EUR 43 million.
Identification	Request information to the State Construction Control Bureau of Latvia
Intended data source	State Construction Control Bureau of Latvia
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Number of large energy consumers in the city
Unit of measurement	Quantity
Explanation	Number of large energy consumers in the city. According to Article 12(1) of the Energy Efficiency Law, a large energy consumer is an electricity consumer whose annual electricity consumption exceeds 500 megawatt-hours for two consecutive calendar years.
Identification	Request for information to the State Construction Control Bureau of Latvia
Intended data source	National Construction Inspection Office
Expected availability	Difficult to access



Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.10.: Reduction of CO₂ emissions from natural gas consumption in the manufacturing and service sectors by switching to RES

Indicator	Reduction of CO ₂ emissions from natural gas consumption in the manufacturing and service sectors by switching to RES
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from natural gas consumption reduced by the measure "Transition to renewable energy in industry and services"
Identification	Data collection on the RES equipment installed by companies in the city of Liepāja
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	Collection of data on RES equipment installed by companies in Liepāja
Required data	
Intended data source	Liepāja city manufacturing and service companies
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.11.: Monitoring indicators for the implementation of the measure "Transition to renewable energy in industry and services"

Indicator	Number and capacity of installed RES systems in the manufacturing and services sector by type
Unit of measurement	Quantity/kW
Explanation	Number and capacity of installed energy production installations by type of energy source in manufacturing and service enterprises
Identification	Requesting and collecting data from "Sadales tīkls" LLC on production and service companies that have installed electricity generators (solar panels and wind turbines), from companies themselves on other installations.
Intended data source	"Sadales tīkls" LLC, enterprises
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Energy produced from RES in the manufacturing and services sector by type
Unit of measurement	MWh/year
Explanation	Energy production from RES installed in manufacturing and service enterprises, by type
Identification	Requesting and collecting data from "Sadales tīkls" LLC on production and service companies that have installed



	electricity generators (solar panels and wind turbines), from companies themselves on other installations.
Intended data source	“Sadales tīkls” LLC, enterprises
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.12.: CO₂ emissions from natural gas consumption in private homes reduced by switching to RES

Indicator	CO ₂ emissions from natural gas consumption in private homes reduced by switching to RES
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from natural gas consumption reduced by the measure "Transitioning private homes to renewable energy"
Identification	Calculation - CO ₂ emissions from residential natural gas consumption in the previous year minus CO ₂ emissions from residential natural gas consumption in the current year
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	Transitioning private homes to renewable energy
Required data	
Intended data source	“Gasos” LLC, private homes
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.13.: Monitoring indicators for the implementation of the measure “Transitioning private homes to renewable energy”

Indicator	CO ₂ emissions from private homes ⁸
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from residential natural gas consumption
Identification	Calculation - Natural gas consumption of private homes multiplied by natural gas emission factor
Intended data source	“Gasos” LLC, calculation methodology
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Energy consumption of private homes by energy source
Unit of measurement	MWh/year
Explanation	Annual heat consumption of private houses by energy source

⁸ This indicator measures the total emission reductions from measures “Transitioning private homes to renewable energy”, “Attracting new heat consumers to Liepāja’s CHS” and “Public awareness”.



Identification	Total natural gas consumption available from "Gasol" LLC for the city, breakdown by type to be calculated based on assumptions
Intended data source	"Gasol" LLC, calculation methodology
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Specific heat consumption of private houses
Unit of measurement	kWh/m ²
Explanation	Heat consumption of private houses in relation to the heated area of the building
Identification	Annual heat consumption of the building divided by the building area
Intended data source	Survey
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.14.: Reduction of CO₂ emissions from municipal infrastructure electricity consumption

Indicator	Reduction of CO ₂ emissions from municipal infrastructure electricity consumption
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from electricity consumption of municipal infrastructure
Identification	Calculation - Subtract the current year's CO ₂ emissions from the electricity consumption of the municipal infrastructure from the previous year's CO ₂ emissions from the electricity consumption of the municipal infrastructure
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	<ul style="list-style-type: none"> • Continuous maintenance of the energy management system • Green renewable electricity for municipal infrastructure
Required data	
Intended data source	EMS, Heads of institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group



Table B-3.2.15.: CO₂ emission reductions from EMS

Indicator	CO ₂ emission reductions from EMS
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from municipal infrastructure in electricity consumption reduced by the measure "Continuous maintenance of the energy management system"
Identification	Calculation - Annual electricity consumption saved under the energy management system multiplied by the emission factor
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	Continuous maintenance of the energy management system
Required data	
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.16.: Monitoring indicators for the implementation of the measure "Continuous maintenance of the energy management system"

Indicator	CO ₂ emissions from municipal infrastructure's electricity consumption
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from electricity consumption of municipal infrastructure
Identification	Calculation - Municipal infrastructure electricity consumption multiplied by emission factor
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Municipal infrastructure electricity consumption
Unit of measurement	MWh/year
Explanation	Annual electricity consumption of municipal infrastructure (municipal buildings and street lighting)
Identification	EMS
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group



Indicator	CO ₂ emissions from electricity consumption in municipal buildings
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from electricity consumption in municipal buildings
Identification	Calculation - Municipal buildings' electricity consumption multiplied by the emission factor
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Deputy Executive Director in Property matters

Indicator	Electricity consumption in municipal buildings
Unit of measurement	MWh/year
Explanation	Annual electricity consumption of municipal buildings
Identification	EMS
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Specific electricity consumption in municipal buildings
Unit of measurement	kWh/m ²
Explanation	Municipal buildings electricity consumption divided by building area
Identification	Annual electricity consumption of the building divided by the area of the building
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	CO ₂ emissions from electricity consumption in street lighting
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from electricity consumption in street lighting
Identification	Calculation - Municipal street lighting electricity consumption multiplied by emission factor
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Electricity consumption for street lighting
Unit of measurement	MWh/year
Explanation	Annual electricity consumption for street lighting
Identification	EMS
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year



Responsible	Energy efficiency Group
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Indicator	Specific energy consumption for street lighting
Unit of measurement	kWh/luminaire
Explanation	Electricity consumption of street lighting divided by the number of luminaires installed
Identification	Calculation - Electricity consumption of street lighting divided by the number of luminaires installed
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Number of street lighting sections renovated/number of luminaires replaced
Unit of measurement	Quantity
Explanation	Number of street lighting sections renovated and luminaires replaced per year
Identification	Data request from "Komunālā pārvalde" Ltd
Intended data source	"Komunālā pārvalde" Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Number of measures implemented
Unit of measurement	Quantity
Explanation	Number of measures implemented under the energy management system
Identification	Accounting for measures
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Green procurement as a share of all municipal procurement
Unit of measurement	%
Explanation	Annual Green Procurement
Identification	Records in Procurement Monitoring Bureau and Electronic procurement system
Intended data source	Procurement Monitoring Bureau and Electronic procurement system
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Public procurement group



Table B-3.2.17.: CO₂ emission reductions from electricity generation/procurement from RES for municipal infrastructure

Indicator	CO ₂ emission reductions from electricity generation/procurement from RES for municipal infrastructure
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from municipal infrastructure in electricity consumption reduced by the measure "Green renewable electricity for municipal infrastructure"
Identification	Calculation - annual amount of electricity purchased and produced from RES multiplied by the emission factor
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Stationary energy sources
Which measures have an impact?	<i>Green renewable electricity for municipal infrastructure</i>
Required data	
Intended data source	Electricity bills for municipal institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.18.: Monitoring indicators for the implementation of the measure "Green renewable electricity for municipal infrastructure"

Indicator	Number and capacity of installed RES systems to generate electricity for municipal infrastructure
Unit of measurement	Quantity/kW
Explanation	Number and capacity of installations in the municipal infrastructure that generate electricity from RES
Identification	Data request from "Sadales tīkls" LLC and from the heads of municipal authorities
Intended data source	"Sadales tīkls" LLC, municipal institutions
Expected availability	Moderately inaccessible
Recommended compilation frequency	Once a year
Responsible	Deputy Executive Director

Indicator	Renewable electricity generated in municipal infrastructure
Unit of measurement	MWh/year
Explanation	Amount of electricity produced by installed equipment in municipal infrastructure that produces electricity from RES
Identification	Data request from "Sadales tīkls" LLC and from the heads of municipal authorities
Intended data source	"Sadales tīkls" LLC, municipal institutions
Expected availability	Moderately inaccessible
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Indicator	Electricity purchased from RES for municipal infrastructure
Unit of measurement	MWh/year



Explanation	Electricity purchased from renewable energy sources for municipal infrastructure
Identification	Collecting data from municipal electricity bills
Intended data source	Municipal electricity bills
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2.19.: Reduction of CO₂ emissions from municipal transport

Indicator	Reduction of CO ₂ emissions from municipal transport
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from municipal transport reduced over the year through the "Environmentally friendly commuting and services for municipal employees" measure
Identification	Calculation - CO ₂ emissions from municipal transport in the previous year minus CO ₂ emissions from municipal transport in the current year
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	Environmentally friendly commuting and services for municipal employees
Required data	
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Energy efficiency Group

Table B-3.2..20.: Monitoring indicators for the implementation of the measure "Environmentally friendly commuting and services for municipal employees"

Indicator	CO ₂ emissions from municipal transport
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from municipal transport fuel consumption
Identification	Calculation - Energy consumption of municipal vehicles by fuel type multiplied by the emission factor of the respective resource
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of vehicles and fuel consumption by type of vehicle (cars, light trucks, lorries, other) and type of fuel (incl. alternative fuels)
Unit of measurement	Quantity/litres or kWh
Explanation	Number of municipal vehicles and fuel consumption by type of vehicle and type of fuel
Identification	Data collection from EMS
Intended data source	EMS



Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Specific fuel consumption of municipal vehicles
Unit of measurement	l/100km
Explanation	Fuel consumption of municipal vehicles divided by distance travelled
Identification	Calculation - fuel consumption of a municipal vehicle per 100 km travelled
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Share of electricity in municipal transport fuel consumption
Unit of measurement	%
Explanation	Municipal vehicles' electricity consumption as a share of total municipal vehicles' energy consumption
Identification	Calculation - Municipal vehicle electricity consumption divided by total municipal vehicle energy consumption
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Average age of municipal vehicles
Unit of measurement	years
Explanation	Average age of municipal vehicles
Identification	Collecting data from vehicle procurement documents
Intended data source	Vehicle procurement documents
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Annual mileage of vehicles
Unit of measurement	km
Explanation	Annual distance travelled by municipal vehicles
Identification	EMS
Intended data source	EMS
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of low/no emission vehicles purchased
Unit of measurement	Quantity
Explanation	Number of low/no emission vehicles purchased for municipal use in the current year
Identification	EMS
Intended data source	EMS



Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of EV charging points at municipal buildings
Unit of measurement	Quantity
Explanation	Number of electric vehicle charging stations at municipal buildings
Identification	Collection of data from local authorities
Intended data source	Heads of municipal institutions
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Proportion of cyclists among municipal employees
Unit of measurement	%
Explanation	Proportion of municipal employees who choose to cycle on a daily basis
Identification	Conducting surveys
Intended data source	Survey results
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2.21: Reduction of CO₂ emissions from private transport

Indicator	Reduction of CO ₂ emissions from private transport
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from private transport reduced per year
Identification	Calculation - Subtract the current year's CO ₂ emissions from private transport from the previous year's CO ₂ emissions from private transport
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	<ul style="list-style-type: none"> • Access to and promotion of environmentally friendly public transport • E-services • Traffic calming and optimisation • Developing micro-mobility and electro-mobility
Required data	
Intended data source	CSDD, calculation methodology
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission



Table B-3.2..22.: Reduction of CO₂ emissions from private transport due to the development and promotion of public transport

Indicator	Reduction of CO ₂ emissions from private transport due to the development and promotion of public transport
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from private transport reduced by measure "Access to and promotion of environmentally friendly public transport"
Identification	Methodology to be developed
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	Access to and promotion of environmentally friendly public transport
Required data	
Intended data source	Mobility surveys
Expected availability	Difficult to access
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2..23.: Reduced CO₂ emissions from public transport

Indicator	Reduced CO ₂ emissions from public transport
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from private transport reduced by measure "Access to and promotion of environmentally friendly public transport"
Identification	Calculation - CO ₂ emissions from public transport in the previous year minus CO ₂ emissions from public transport in the current year
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	Access to and promotion of environmentally friendly public transport
Required data	
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2..23.: Monitoring indicators for the implementation of the measure "Access to and promotion of environmentally friendly public transport"

Indicator	CO ₂ emissions from public transport
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from public transport fuel consumption
Identification	Calculation - Public transport energy consumption by energy source multiplied by the emission factor of the energy source



Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of public transport vehicles by type
Unit of measurement	Quantity
Skaidrojums	Number of public transport vehicles by type
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of public transport routes
Unit of measurement	Quantity
Explanation	Number of public transport routes
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Public transport fuel/energy consumption by type
Unit of measurement	l/year or kWh/year
Explanation	Public transport fuel/energy consumption by type
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of passengers carried by type
Unit of measurement	Quantity
Explanation	Number of passengers carried by type
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Deputy Executive Director

Indicator	Annual mileage of public vehicles
Unit of measurement	km
Explanation	Annual mileage of public vehicles
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company



Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Residents' satisfaction with public transport
Unit of measurement	%
Explanation	Residents' satisfaction with public transport
Identification	Mobility survey
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Deputy Executive Director

Indicator	Adapted/new public transport routes
Unit of measurement	Quantity
Explanation	Number of public transport routes created or adapted in a given year
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Proportion of zero-emission vehicles in the bus fleet
Unit of measurement	Quantity
Explanation	Number of zero-emission vehicles in the public transport fleet
Identification	Collection of data from the public transport management company
Intended data source	Public transport management company
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2..25.: CO₂ emissions reduction for private transport from e-services

Indicator	CO ₂ emissions reduction for private transport from e-services
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from private transport reduced by the "E-services" measure
Identification	Methodology to be developed
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	E-services
Required data	
Intended data source	To be defined



Expected availability	Not available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2.26.: Monitoring indicators for the implementation of the measure “E-services”

Indicator	CO ₂ emissions from private transport
Unit of measurement	tCO ₂ /year
Explanation	CO ₂ emissions from private transport fuel consumption
Identification	Calculation based on CSDD data on the number of vehicles in the city and fuel breakdown, as well as mileage assumptions
Intended data source	CSDD, Mobility survey
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of e-services offered
Unit of measurement	Quantity
Explanation	Number of e-services offered by the municipality
Identification	Collecting data from the IT department of the municipality
Intended data source	Municipal IT Department
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Residents' satisfaction with municipal e-services
Unit of measurement	%
Explanation	Residents' satisfaction with municipal e-services
Identification	Mobility survey
Intended data source	Mobility survey
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2..27.: CO₂ emissions reduction for private transport from traffic calming and optimisation

Indicator	CO ₂ emissions reduction for private transport from traffic calming and optimisation
Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from private transport reduced by "Traffic calming and optimisation"
Identification	Methodology to be developed
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator
Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	Traffic calming and optimisation
Required data	



Intended data source	To be defined
Expected availability	Not available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2..28.: Monitoring indicators for the implementation of the measure “Traffic calming and optimisation”

Indicator	Number of registered and roadworthy vehicles by fuel type and age
Unit of measurement	Quantity
Explanation	Number of roadworthy vehicles registered in the city by fuel type and age
Identification	Collection of data from CSDD
Intended data source	CSDD
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Deputy Executive Director

Indicator	Average fuel consumption of vehicles
Unit of measurement	Litres/100km
Explanation	Average fuel consumption of private vehicles in the city
Identification	Data collection from CSDD and Mobility surveys
Intended data source	CSDD, Mobility survey
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Annual mileage of vehicles
Unit of measurement	km
Explanation	Annual mileage of vehicles
Identification	Data collection from CSDD and Mobility surveys
Intended data source	CSDD, Mobility survey
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Average age of vehicles
Unit of measurement	years
Explanation	Average age of vehicles
Identification	Data collection from CSDD and Mobility surveys
Intended data source	CSDD, Mobility survey
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Breakdown of travel by type: (1) private car, (2) public transport, (3) cyclists, (4) pedestrians
Unit of measurement	Quantity/%



Explanation	Characterisation of the daily commuting patterns of the city's residents, finding out what share of the population prefers which mode of commuting
Identification	Mobility survey
Intended data source	Mobility survey
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of mobility points
Unit of measurement	Quantity
Explanation	Number of mobility points in the city
Identification	Development Administration
Intended data source	Development Administration
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of Mobility Point users per day/month/year
Unit of measurement	Quantity per day/month/year
Explanation	Number of Mobility Point users per day/month/year
Identification	User counting devices should be installed at mobility points
Intended data source	IT Department
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of traffic lights optimised
Unit of measurement	Quantity
Explanation	Number of traffic lights in the city for which optimisation options have been carried out
Identification	Data request from "Komunālā pārvalde" Ltd
Intended data source	"Komunālā pārvalde" Ltd
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2.29.: CO₂ emissions reductions for private transport from the development of micro-mobility and electro-mobility

Indicator	CO ₂ emissions reductions for private transport from the development of micro-mobility and electro-mobility
Indikatora Unit of measurement	tCO ₂ /year
Explanation	Annual CO ₂ emissions from private transport reduced through the "Developing micro- and electro-mobility" measure
Identification	Methodology to be developed
Description	
Type of indicator	Direct impact (i.e. greenhouse gas emission reductions) indicator



Which emission source sectors are affected?	Transport and mobility
Which measures have an impact?	Developing micro- and electro-mobility
Required data	
Intended data source	To be defined
Expected availability	Not available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Table B-3.2.30.: Monitoring indicators for the implementation of the measure “Developing micro- and electro-mobility”

Indicator	Number of electric cars in the city
Unit of measurement	Quantity
Explanation	Number of electric vehicles registered in roadworthiness in the city
Identification	Collecting data from CSDD
Intended data source	CSDD
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Elektrouzlādes staciju skaits pilsētā
Unit of measurement	Quantity
Explanation	Number of EV charging stations in the city
Identification	Collecting data from CSDD
Intended data source	CSDD
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Length of cycle paths
Unit of measurement	km
Explanation	Length of city's cycle lanes by cycle lanes, cycle paths and cycle paths combined with pedestrian paths
Identification	Collecting data from Development Administrations
Intended data source	Development Administrations
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

Indicator	Number of cycle racks
Unit of measurement	Quantity
Explanation	Number of bike racks in the city
Identification	Collecting data from Development Administrations
Intended data source	Development Administrations
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission



Indicator	Number of vehicles (intensity) on reference streets per year or month
Unit of measurement	Quantity
Explanation	Number of vehicles (intensity) on reference streets per year or month
Identification	Reference streets are defined. Traffic flow meters are installed and traffic intensity is measured on the defined streets. The data is collected and analysed.
Intended data source	City's traffic volume monitoring
Expected availability	Available
Recommended compilation frequency	Once a year
Responsible	Transport Infrastructure Commission

5 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).

5.1 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
CCC Working Group	Working group monitoring and coordinating the achievement of climate change objectives	Municipality of City of Liepāja	All groups specified in the organizational scheme	Ensure synergy with all working groups involved in the process and the Management and Monitoring Group	Allow systematic implementation of energy and climate measures in Liepāja
Cooperation with the parties concerned	Develop cooperation with external stakeholders	Environmental Communication Group	NGOs, entrepreneurs, service providers, residents, etc.	Networking is critical to the achievement of the objectives pursued by the city	Increase in innovative solutions, examples of good practices, etc.

Roles and responsibilities of commissions and groups involved in the organisational structure is already described in section A-3.3.

C-1.2: Description of organisation and governance interventions – textual and visual elements
<p>Management and Monitoring Group (Newly formed) The Management and Monitoring Group assumes a critical role in overseeing the SECAP2030 and CCC measures. Comprising key stakeholders, including the City council chairman, Executive director, and other relevant authorities, this group will foster cooperation with Riga municipality and state institutions. Emphasis is placed on decision-making and monitoring measures within the district heating sector, a vital component of Liepāja's climate action plan.</p> <p>Energy Efficiency Group with 3 sub-groups (Newly formed) This newly formed group focuses on organising and monitoring the implementation of measures in municipal, housing, and industrial sectors. The establishment of sub-groups ensures a detailed approach, allowing for effective delegation to responsible authorities. Close cooperation with other groups and commissions is encouraged to create synergies and ensure alignment with climate neutrality objectives.</p> <p>Environmental Communication Group (Newly formed) The Environmental Communication Group plays a pivotal role in fostering collaboration with all other groups to identify key needs. By organising and monitoring environmental communication activities, this group aims to enhance awareness and engagement. Effective delegation to responsible authorities and consistent feedback mechanisms to the CCC group are integral to its functioning.</p> <p>CCC Group (Informal and existing)</p>



The CCC group serves as a cornerstone in ensuring the conditions of NetZeroCities are met and communicated effectively. Through monitoring the implementation of joint measures, conducting annual inventories of CO₂ emissions, and facilitating the renewal/updating of SECAP and CCC and other NetZeroCities initiative documents, the CCC group plays a central role in Liepāja's commitment to climate neutrality.

Public Procurement Commission (Existing)

The Public Procurement Commission extends its role to include energy-related aspects and adaptation to climate change. Collaboration with all groups and commissions ensures a comprehensive approach, aligning procurement practices with climate goals.

Strengthening existing groups and establishing new commissions

The existing commissions and groups listed in Table A-3.3.1 are pivotal to achieving climate neutrality. Their mandates will be extended, and potential compositions outlined.

These groups and commissions fall under the oversight of Liepāja Central administration, and their roles are already and will be further defined in comprehensive guidelines. This approach aims to establish clear communication channels, fostering effective commission functioning within the municipal framework.

Stakeholder engagement

Recognising that achieving climate neutrality requires extensive involvement, Figure A-3.3.2 identifies key stakeholders, considering their interest and influence. A strategic focus will be placed on engaging all segments of society, as the local government recognises the indispensable role of collective efforts in attaining climate neutrality objectives. This inclusive approach aims to strengthen the organisational structure and enhance overall stakeholder participation in Liepāja's climate action initiatives.

It is evident that Liepāja has taken significant and strategic steps in integrating sustainability and climate action into its governance and management structures. The alignment of key personnel in various roles, coupled with the active participation of the city in initiatives such as the Covenant of Mayors, demonstrates a strong commitment to addressing climate and energy issues.

The fact that the deputy executive director, who serves as the municipality's energy management system manager, also holds a leadership position in the district heating company, allows for a coordinated and integrated approach. This alignment of roles can facilitate smoother communication and collaboration between the municipality and key energy stakeholders.

The involvement of Liepāja's city council members in the leadership and management roles of the Liepāja Special Economic Zone highlights a strategic approach to fostering green manufacturing companies. This ensures that economic development is aligned with sustainability goals and contributes to the city's overall climate objectives.

The mayor's role as a EU Climate Pact Ambassador and membership in the EU Committee of Regions, along with relevant qualifications in environmental science and management, reflects a high level of commitment and expertise. Such leadership at the mayoral level is crucial in driving city-wide initiatives and gaining recognition at national and international levels.

Liepāja's decision to join the Covenant of Mayors initiative in 2012 signifies a proactive approach to climate action. This commitment not only sets a standard for the city but also signals to residents, industries, and NGOs that Liepāja is dedicated to advancing sustainability and climate goals.

By being an example to other Latvian cities and already having completed foundational work towards climate neutrality, Liepāja positions itself as a leader in sustainable urban development. This can inspire and motivate other municipalities to follow suit.

Actions that is in place and that are planned to address the lack of multi-level governance coordination

Existing activities



In our unwavering commitment to advancing multi-level governance coordination, the CCC Working Group, under the leadership of the Liepāja Central administration, has extended its reach through active involvement at the national level. The Executive Director, along with his deputies, plays a crucial role in advocating for climate action improvements on the national stage. Their direct engagement in discussions with ministries and participation in the different national work groups underscores our dedication to influencing and enhancing national governance policies related to climate change.

Our Mayor, as a Climate Pact Ambassador and a distinguished member of the EU Committee of Regions, brings a wealth of experience and influence to our climate governance initiatives. His strategic involvement at both national and European levels amplifies our city's voice and positions Liepāja as an active participant in shaping regional and continental climate policies. The Mayor's role not only strengthens our city's representation but also facilitates direct access to EU-wide discussions and best practices, fostering a collaborative environment for shared learning and impactful decision-making.

The Environmental Communication Group and CCC Working Group ensures that insights and advancements from these high-level discussions are effectively communicated to our local stakeholders. By maintaining transparent communication channels and disseminating information on national and EU-level engagements, we empower our community with knowledge, encouraging active participation and fostering a sense of shared responsibility in Liepāja's journey towards climate neutrality.

Planned activities

Together with NGOs, for example “Vefresh”, we are initiating forums that bring together representatives from various municipalities, ministries, and regional planning bodies. These forums provide a structured platform for open discussions, knowledge-sharing, and collaborative problem-solving. By actively participating in these advocacy forums, Liepāja aims to contribute to the development of coherent national climate policies that align with local and regional priorities.

Recognising the collaborative strength of the Kurzeme Planning Region's initiatives, Liepāja is actively engaging in efforts to join forces with other cities within the region. By participating in collaborative projects facilitated by the Kurzeme Planning Region, we are leveraging shared resources, knowledge, and expertise to enhance the impact of our climate initiatives. This collaborative approach not only strengthens multi-level governance coordination within the region but also promotes a unified front in addressing climate challenges.

In our commitment to multi-level governance coordination, Liepāja is initiating information exchange, where representatives from ministries gather to share plans and priorities, deepen understanding, build relationships, and streamline coordination. Liepāja, along with Riga, hope to continue actively contribute to these discussions, aligning city's climate strategies with national priorities. This adaptive approach ensures our cities remain at the forefront of multi-level governance coordination, shaping the national discourse on climate action..

5.2 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
Energy Communities	Create different communities for energy production	Energy Efficiency Group	Municipality, residents, business, NGO	Cooperation will ensure a higher share of RES by ensuring the	Increased energy independence and resilience



				participation of citizens and entrepreneurs	of the community, new jobs and economic opportunities, public engagement
Public participation budget	Support Instrument for the Implementation of Citizens' Initiatives	Municipality administration	Municipality, residents	Development of projects that will mitigate climate impacts and contribute to the introduction of nature-based solutions	Public involvement in achieving common objectives by improving the urban environment
Social entrepreneurship	Create a programme supporting and promoting social entrepreneurs developing innovative solutions to achieve climate neutrality objectives	Liepāja Special Economic Zone and municipality administration	Municipality, businessmen, mentors, investors, experts	A circle of social entrepreneurs will be created to offer sustainable products, services and business models	Job creation, an improved business environment, innovative solutions, potential economic growth
Education models	Develop programmes that will provide knowledge of sustainable entrepreneurship, green jobs	Municipality administration and education authority	Educational establishments, NGOs, entrepreneurs	Will allow the development of a workforce with increased awareness of the possibilities to move towards a low-carbon economy	Reduced skills gap, improved business environment and sustainable innovation
Reduction of food waste	Introduce a food waste reduction programme	Waste Management Advisory Working Group	Catering businesses, food shops, NGOs, waste managers, residents	Reduced landfill, reduced GHG emissions, promotion of circular economy	Reduced costs of waste housekeeping, improved awareness and changing behaviour
Sharing facilities and infrastructure	Accessibility of environmentally friendly spaces for meetings of different groups of society	Environmental Communication Group	Municipality, business, NGO, residents	Promoting cooperation and public engagement, raising awareness	Increased productivity and comfort, showing sustainability principles
Environmentally friendly urban infrastructure	Providing environmentally friendly transport infrastructure, including roads, walkways, electric charging stations, and motivating the use of public transport and sharing services	Transport Infrastructure Commission	Public transport service providers, municipality, public service providers, residents, etc..	Reduced CO ₂ emissions, reduced number of vehicles	Improved accessibility and mobility, less congestion and parking needs, improved health, potentially including cost savings

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



In addition to the summary table presented in C-2.1, this section provides more detailed descriptions and comments on each social innovation intervention.

Energy Communities aim to create distinct local groups focused on energy production (mostly for their own use). After lead taken by the Energy Efficiency Group, collaboration involves the municipality, residents, businesses, and NGOs. Through collective efforts, these communities ensure a higher share of renewable energy sources by fostering citizen and entrepreneurial participation.

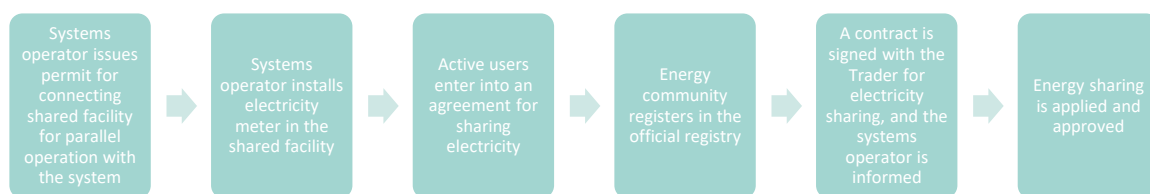


Figure: C-2.2.1: Procedure for sharing electricity (source: Ministry of Climate and Energy presentation 18.12.2023.)

The Public participation budget initiative is a support instrument administered by the municipality. It involves collaboration with residents and focuses on implementing citizens' initiatives that contribute to climate mitigation and nature-based solutions. This approach fosters public involvement in shaping and executing projects that enhance the urban environment. Some of the municipalities in Latvia already have Public participation budget and Local Government Law states obligation for every municipality in Latvia to implement this in year 2025.

A local government shall use the participatory budget to promote the participation of the inhabitants of the administrative territory of the local government in taking decisions on the development of the territory having regard to the requirements of this Law. The inhabitants of the administrative territory of the local government shall decide on the use of the participatory budget.

A council shall provide for the financing of the participatory budget in the annual budget of the local government at least in the amount of 0.5 per cent of the average actual revenue of one year of personal income tax and immovable property tax of the local government calculated for the last three years.

The participatory budget shall be divided into participatory budget planning units (territories) which shall be determined in the development programme of the local government. The participatory budget planning unit (territory) may be the entire administrative territory of the local government.

The financing of the participatory budget shall be used for territorial development projects proposed by society (hereinafter - the projects). The submission and selection of the projects shall be organised by the local government in each participatory budget planning unit.

Led by the Liepāja Special Economic Zone (LSEZ) and municipality, the **Social Entrepreneurship** program not only supports and promotes individuals developing innovative solutions for climate neutrality but also involves additional initiatives to foster economic growth and entrepreneurial development within the region.



In collaboration with the LSEZ, the system includes an evaluation process where LSEZ assesses and selects companies to operate within their territories. This ensures that businesses align with regional goals and contribute to sustainable development.

The municipality actively assists reemigrants in starting their businesses. This support includes providing guidance, resources, and incentives to encourage individuals returning to the region to initiate and grow their enterprises.

The municipality organises project competitions specifically designed to support entrepreneurs. These competitions serve as a platform for innovative ideas, offering financial and logistical support to selected projects that align with the municipality's objectives.

Within **educational model** collaboration between the Central administration and the Education Authority results in the development of programs that impart knowledge of sustainable entrepreneurship and green jobs. Educational establishments (including Liepāja State Technical School), NGOs, and entrepreneurs participate, fostering a workforce with increased awareness of opportunities in a low-carbon economy.

The Waste Management Advisory Working Group and Environmental department are working to improve and accomplish a comprehensive **food waste reduction** program involving catering businesses, NGOs, waste managers ("Liepājas RAS"), and residents. This initiative contributes to reduced landfill, decreased greenhouse gas emissions, and the promotion of circular economy practices.

The municipality actively participates in various events organised across different locations, including those where NGOs are hosts. This engagement underscores the municipality's commitment to fostering collaboration, sharing knowledge, and staying connected with diverse stakeholders.

Facilitated by the office of Mayor, there is initiative of **accessibility of environmentally friendly spaces** for meetings of different local communities and groups. Regularly mayor with other municipality's specialists meet in environmentally friendly and accessible spaces. The collective engagement of municipality and local communities promotes cooperation, public engagement, and increased awareness of sustainable practices within the community.



Figure: C-2.2.1: Mayor of Liepāja meets with residents in Ploču street meets with residents about the gravel street reconstruction program (source: Liepāja municipality)



Figure: C-2.2.2.: Mayor of Liepāja meets with residents in Karosta (source : Liepāja municipality)

Led by the Transport Infrastructure Commission, this initiative involves public transport service providers, the Municipality, and other stakeholders in providing **environmentally friendly transport infrastructure**. The goal is to reduce CO2 emissions and the number of vehicles, thereby improving accessibility, mobility, and public health. This initiative encompasses various elements, including roads, walkways, electric charging stations, and strategies to encourage the use of public transport and sharing services.

If the direct goal is reduced CO2 emissions, then the indirect result is improved urban mobility safety, enhanced human health, and a more comfortable and convenient daily life.



5.3 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
Transition to 100% renewable energy in district heating	Management and Monitoring Group	2023 - 2030	Energy system	10 666 tCO ₂ /year	30,66 million EUR
Attracting new heat consumers to Liepāja DH	Management and Monitoring Group	2023 - 2030	Energy system	13 845 tCO ₂ /year	2,25 million EUR
Continuous maintenance of the energy management system	Energy Efficiency Group	2023 - 2030	Building	130 tCO ₂ /year	100 thousand EUR
Renewable energy for heating municipal and capital company buildings	Energy Efficiency Group	2023 - 2030	Building	1 976/CO ₂ year	25 million EUR
Green renewable electricity for municipal infrastructure	Energy Efficiency Group	2023 - 2030	Energy system	2 472 tCO ₂ /year	6,605 million EUR
Environmentally friendly municipal transport	Energy Efficiency Group	2023 - 2030	Mobility and transport	762 tCO ₂ /year	600 thousand EUR
E-services and digital solutions	Transporta infrastruktūras komisija	2023 - 2030	Mobility and transport	64 tCO ₂ /year	500 thousand EUR
Transition to renewable energy in industry and services	Energy Efficiency Group	2023 - 2030	Energy system	1 998 tCO ₂ /year	2 million EUR
“Energy efficiency first” in services and manufacturing	Energy Efficiency Group	2023 - 2030	Building	2 220 tCO ₂ /year	1,5 million EUR
Traffic calming and optimisation	Transport Infrastructure Commission	2023 - 2030	Mobility and transport	3 190 tCO ₂ /year	15 million EUR



Access to and promotion of environmentally friendly public transport	Transport Infrastructure Commission	2023 - 2030	Mobility and transport	6 023 tCO ₂ /year	600 thousand EUR
Developing micro- and electro-mobility	Transport Infrastructure Commission	2023 - 2030	Mobility and transport	43 350 tCO ₂ /year	15 million EUR
Renovation of apartment buildings	Energy Efficiency Group	2023 - 2030	Building	-	110 million EUR
Raising public awareness	Energy Efficiency Group	2023 - 2030	Building	111 tCO ₂ /year	315 thousand EUR
Transitioning private homes to renewable energy	Energy Efficiency Group	2023 - 2030	Building	923 tCO ₂ /year	6,5 million EUR
Removal of CO ₂ emissions in Liepāja	Planting Monitoring Commission	2023-2030	Adaptation to climate change	-	7,6 million EUR
Climate change adaptation and nature-based package	Environmental Commission	2023-2030	Adaptation to climate change	-	5 million EUR



6 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

Future plans planned for the city of Liepāja:

- Approve the updated SECAP2030 and sign the Climate City agreement.
- Establishing an organisational structure for the implementation and monitoring of the plan in accordance with the organisational framework described in the plan.
- Prepare a specific timetable for the implementation of action for 2023-2025, including the responsible persons and the necessary resources.
- Provide an organisational framework for the implementation and monitoring of the plan.
- The introduction and involvement of all groups of society in the implementation of priority measures, including the monitoring of activities.
- Evaluate and supplement the plan with a calculation for energy consumption and emissions from Liepāja City waste management.
- Review the plan at least every two years (next in 2025) and to evaluate both the progress and achievements of the implementation of the measures and to review the measures needed to achieve the objectives and to plan additional measures.

7 Annexes

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