NET ZERO CITIES

EU MISSION PLATFORM | CLIMATE NEUTRAL AND SMART CITIES

Climate City Contract

2030 Climate Neutrality Investment Plan

2030 Climate Neutrality Investment Plan of Limassol

LIMASSOL 2030

EU CITIES MISSION

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Glossary of Terms

Acronym	Description
AP	Action Plan
ESCO	Energy Service Company
IP	Investment Plan
KPI	Key Performance Indicator
MEL	Monitoring Evaluation & Learning
NGO	Non-governmental organisation
PPP	Public Private Partnership
RES	Renewable energy sources
TDM	Transportation Demand Management

1 Executive summary

The Climate City Contract has emerged through a collective effort focused on the systematic integration and acceleration of measures spanning all sectors and governance levels, with the primary objective to support the Mission Cities in reaching zero emissions by 2030.

The total baseline emissions amount to 721.530 tonnes of CO2. Residual emissions, which are those emissions that cannot be reduced through climate action (and must equal a maximum of 20% of total emissions) amount to 126.005 tonnes of CO2. The baseline emissions reduction target is equal to the difference between baseline emissions and residual emissions, which amounts to 596.545 tonnes of CO2. Emission reductions planned for in existing action planning and strategies are equal to 226.308 tonnes of CO2. Thus, the emissions gap, is equal to 370.237 tonnes of CO2. The aim is for the emissions gap to be closed through the implementation of the climate actions as described in the Action Plan.

Currently, the Limassol Municipality does not allocate specific funds for climate action. However, when exploring strategic funding and financing options, it strives to integrate climate-related actions into projects, optimizing the benefits and capital flows from available EU and national funding sources, as well as its own contributions, which mainly stem from operational surpluses and debt financing. As per the FY23 budget, the Limassol Municipality is projected to generate approximately €54,2 million in income for FY23, with an estimated annual operational surplus of around €5,5 million after covering operating expenses. Thus, the city's ability to finance projects solely from its operational surplus is limited. The primary sources of income for the city could potentially be harnessed in the formulation of climate action policies. As per our estimates, the potential capital size that could be deployed from FY24 to FY30, amounts to approximately €137,6 million. Considering the fact that the total capital needs for full implementation of the Action Plan amount to c.€1.237m it is clear that a significant funding gap arises, which needs to be bridged by utilising additional funding sources and especially by private capital. This gap will need to be financed from alternative sources if the Municipality's capacity remains unchanged, taking into account limitations based on existing debt and municipal assets.

Some risks may affect action implementation and it is essential to propose some mitigation measures. There are various types of risk identified, some of which can be mitigated, some that cannot be mitigated and others which are characterized as systemic risks. In the transportation sector, the promotion of public transportation strategies is proven to be a complicated procedure where an interdisciplinary approach is required. Specific technological skills and knowledge are needed in the area of public transportation, where the techniques need to be applied in a very specific empirical setting. The lack of an established supply chain of local companies making high performance materials and components results in strong dependence on imports. The establishment of an effective supply chain for the materials and components is required. Economic inequality is also a risk faced, with soaring prices, increasing interest rates, rising construction costs, and stagnant wages following

the COVID-19 pandemic and Russian-Ukrainian war. Targeted subsidies and grants to support vulnerable groups in the climate transition are needed in order to mitigate this risk. It is deemed necessary for the Government to provide incentives for people to get trained in each respective field of the Green Economy and build new business to fill the increased demand. The tight timeframe may also pose a risk to the implementation of the actions, where training and upskilling will be required.

In terms of capital deployment, it is noted that the Limassol Municipality does not have sufficient resources to finance large scale climate investment projects. The government's resources are limited with low capacity for withstanding debt. The Municipality needs to increase its internal capacity and help mobilise private sector financing as well as EU grants in order to support the actions proposed to achieve climate neutrality. The Climate Neutrality Investment Plan of Limassol Municipality is a systematic map of the costs and capital that Limassol needs to reach climate neutrality by 2030. This work will help structure the way the Municipality plans, organises and develops its economic and financial strategy, and help mobilise capital from citizens, national and international funding platforms and financial institutions through policies introduced which are specifically designed for this purpose.

2 Introduction

This document builds upon the portfolio of actions and measures the Limassol Municipality committed to take within the Action Plan and quantifies the capital needs and sources to deliver these actions. For your reference, we provide below a summary of the work carried out in the 2030 Climate Neutrality Action Plan for each field of action.

Fields of Action	Actions	Description
Transportation	Public Transportation	Implementation of public transportation strategies that aim to boost the modal split of public transportation over 20% by 2030. The changes in the public transportation network will also include infrastructure upgrading of the bus stops within Limassol Municipality.
	Micro-mobility	Strategies enhancing micro-mobility modal split over 10% by 2030 that include infrastructure cost of creating 36 km of bike lanes (that include around 50 street trees per km) and subsidized user cost that incentivizes people to use shared micro-mobility services (subsidizing 11% of trip).
	Pedestrian Network	Development of comprehensive pedestrian network that include state-of-the-art pedestrianized streets of more than 5km (including shading, street furniture) and the upgrading of signalized junctions into safe pedestrian crossings “PELICAN” as a means to increase the road safety level and perception.
	Vehicle Electrification	Establishment of vehicle electrification strategies in the form of providing over 170 charging stations within Limassol Municipality that aim to address the conversion of more than 45% internal-combustion engine vehicles to electric vehicles. Further, it includes the 100% conversion of the bus fleet to electric by 2030.
	Freight Transportation	Strategies improving the efficiency of freight transportation by constructing 8 transportation centres within Limassol Municipality, while also electrifying garbage trucks and the Municipal fleet.
Transportation	TDM Plan	Optimization of transportation demand (TDM strategies) that include the construction of 5 park and ride locations, the installation of 5 mobility hubs in strategic locations within Limassol Municipality and the design and operation of a platform that controls TDM strategies.
	Smart Technologies	Incorporation of smart technologies in sustainable transportation strategies that includes the smart upgrading of bus stops within Limassol municipality, the signalization of 5 roundabouts to form a corridor of signalized roundabouts for more efficient control of traffic, the smart upgrading of crossings and a cost allocated for ITS equipment.
Built Environment	Deep building renovation	This action includes the following measures: - Increasing the building refurbishment rate through a large-scale retrofitting program; - Providing NZC guidelines for deep building envelope refurbishment; - Making compulsory the installation of effective and movable external shadings; - Banning oil boilers and replace with heat pumps; - Upgrading/replacing inefficient electromechanical systems; - Making compulsory the installation of individual energy accounting; - Promoting behavioural change and people's awareness; - Promoting building-integrated RES; - Promoting building-integrated electricity storage; - Integrating EV chargers in residential and office buildings; and - Completing installation of smart meters in all units (buildings, dwellings).

Fields of Action	Actions	Description
Built Environment	New carbon-neutral buildings	This action includes the following measures: - Stating the carbon neutrality target for new buildings; - Providing NZC guidelines for carbon-neutral buildings ; - Developing and providing a standard calculation tool for the verification of building GHG emissions; - Promoting the installation of neighbourhood-level RES; and - Promoting the re-naturalization of the urban area for increasing carbon-sinks.
	Urban regeneration	This action includes the following measures: - Studying city-wide climate-change adaptation strategies; - Creating a Breathable City; - Establishing a city-wide monitoring network - Resurfacing urban horizontal surfaces to increase albedo; - Introducing urban shading systems; - Enhancing green and blue infrastructures in the city; - Co-designing sustainable best practices; - Educational campaigns; - Creating beautiful and inclusive public spaces; - Encourage mixed-use planning; - Support flexible and adaptable design of open spaces; and - Maintenance and up-keep.
Energy Systems	Change of the energy mix	This action is beyond the control of the Municipality, but it is significant. Cyprus will undergo a rapid expansion of its PV installed base in the next few years (leading up to 2030) and replace HFO and diesel use in power generation with Natural Gas. This will significantly lower the emissions factor for scope 2 emissions and has cascading effects on all measures that rely on grid electricity.
	Energy community	Establishment of an energy community within the Municipality of Limassol by engaging various stakeholders and citizens. The energy community will consist of a large-scale PV park and energy storage technologies, aiming to satisfy the energy demand of end users and make considerable GHG savings.
	Install a 200kWth Fresnel system	Fresnel systems utilise solar energy and can provide heat at low and mid temperatures. Therefore, they can become an alternative option for supplying clean energy to commercial and industrial facilities. This is considered a pilot project with limited access to finance and thus will require funding.
	Renewables in residential buildings with behind-the-meter storage	Install photovoltaics at residential buildings in Limassol with behind-the-meter storage systems. This action will turn citizens into prosumers and reduce electricity consumption from the grid significantly. In addition, installation of storage units will further increase energy autonomy.
	Install heat pumps at commercial and residential buildings	Heat pumps are considered to be the most efficient technology for thermal generation. They can be used to provide heating (including hot water) and cooling in buildings. These units can replace boilers or other conventional technologies and reduce carbon emissions significantly.
	Centralised RES generation and long-term storage to satisfy increased demand from Mission actions	The aim is to build a hybrid PV/Wind energy system with a total joint size of 45 MW that will be combined with energy storage. The storage system targeted in this action is a Long-Term Energy Storage solution that will effectively use energy generated during the day and deliver it to the load when needed. Apart from the fact that the physical location of the proposed energy generation and storage will not be within city limits, the electricity it generates and delivers will be supplied to the centralised national grid.
Green Infrastructure and Nature Based Solutions	Green Infrastructure and Nature Based Solutions	The actions relating to green infrastructure and nature-based solutions have been included in actions of other fields (i.e., Urban Regeneration, Micro-mobility, Pedestrian Network, Resilient Coastal Neighbourhoods, Seagrass Meadows).

Fields of Action	Actions	Description
Waste and Circular Economy	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production	The target is to separately collect organic waste (e.g., household, restaurants, bakeries) and divert them in existing energy production facilities (e.g., anaerobic digestion and electricity generation). According to our estimations, separate collection of organic waste to produce energy and fertilizer leads to 80% reduction of the GHG emissions related to MSW management in Limassol. Additional removal of recyclable material could increase the reduction up to 90%. Initials steps could be also conducted for the design of a waste to energy facility in Limassol, supporting the national targets for waste management and GHG emissions reduction. For more details, please refer to sub-actions 1.1 to 1.8 in pages 98-99 of the Action Plan.
Waste and Circular Economy	Zero waste production (circular economy) in Limassol	The action capitalizes the outcomes of Waste Segregation, to go one step further to remove all the recyclable materials in the MSW (e.g., plastic, metals, textile, inert). This will lead to zeroing the amount of waste that goes to the landfills. It will follow a similar approach to Waste Segregation (small projects and upscaling). Beyond this, the potential to establish material reusing and recycling facilities in Limassol will be examined. As it is, PMD is collected, stored and exported to recycling factories in the EU (which increases GHG emissions due to shipping transportation). For more details, please refer to sub-actions 2.1 to 2.4 in page 100 of the Action Plan.
Coastal and Sea Area	Design and Development of Cold Ironing Infrastructure for the Limassol Port	The Cold Ironing initiative at Limassol Port aims at electrical power supply from the shore to ships while they are docked. By replacing onboard diesel engine produced power with a more sustainable energy sources, the initiative seeks to drastically cut emissions, improve air quality, and pave the way for a greener future in maritime operations. The action is guided and aligned with several EU directives and regulations making it somewhat easier to push forward and with significant impact. Direct positive impacts are expected on the health and well-being of the local community, as well as on the overall environmental quality of the region. Furthermore, the project promotes sustainable development and the transition to a low-carbon economy.
	Carbon neutrality in Blue Infrastructure – The case of Limassol Marina	This action focuses on the Limassol Marina ecosystem to transform it into a “carbon neutral cell” for the city of Limassol. Initiatives such as Renewable Energy Sources investments, electrical charges, building energy management systems etc. will be adopted to decarbonize the area. Synergistic approaches will be implemented to monitor emissions, use state-of-the-art technologies and achieve carbon neutrality, which will deliver social surplus and private benefit. The implementation of an “energy community” model with the involvement of all marina users will also be explored.
	Mitigation of Risks to the Coastal Area through Technology Tools & Integrated Data Management	Focuses on developing and establishing an integrated digitalised surveillance, recording and processing marine pollution system as an integrated and holistic solution for the marine ecosystem, with the aid of technology (e.g., sensors, USV, e-platform), which will provide an early warning system when an environmental risk is identified and will be available to end-users.
	Resilient Coastal Neighbourhoods	Focuses on the development of a multi-faceted urban regeneration tool, aiming at emissions reduction through enhancing the sense of community and their responsiveness toward environmental issues, which are eroded fast by a rapid-changing economy of Limassol during the last two decades. The project will define and selectively measure, energy consumption/emission patterns and define resilience levels in terms of environmental, social, and economic challenges. The investigatory methodology will draw from well documented concepts such as the ‘15 minutes city’ or the ‘healthy neighbourhood’, tailored to the very different cultural and climatic context of the eastern Mediterranean.

Fields of Action	Actions	Description
Coastal and Sea Area	Assessing carbon stock and sinking potential of seagrass meadows in Limassol coastal waters and pilot restoration	The assessment of Carbon Sinking Potential of Seagrass Meadows in Limassol Bay action aims at assessing the sequestered carbon stock in the present meadows and to initiate a monitoring and restoration programme that will have direct and indirect benefits to the society and the environment. The seagrass species Posidonia oceanica, provides a variety of ecosystem services including carbon sequestration ('blue carbon'), water purification, nutrient cycling, habitat formation sustaining hundreds of species and it also supports many recreational and economic activities. The restoration and monitoring programme of one of the most important carbon sinks in Limassol Bay has impacts relevant to environmental assessment, new technologies adoption, policy reforms and social capital. This is a research project with limited access to finance and thus will require funding.
	Wave Energy Harnessing for Water Desalination	The Wave Energy Harnessing for Water Desalination project aims at reduction of CO2 emissions from conventional desalination systems and serve as a flagship project that can attract global visibility with promotional value for the city of Limassol. The project includes a feasibility study and technological implementation for optimum Wave Energy Converter (WEC) deployment and impact. Also, the deployment of a WEC for off-shore and on-shore use for water desalination, and possibly for electricity generation purposes, as well as the design and test of a pilot in the sea water and field optimisation-based design will pave the way for larger scale implementation. Environmental, economic and social benefits will be achieved, as well promotional value benefits for the mission and the city. This is a pilot project with limited access to finance and thus will require funding.
Smart Transformation (Cross-cutting)	Digital Transformation - Green IT	- Equipment modernization: refers to the modernization of equipment (IT, network, personal, etc.) for reducing an organization's carbon footprint, greenhouse gas emissions and energy consumption. For example, replacing the municipalities and other governmental authorities' equipment (such as laptops, PCs, printers) with new energy-efficient equipment. That is, energy Star-certified devices consume less power and operate more efficiently. - Switch to the cloud: Reduce the physical servers and the large-scale data-centres by using virtualization technology and cloud computing services, which allow multiple servers to run in a single machine and use advanced cooling techniques, implement energy management systems, and utilize renewable energy sources for powering their infrastructure resulting in higher energy efficiency compared to on-premises servers and data centres. Additionally, by using electronic communication and document management systems, carbon emissions associated with paper production and disposal can be minimized. - Re-skilling employees and being remote-ready: Train employees on green technologies, energy-efficient process management and operations, as well as environmental impact mitigation. Use telecommuting to reduce the number of employees travelling within the city.
Smart Transformation (Cross-cutting)	Urban Digital Platform	Design and develop a multi-purpose, inter-operable, scalable and secure urban digital platform on top of a smart infrastructure that will enable the secure collection, storage and analysis of smart-city related big-data to be utilized from (i) the municipality and government in planning, implementation and decision-making of municipal activities (thematic areas), (ii) the industry sector for leveraging smart and green innovation solutions and entering a new market, (iii) for raising awareness to and engaging citizens in the decision-making processes via particular incentives and (iv) the academia and researchers for new research opportunities, innovations and collaborations as well as for offering experiential learning.

Fields of Action	Actions	Description
Smart Transformation (Cross-cutting)	Limassol Digital Twin	Design and develop a virtual replica of the Limassol city by combining data that will be acquired from the smart infrastructure (e.g., sensors, devices, systems) and will be processed, stored and analysed in the urban digital platform data space. The Limassol digital twin will offer the opportunity to city planners, citizens, local enterprises, academia, researchers and experts to create a real-time 3D model of the city for (i) visualizing the city's physical environment accurately and have a more intuitive understanding of its processes, infrastructures and constraints, (ii) receiving insights about the city's current state and take intuitive and instant decisions to dynamic changes, (iii) simulating different scenarios and predict future outcomes, and (iv) offering transparency to citizens and consequently empowering them to participate in decision-making processes as well as collaborate with the authorities and the industry sector.
	Smart Apps	The action capitalizes on the outcomes of Limassol Digital Twins, to go one step further with smart apps that will further extend the citizens app by allowing a user to instantly enable them based on his/her personal needs and preferences.

The Limassol Municipality required assistance and support in preparing the Investment Plan. Based on an internal assessment of its capability and capacity, it has decided to proceed with the appointment of a financial advisor to assist in planning, organizing and developing the Economic and Financial strategy that will help to mobilize capital from national and international funding platforms and financial institutions due to time constraints, limited resources and knowledge gaps in project financing (including Public Private Partnerships, EU funding, investment appraisals and financial instruments).

In the preparation of the Investment Plan, the Municipality with the support of the financial advisor performed the following tasks:

- Obtained and analysed the Action Plan with an analysis of timebound costs and capital needs for each field of action (Transportation, Energy Systems, Built Environment, Green Infrastructure and Nature Based Solutions, Waste and Circular Economy, Coastal and Sea Area and Smart Transformation) and their description of the relevant actions, to identify possible sources and uses of capital along with the impact of the actions;
- Analysed the Municipality's budget for 2023 to assess the ability to draw upon existing capital resources and structures and to analyse the opportunity for directing existing resource flows to actions needed to achieve Climate Neutrality (e.g., energy charges and taxes, parking revenues, immovable property tax, etc.) by forming public capital and implementing policy mechanisms such as green budgeting and sustainable procurement practises;
- Mapped stakeholders and assessed their capacity and expertise to participate in the process of developing the Investment Plan to form the basis for stakeholder engagement planning;
- Obtained an analysis of the Municipality's capital stock and planned capital flows to apply a city-wide integrated approach when considering the Action Plan and taking into account interactions, trade-offs and co-benefits between its actions, to understand the ownership of assets and provision of operations by the public and private sector as well as the current policy framework, to be able to define policy and deploy capital for alignment of asset owners and public service operators towards the goal of Climate Neutrality;
- Estimated capital needs across each portfolio of actions to determine type of capital needed to be drawn from public and private sources and identify what actions can be financed as opposed to actions that need to be funded by considering sufficiency of project returns. This step is necessary for economic and financial planning in order to begin designing suitable financial instruments, funding mechanisms and policies which are either established or in certain cases require a level of innovation;
- Identified and assessed risks for each action, associated with the development of the Investment Plan and considered mitigation actions, taking into consideration stakeholders involved; and

- Finally, to allow for iteration in the Investment Plan process, a monitoring, evaluation and learning (MEL) framework was put in place with indicators to monitor progress and highlight the need for adjustments in the Investment Plan. Feedback from citizen and stakeholder engagement will help to develop further the Investment Plan and refine the approach for increasing the capacity of early public capital formation (e.g., energy charges and taxes, parking revenues, immovable property tax, etc.) and deploying private capital towards Climate Neutrality actions (e.g. green bonds, bank loans, PPP, crowdfunding, private capital, etc.) whilst addressing the risks identified.

As indicated above, the Investment Plan has been prepared on the basis of the Action Plan, and the implementation of both plans will require active and sustained involvement of various stakeholders with necessary capacity and expertise to participate in the process of reaching climate neutrality and financing/funding the relevant actions for climate investment. The Investment Plan is divided into three main sections:

1) Part A - Current State of Climate Investment;
2) Part B - Investment Pathways towards Climate Neutrality by 2030; and
3) Part C - Enabling Conditions for Climate Neutrality.

3 Part A – Current State of Climate Investment

Part A “Current State of Climate Investment” is the **structural element** of the climate neutrality investment plan, putting the basis for the development of the plan through a detailed-oriented evaluation and assessment of your city’s existing financial policies and funding/financing activities.

3.1 Module IP-A1: Existing Climate Action Funding and Financing

This section represents the initial step of the 2030 Climate Neutrality Investment Plan (Investment Plan) and will require you to evaluate and assess previous and existing funding and financing for climate activities by field of action.

A-1.1: Textual element
All figures relating to the Limassol Municipality budget and Property Plant and Equipment (PPE) are strictly confidential. This section represents the initial step for the preparation of the 2030 Climate Neutrality Investment Plan. It summarises the Municipality's current actions and activities related to the funding and financing of climate actions, priorities and objectives. Capital sources for the funding and financing of the Municipality’s climate actions are covered in section A2. Below, there is a breakdown of the capital flow and capital stock per field of action and sector subsection. The classification identifies both city-wide funding (capital not yet allocated towards climate neutrality) and project-based capital (capital that is already allocated to projects that are sufficiently developed) that is directed to implementing climate actions. Currently, the Limassol Municipality does not prepare a climate budget. Moreover, the Action / Investment Plan actions are not reflected in the current budget of the Municipality for the financial year ended 31 December 2023, and thus does not contain project-based capital directed to implementing climate actions of the Action Plan. However, going forward the city budgeting process will be adjusted to take into consideration the said actions and their anticipated impact on emissions. This will allow decision makers to prioritise capital allocation decisions towards projects with higher impact on emission reduction. For this edition of the Investment Plan, we have requested information from the technical team of the Municipality to include the allocated investment amounts and % of budget allocation for each portfolio of actions by allocating expenditures relating to the Municipality's projects to the various portfolios of actions. At this point in time, an exercise to directly allocate costs to the portfolios of actions could not be performed. However, based on discussions with the technical team and the finance department, we have allocated the expenditures to specific fields of actions (e.g., parks were partially allocated to "Green Infrastructure" and/or “Pedestrian Network”) based on the project’s description / characteristics and understanding of the underlying cost items and activities. Specifically, where a project’s cost could not be directly allocated to specific fields of action, an estimated cost allocation was used in order to allocate part of the expenditure for each project to the relevant portfolios of actions. Further work is needed in this area to directly allocate costs more accurately to the fields of action. Table 1a presents the Current Capital Flows of the Municipality for current projects whose expenditure from 2023 onwards is included in the FY23 city budget. These capital flows amount to c.€58,8m. These capital flows had not been allocated to specific fields of action for the purposes of the city budget. For the purposes of Table 1a, this allocation was performed on the basis of estimations developed by the city's finance department and the Municipality’s technical team based on the costs reflected in the FY23 city budget and the fields of action relating to the Investment Plan. Specifically, the table presents capital flows allocated to specific fields of action as an absolute

amount and as a percentage of the total budgeted capex from 2023 onwards for current projects included in the city budget for 2023, i.e., these are ongoing projects that have commenced in 2023 or earlier. Capital flows allocated to climate actions amount to c.€19,1m (32,5% of the total capital flows).

Similarly, Table 1b presents the Current Capital Stock of the Municipality allocated to the Investment Plan's fields of action and was prepared in the same manner. The total amount attributed to capital stock is c.€108,9m. Specifically, the table presents existing capital stock (i.e., expenditure already incurred) for completed and ongoing projects included in the FY23 city budget allocated to fields of action and presented as an absolute amount and as a percentage of the total capex incurred up to 2022. Capital stock allocated to climate actions amount to c.€37,5m (34,4% of the total capital stock), which is consistent with the capital flows percentage of 32,5% allocated to climate actions. It is noted that the total Property Plant and Equipment after depreciation of the Limassol Municipality is equal to c.€257,6m.

Fields of Action	Sector Subsection	Current Budget Allocation (€)	% Current Budget Allocation	Comments
Transportation	Public Transportation	-	-	n/a
	Micro-mobility	4.007.776	6,8%	- Structural funds (12% on project's budget) - Lady's Mile (12% on project's budget), including pedestrian and micromobility network and green infrastructure - Sustainable Urban Mobility Plan (100% on project's budget)
	Pedestrian Network	3.627.776	6,2%	- Structural funds (12% on project's budget) - Lady's Mile (12% on project's budget), including pedestrian and micromobility network and green infrastructure
	Vehicle Electrification	-	-	n/a
	Freight Transportation	-	-	n/a
	TDM Plan	-	-	n/a
	Smart Technologies	5.500.000	9,4%	n/a
Built Environment	Deep building renovation	-	-	n/a
	New carbon-neutral buildings	160.000	0,3%	Embellishment of residential areas (50% on project's budget)
	Urban regeneration	1.193.719	2,0%	Installation of LED technology for public lighting (100% of project's budget)
Energy Systems	Change of the energy mix	-	-	n/a
	Energy community	-	-	n/a
	Install a 200kWth Fresnel system	-	-	n/a
	Renewables in residential buildings with behind-the-meter storage	-	-	n/a
	Install heat pumps at commercial and residential buildings	-	-	n/a
	Centralised RES generation and long-term storage to satisfy increased demand from Mission actions	-	-	n/a

Fields of Action	Sector Subsection	Current Budget Allocation (€)	% Current Budget Allocation	Comments
Green Infrastructure and Nature Based Solutions	Green Infrastructure and Nature Based Solutions	4.651.259	7,9%	- Structural funds (6% on project's budget) - Embellishment of residential areas (50% on project's budget) - Other parks (100% on project's budget) - Lady's Mile (6% on project's budget), including pedestrian and micromobility network and green infrastructure
Waste and Circular Economy	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production	-	-	n/a
	Zero waste production (circular economy) in Limassol	-	-	n/a
Coastal and Sea Area	Design and Development of Cold Ironing Infrastructure for the Limassol Port	-	-	n/a
	Carbon neutrality in Blue Infrastructure – The case of Limassol Marina	-	-	n/a
	Mitigation of Risks to the Coastal Area through Technology Tools & Integrated Data Management (MERA)	-	-	n/a
	Resilient Coastal Neighbourhoods	-	-	n/a
	Assessing carbon stock and sinking potential of seagrass meadows in Limassol coastal waters and pilot restoration	-	-	n/a
	Wave Energy Harnessing for Water Desalination	-	-	n/a
Capital flows not allocated to climate actions		39.678.068	67,5%	
TOTAL		**58.818.598**	**100,0%**	

Table 1a: Finance Sources By Field of Actions – Capital Flow

Fields of Action	Sector Subsection	Current Budget Allocation (€)	% Current Budget Allocation	Comments
Transportation	Increase of Public Transportation Usage in Modal Split to 20% / Passenger KMs	-	-	n/a
	Micro-mobility	8.237.307	7,6%	- Structural funds (12% on project's budget) - Garyllis park (34% on project's budget), including pedestrian and micromobility network and green infrastructure
	Pedestrian Network	8.237.307	7,6%	- Structural funds (12% on project's budget) - Garyllis park (34% on project's budget), including pedestrian and micromobility network and green infrastructure
	Vehicle Electrification	-	-	n/a
	Freight Transportation	-	-	n/a
	TDM Plan	-	-	n/a
	Smart Technologies	-	-	n/a
Built Environment	Deep building renovation	-	-	n/a
	New carbon-neutral buildings	319.000	0,3%	- Embellishment of residential areas (50% on project's budget)
	Urban regeneration	3.606.281	3,3%	- Installation of LED technology for public lighting (100% of project's budget)
Energy Systems	Change of the energy mix	-	-	n/a
	Energy community	-	-	n/a
	Install a 200kWth Fresnel system	-	-	n/a
	Renewables in residential buildings with behind-the-meter storage	-	-	n/a
	Install heat pumps at commercial and residential buildings	-	-	n/a
	Centralised RES generation and long-term storage to satisfy increased demand from Mission actions	-	-	n/a
Green Infrastructure and Nature Based Solutions	Green Infrastructure and Nature Based Solutions	17.099.344	15,7%	- Structural funds (6% on project's budget) - Garyllis park (17% on project's budget), including pedestrian and micromobility network and green infrastructure - Other parks (100% on project's budget) - Embellishment of residential areas (50% on project's budget)
Waste and Circular Economy	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production	-	-	n/a
	Zero waste production (circular economy) in Limassol	-	-	n/a

Fields of Action	Sector Subsection	Current Budget Allocation (€)	% Current Budget Allocation	Comments
Coastal and Sea Area	Design and Development of Cold Ironing Infrastructure for the Limassol Port	-	-	n/a
	Carbon neutrality in Blue Infrastructure – The case of Limassol Marina	-	-	n/a
	Mitigation of Risks to the Coastal Area through Technology Tools & Integrated Data Management (MERA)	-	-	n/a
	Resilient Coastal Neighbourhoods	-	-	n/a
	Assessing carbon stock and sinking potential of seagrass meadows in Limassol coastal waters and pilot restoration	-	-	n/a
	Wave Energy Harnessing for Water Desalination	-	-	n/a
Capital stock not allocated to climate actions		71.488.747	65,6%	
TOTAL		**108.987.985**	**100,0%**	

Table 2b: Finance Sources By Field of Actions – Capital Stock

3.2 Module IP-A2: Strategic Funding and Financing Evaluation

You will evaluate your city's existing financial policies to understand how they are currently managing the capital allocation towards net zero. This will include strategies in place and what your city has at its disposal to facilitate the transition. Your team should identify the forms of capital it has access to and which are specific to their climate neutrality targets.

A-2.1: Textual element

All figures relating to the Limassol Municipality budget and Property Plant and Equipment (PPE) are strictly confidential.

This section will be used to evaluate the city's existing financial policies in order to understand how capital allocation is managed towards net zero. As mentioned earlier, the city does not currently budget for climate action. However, when considering strategic funding and financing options it attempts to combine climatic action into projects to optimise benefits / capital flows from available EU and national funding as well as its own contribution which appears to come from operational surpluses and debt financing.

Limassol is the largest municipality of Cyprus with a population of 108.105 citizens as per the preliminary results of the 2021 Census of Population. Compared to the previous census of 2011, Limassol's population increased by approx. 7% from 101.000 citizens, which is among the highest of the main urban centres on the island. The population increase is due to internal and external migration with a large influx of refugees from war zones in the wider region and the development of Limassol into a business, technology and commercial hub attracting skilled talent from other cities and abroad. Limassol is also the largest coastal city on the island with all types of economic activity (i.e., business, tourism, commerce and industry) taking place within its geographical area compared to the other coastal cities which concentrate more on tourism. The development of the city has increased urban sprawl across its southern coast and to the hills surrounding it on the north with a loss of green areas and at the same time has led to increased housing and living costs which appear to be the highest in the country.

Table 2 presents, based on the FY23 budget, the city's existing income sources currently available. Limassol Municipality's income in total for FY23 amounts to c.€54,2m with the annual operational surplus for FY23, after covering for any operating expenses, amounting to c.€5,5m. Therefore, the city's capacity to fund projects from its operational surplus is limited. However, it should be noted that the main income sources of the city could be linked to fields of action and could potentially be employed in formulating policies for climate action. Specifically, it appears that besides government funding (24% of city's total income), 33% of the city's total income is related directly and/or indirectly to real estate (immovable property tax, professional licence tax, business premise licence tax, building and plot division permits, planning permits), 22% relates to refuse payments and 5% relates to the use of vehicles (parking fees and traffic fines). In terms of future trends on income, one would expect that real estate, parking and waste related income would increase given the growing population of Limassol and therefore could form the basis for implementing future policy for early capital formation out of these revenue sources. Also, the expected introduction of a pay-as-you-throw scheme would lead to an initial increase of waste related revenues until behavioural change takes place and citizens adjust their habits to reduce excess waste disposed.

Therefore, it is possible that future regulatory policies in the areas of real estate, waste and transportation could be used to direct and enhance existing resource flows to the relevant fields of action (Built Environment, Transportation and Waste). These cash flows based on the existing policies are not currently directed fully to the respective fields of action but are used to fund the total budget. Based on our analysis in Table A1, capital allocation on Transportation is more intensive relative to the other fields of action and existing revenues relating to the use of vehicles are not sufficient to cover it fully. Therefore, there is considerable scope in implementing future policy on congestion pricing.

Table 3 presents, based on the FY23, the city's existing capital sources for FY21 (actual), FY22 (revised budget) and FY23 (budget) along with a description and whether they originate from public or private sources. We have also included in Table 3 an estimate for the size range of capital that could be deployed from FY24 to FY30 assuming that capital flows can be linearly extrapolated over the said period for climate actions. In total the estimated size range over the 7-year period amounts to c.€137,6m. Given that the total Investment Plan capital needs are c.€1.237m, the funding gap is estimated to be c.€1.100m and will need to be financed from

other sources if the Municipality's capacity remains unchanged and taking into consideration that debt capacity is limited based on existing debt and municipal assets.

Therefore, it is evident that private capital needs to be deployed (incentive schemes that direct resources to households and businesses, public sector finance instruments, green bonds, etc.) and absorption of EU grants needs to be effectively utilized to close the funding gap. Based on the population of Limassol (101,000 citizens) and latest figures on 2022 annual GDP per head of c.€29,5k p.a., we estimate that there is capacity in private capital to fund the gap.

In this regard, the Municipality needs to build further capability in implementing policy reforms, identifying and obtaining EU funding for Climate actions and introducing appropriate municipal budgeting policies as well as implementing voluntary disclosure schemes (TCFD) and the EU Taxonomy for investment decision making. This will help to increase transparency, create trust and acceptance by the citizens for the new policies and actions to be implemented.

Income Category	City income	% of city budget
Direct Taxation		
Immovable property taxation	3.373.000	6%
Indirect Taxation		
Professional license tax	11.059.000	20%
Business premise license tax	1.116.000	2%
Building and plot division permits	450.000	1%
Planning permits	1.116.000	2%
Other	823.600	2%
Income from fines and charges		
Refuse payments	11.891.000	22%
Parking fees	1.255.000	2%
License of use of Municipal premises	1.493.500	3%
Cemetery fees	900.460	2%
Rental of space	624.000	1%
Other	1.841.000	3%
Income from Limassol Water Board	-	0%
Interest and dividend income	2.010	0%
Income from fines and charges		
Traffic fines	1.734.000	3%
Other Income from fines and charges	1.792.000	3%
Government grants (current)	12.750.491	24%
Other grants (current)	430.000	1%
Other income	1.593.840	3%
TOTAL	**54.244.901**	**100%**

Table 3: List of income sources for the city

Type	Size Range	FY21 (Actual)	FY22 (Revised)	FY23 (Budgeted)	Level	Description
Cash flows from operating activities	11.529.033	332.406	1.194.634	3.413.974	Public	Excess cash from operating activities
Government grants (capital)	11.775.736	686.744	780.000	3.580.000	Public	Governmental grants
Other grants (capital)	62.661.933	7.145.335	9.901.709	9.808.070	Public	EU grants
Loan withdrawals	30.938.462	3.069.400	1.959.222	8.230.719	Private	Bank Loans
Withdrawals from other accounts and Special Funds	n/a	-	-	2.509.000	Public	Parking Acquisition Fund, Open Spaces / Green Spaces Acquisition Funds - Bank of Cyprus
TOTAL	**116.905.164**	**11.233.885**	**13.835.565**	**27.541.763**		

Table 4: List of capital sources for the city

Note: Withdrawals from other accounts and Special Funds were not estimated, however, it is noted that the Municipality has available cash balances of c.€20,7m as at 31 December 2023, based on the FY23 budget, that could be partially deployed throughout the 7-year period.

3.3 Module IP-A3: Barriers to Climate Investment

You will need to evaluate and identify the range of structural, policy, economic, and financial barriers for capital deployment in support of climate action.

A-3.1: Textual element
This module's primary focus is the identification of potential barriers that affect the generation and utilization of capital. It also examines the shifts in the policy environment aimed at improving accessibility to climate funding and financing. The barriers identified primarily relate to financial barriers, emphasising on the limited capacity of local stakeholders to provide financing. Additional barriers considered relate to finance access, policy constraints and financial institutions and their willingness to provide capital. The main barriers identified that will require support from the Mission Platform are: - In terms of Financial barriers, the Municipality has a very low capacity of withstanding debt, and the government has also low capacity to withstand debt. Also, in terms of financial barriers, Cypriot Banks and the Cypriot Financial system in general, are not mature enough to provide alternative funding options such as green bonds, municipal bonds and crowd funding options in order to secure project financing. Furthermore, Private sector investors and the EU, will require incentives to invest in the climate related actions and feasibility studies as well as data are required in order to secure financing and EU grants. Banks may grant consumers with commercial loans if incentivised to do so. This will enable the consumers to participate in the city's actions towards their mission of reducing CO2 emissions, as they will have the required funds. Additionally, the Municipality would need support from the Mission Platform to issue a green bond, possibly on the back of municipal revenues, to form early capital for funding the first more mature income generating projects in the Action Plan. - In terms of Economic barriers, there are supply chain issues, due to scarcity of local factories manufacturing high performance materials. - In terms of Structural barriers, there are training needs, in order for the workforce to be properly trained and the public to be informed about climate friendly actions. Also, there is a need for an internal governance mechanism and organisation between departments that will allow respectively wider engagement with the public and more efficient coordination within the Municipality. - In terms of Policy barriers, the regulation needs to adapt to the needs of a "zero emissions city" framework.

Financial Barriers to achieving Climate Neutrality	Typology of Barrier	Systemic / Non-systemic Barrier	Description	Sector and stakeholders involved	Mitigation Plan
Lack of financial capacity by the Limassol Municipality.	Financial	Non-systemic	Limassol Municipality does not have sufficient resources to finance large scale climate investment projects.	Limassol Municipality, Public sector, Private sector, Local banks	Increase internal capacity and outsource
Lack of financial capacity by the Government.	Financial	Non-systemic	The amount of financing that the Cyprus government is capable of providing in support of climate action projects is limited.	Public sector, Cyprus government	No mitigation in the short term
Lack of capacity of local financial institutions to provide capital.	Financial	Systemic	The investments that relate to climate actions are of a larger financing scale than what local commercial banks are willing or capable of providing.	Private sector, Local commercial banks	No direct mitigation but a robust stakeholder engagement plan is needed to involve financial institutions in deploying capital
Unwillingness of local financial institutions to provide capital.	Financial	Systemic	Local commercial banks may be unwilling to provide financing, unless presented with robust data regarding relevant benefits and risks of the investments.	Limassol Municipality, Public sector, Private sector, Local banks	Prepare detailed feasibility studies for each action requiring financing from financial institutions
Potential lack of incentives in order to attract Private investors' interest.	Financial	Systemic	Unless provided with a clear set of incentives, private investors may not show interest in providing capital for Climate investment projects, given the high uncertainty of their returns.	Limassol Municipality, Private sector	Prepare detailed feasibility studies for each action requiring financing from financial institutions. Limassol Municipality to provide incentives for private investors/citizen for deploying capital including assets.
Lack of alternative funding options.	Financial	Non-systemic	The Cyprus Market is not mature enough in connection to alternative funding options, i.e., Green bonds, crowd funding etc.	Limassol Municipality, Cyprus Government	No direct mitigation in the short-term but support from Mission Platform needed to build capability. Outsourcing is also an option.
Lacking procedures for accessing EU Grants.	Economic	Systemic	Inefficient relevant procedures and communication between involved parties, may result in the delay of accessing necessary grants from the EU and/or not managing to secure the maximum amounts available.	Limassol Municipality, Cyprus Government, European Union funding	Outsourcing is an option.
Lack of needed high-performance materials.	Economic	Systemic	Due to the scarcity of local companies manufacturing the needed production materials, a strong dependence on imports may arise. In turn, this might negatively impact the amount of financing that the public sector is willing and/or able to provide.	Public sector, Private sector, Material Production companies	No direct mitigation in the short term. The Municipality / Government should provide incentives for people to get trained in the respective field and found new businesses to fill the increased demand

Financial Barriers to achieving Climate Neutrality	Typology of Barrier	Systemic / Non-systemic Barrier	Description	Sector and stakeholders involved	Mitigation Plan
Insufficient technical skills of involved stakeholders (e.g., workforce).	Structural	Systemic	There are insufficient technical skills of possible parties to be involved in the execution of the climate action plan. In particular, the deep renovation of existing buildings and the construction of carbon-neutral buildings require very skilled workforce, e.g., SMEs do not typically have the required skills to install advanced HVAC components, provide airtight envelopes, integrate multifunctional devices. Therefore, it is likely that this may impede the securing of financing from private investors and/or EU grants.	Public sector, Private sector, EU	No mitigation in the short term. Change of mechanisms and procedures in the long-term with training structures to be put in place.
Cumbersome and uncoordinated mechanisms for existing funds.	Structural	Systemic	Due to the disorganised and complicated mechanisms in place for the utilisation of existing funds, their distribution to the relevant climate investment projects may prove inefficient and decelerated.	Limassol Municipality, Public sector	No mitigation in the short term. Appropriate legislative framework and policies to be established in the long-term.
Necessary transformation of the legislative framework.	Policy	Systemic	Since there are currently gaps to the legislative framework, it is deemed necessary to incorporate the relevant policies and regulations critical to the implementation of the climate action plans.	Public sector, Cyprus Government and Cyprus House of Representatives	No mitigation in the short term. Changes in the legislation could force the private sector to adopt environmental practices.
Recency of integrating environmental assessment schemes	Policy	Non-systemic	The private sector in Cyprus is not currently legally required to adopt environmental practices in relation to high-performance buildings.	Public sector, Private sector	No mitigation
Increase in real estate prices	Economic	Systemic	The increase of the real estate prices in the centre and coastal areas of the city are causing an increase in the financing requirements.	Limassol Municipality, Public sector, Private sector, Local banks, Cyprus Government	No mitigation
High private-sector indebtedness	Financial	Systemic	High private-sector indebtedness in Cyprus restricts deployment of private capital	Private sector, Local commercial banks	Strong public awareness campaign to inform and educate residents and businesses about their roles and responsibilities. Continuous evaluation and feedback mechanisms should be in place to monitor progress, address challenges promptly, and make necessary adjustments to improve effectiveness over time.

Financial Barriers to achieving Climate Neutrality	Typology of Barrier	Systemic / Non-systemic Barrier	Description	Sector and stakeholders involved	Mitigation Plan
Internal governance	Structural	Systemic	Disengagement of citizens needs to be addressed through an internal governance mechanism that promotes transparency and wider participation of stakeholders	Limassol Municipality, Private sector, Citizens	Establishment of a transversal team to facilitate efficient coordination between departments
Organisation between departments	Structural	Non-systemic	The lack of a transversal team does not allow for efficient coordination between departments	Limassol Municipality	Increase internal capacity

Table 5: Barriers to Climate Investment

4 Part B – Investment Pathways towards Climate Neutrality by 2030

Part B "Investment Pathways towards Climate Neutrality by 2030" is in place to capture the actions and needs for mobilising and delivering the funding and financing needed for climate neutrality. This Part of the Investment Plan will be aligned with and build upon the Action Plan. In addition, each of these Plans are likely to entail multiple iterations over the course of the path to climate neutrality.

4.1 Module IP-B1: Cost Scenarios for Climate Neutrality

These are the actions and measures which make up the 2030 Climate Neutrality Action Plan that need to be costed. Given the Investment Plan needs to be practical, the measures defined within the Action Plan need to be tagged by how much they will cost for the city, considering implementation and operational costs, so the city budget can be adapted to include them.

Cities have the option to provide cost estimates at their own discretion on the measures disclosed in the Action Plan template as per table B-2.2 and in the Investment Plan template as per table B1.2. Given these cost estimates for the actions, cities can then include non-sectorial costs (the cost of the levers to implement these actions) these should be considered alongside the concrete actions.

B-1.1: Textual element
This part focuses on the attempts to examine and analyse the overall costs associated with achieving climate neutrality by 2030 by implementing the activities described in the Action Plan. It identifies various initiatives and the capacity to achieve climate neutrality, aiming to provide a more granular costs estimation. This section is an initial internal estimate of the total capital required, to form the preliminary actions in order to employ capital from various sources. The internal estimates were provided by academics who are part of the Climate Response Team of the Municipality and are subject matter experts in each respective field of action and have extensive experience in costing climate actions. It is noted that in updated versions of the Investment Plan and Action Plan we will engage with external partners to obtain more accurate data and where possible receive third party quotations to form a basis for the relevant costs. This validation process for the costs will run continuously with updated costs used for feasibility study purposes. The costs shown in table 5.a are broken down in upfront costs, and implementation costs and are presented on a total cost basis. Upfront costs cover some preliminary costs for the collection of data, estimations, documentation, preparation of feasibility studies and other costs that arise prior to the implementation of the actions and in some instances cost of land and infrastructure costs. Implementation costs contain CAPEX and OPEX needs for each action and were estimated on a per cost item basis by the subject matter experts based on past experience from comparable projects. Implementation costs for the fields of Built Environment and Waste and Circular Economy contain the total amount required for upfront costs and implementation costs. Operational expenditure includes running costs per action, such as machinery repairs and maintenance, staff wages, etc for the period up to 2030. A more detailed breakdown of the implementation costs to Capital expenditure and Operating expenditure will be provided in future editions of the Investment Plan. More details on the calculation of costs are included in part B.2.2 of the Action Plan. The output analysis encompasses the direct impacts such as emission reductions and the respective monetary benefit, as well as indirect impacts in the form of co-benefits. In terms of direct impacts, the seven activities described in the Action Plan under the Transportation sector have a total Cost / CO2 eq ton of €1.277. The three activities described in the Action Plan under the Built Environment sector have a total Cost / CO2 eq ton of €2.011. The five activities described in the Action Plan under the Energy

Systems sector have a total Cost / CO2 eq ton of €1.982. The six activities described in the Action Plan under the Coastal and Sea Area sector have a total Cost / CO2 eq ton of €1.734. The two activities described in the Action Plan under the Waste and Circular Economy have a total Cost / CO2 eq ton of c.€1.303.

The monetary benefit corresponds mainly to emission reductions for the Transportation sector and in the case of Build Environment it includes cost savings due to energy efficiency measures in terms of €m per year by 2030.

Indirect benefits are stated in terms of energy demand and reduction of emissions, ecological improvements, externalities, social impact, policy measures, financing etc.

Tables 5.b, 5.c and 5.d respectively present sectoral costs for the city only, sectoral costs for the city, citizens and businesses with CO2 emission reductions and sectoral capex/upfront investment by asset owner from the Economic Case on an increment basis and not on a total cost basis. From tables 5.b and 5.c, it is evident that the Municipality will bear an incremental investment cost cash outflow of c. EUR38mln which after cost savings equates to a net incremental investment cost cash outflow of c. EUR24mln while citizens and businesses will bear a much greater part of total incremental investment costs cash outflows of c. EUR823mln which after cost savings/co-benefits result to an overall net positive cash inflow of c. EUR74mln across all sectors. The Building & Heating sector appears to have net negative cash outflow of c. EUR355mln which indicates that actions in this field of action will need greater funding/support in the form of EU and Government Grants.

In terms of asset ownership as per Table 5.d, it appears that only 4% of assets are owned by the Municipality whilst 52% of assets are owned by the citizens, 21% by businesses, 13% by Transport Owners and 10% by Utility Companies which provides good background as to the influence of each stakeholder group on the success of the Action Plan, the need for wider stakeholder engagement, an effective communication campaign and deployment of private capital.

Fields of Action	Action / Indicator	Upfront Costs/Capex	Implementation Costs (incl. Capex and Opex)	Direct impacts		Indirect impacts (co-benefits)
				Emission reductions (tCO_2)	Monetary benefit (€)	
Transportation	Increase of Public Transportation Usage in Modal Split to 20% / Passenger KMs	2.300.000	20.800.000	10.845 tCO2	c.9.000.000	Reduction in GHG emissions Promotion of public transportation strategies, such as increasing ridership, improving fleet efficiency, etc.
						Air quality improvement Shifting from private vehicles to public transportation leads to a decrease in vehicle emissions, leading to improved air quality
						Fuel consumption reduction Public transportation systems are generally more fuel-efficient per passenger-mile compared to private vehicle
						Traffic congestions mitigation Promotion of public transportation can help alleviate traffic congestion by reducing the number of vehicles on the road.
						Improved public health Public transportation systems promote accessibility and mobility, contributing to increased physical activity levels
						Enhanced social equity Promoting accessibility and mobility for all segments of society (e.g., elderly, individuals with disabilities, lower income individuals, etc.), by providing affordable and inclusive transportation options
						Enhanced urban liveability Public transportation promotes compact urban development and reduces the need for expansive road networks and parking spaces
	Micro-mobility	4.150.000	37.390.000	14.736 tCO2	c.8.000.000	Reduction in GHG emissions Promotion of micro-mobility strategies, lead to a reduction in GHG emissions by encouraging the use of micro-mobility vehicles
						Air quality improvement Shifting from private vehicles to micro-mobility leads to a decrease in vehicle emissions, leading to improved air quality
						Noise pollution reduction Micro-mobility modes produce significantly less noise compared to traditional combustion engine vehicles
						Traffic congestions mitigation Promotion of micro-mobility can help alleviate traffic congestion by reducing the number of vehicles on the road.
						Improved public health Promotion of micro-mobility contributes to increased physical activity levels
						Enhanced urban liveability Micro-mobility strategies enhance the quality of urban life by creating liveable and people centric cities

Fields of Action	Action / Indicator	Upfront Costs/Capex	Implementation Costs (incl. Capex and Opex)	Direct impacts		Indirect impacts (co-benefits)
				Emission reductions (tCO_2)	Monetary benefit (€)	
Transportation	Pedestrian Network	370.000	3.320.000	7.368 tCO2	c.5.000.000	Reduction in GHG emissions The development of a pedestrian network results in the reduction of private vehicles for short-distance trips
						Air quality improvement By reducing the reliance on motorized vehicles, a pedestrian network will contribute to improved air quality
						Social equity and inclusivity A comprehensive pedestrian network ensure equal access to transportation options for all members of society
						Traffic congestions mitigation Promotion of micro-mobility can help alleviate traffic congestion by reducing the number of vehicles on the road.
						Improved public health Increased emphasis on walking contributes to increased physical activity levels
						Vibrant and liveable urban spaces The creation of pedestrian network encourages social interaction, community engagement and the revitalization of urban spaces
	Vehicle Electrification	4.580.000	41.230.000	92.385 tCO2	c.21.000.000	Reduction in tailpipe emissions The adoption of electric vehicles leads to a reduction in GHG emissions and air pollutants
						Decreased noise pollution Electric vehicles produce significantly less noise compared to ICE engines
						Energy independence and security Widespread adoption of electric vehicles reduces dependence on fossil fuels, promoting renewable energy sources
						Job creation and economic growth The transition to electric vehicles fosters the growth of green industries, creating employment opportunities
						Improved public health Electric vehicles adoption reduces air pollutants leading to improved public health

Fields of Action	Action / Indicator	Upfront Costs/Capex	Implementation Costs (incl. Capex and Opex)	Direct impacts		Indirect impacts (co-benefits)
				Emission reductions (tCO_2)	Monetary benefit (€)	
Transportation	Freight Transportation	3.500.000	31.950.000	9.439 tCO2	c.5.000.000	Reduction in GHG emissions The implementation of efficient freight transportation strategies leads to a reduction in GHG emissions and air pollutants
						Fuel consumption reduction Efficient freight transportation strategies (e.g., optimizing delivery routes, minimizing idle times, adopting fuel efficient technologies, etc.) can lead to a direct reduction in fuel consumption
						Reduced traffic congestion Efficient freight transportation strategies (e.g., optimizing delivery routes, utilizing smart logistics systems, etc.) can help reduce traffic congestion on roads
						Economic cost savings Improving the efficiency of freight transportation (e.g., reducing fuel consumption, minimizing delivery times, etc.) can lead to cost savings for businesses
	TDM Plan	2.720.000	24.540.000	8.786 tCO2	c.6.500.000	Reduction in GHG emissions Sustainable transportation choices (e.g., public transportation, micro-mobility, etc.) can lead to a reduction in GHG emissions and air pollutants
						Decreased vehicle miles By implementing strategies that encourage mode shifting and reduce unnecessary trips, results in lower emissions and reduced congestion
						Reduced traffic congestion Optimization of the transportation system can help alleviate traffic congestion
						Economic cost savings The promotion of share transportation options can help individuals save on transportation cost
	Smart Technologies	1.770.000	15.960.000	8.780 tCO2	c.6.500.000	Reduction in fuel consumption Integration of smart technologies such as intelligent traffic management systems can lead to a reduction in GHG emissions and air pollutants
						Improved route optimization Smart transportation systems can analyse real-time traffic data, identify the most efficient routes and suggest alternative modes of transportation, leading to shorter travel distances, reduced congestion and lower emissions
						Increased safety Smart transportation systems can incorporate advanced safety features (e.g., real-time monitoring, collision detection, etc.) leading to a reduction in accidents and fatalities on the roads

Fields of Action	Action / Indicator	Upfront Costs/Capex	Implementation Costs (incl. Capex and Opex)	Direct impacts		Indirect impacts (co-benefits)
				Emission reductions (tCO_2)	Monetary benefit (€)	
Transportation	Smart Technologies					Economic benefits The integration of smart technologies can stimulate economic growth by creating new job opportunities and attract investments
Built Environment	Deep building renovation		348.391.679	200.386 tCO2	€9.415.809	Reduced GHG Emissions: By implementing this action will contribute to a substantial reduction in greenhouse gas emissions. The upgraded building stock will consume less fossil fuel-based energy, resulting in lower carbon dioxide and other greenhouse gas emissions. This will support local and national climate change mitigation efforts, helping Limassol achieve its emission reduction targets.
						Increased rate of retrofit: Accelerated adoption of building renovation and energy efficiency measures, resulting in reduced energy consumption, lower carbon emissions, and improved building performance in existing structures.
						Reduced energy demand needs or consumption: Deep renovation of the building stock will result in significant improvements in energy efficiency. Upgrading insulation, sealing air leaks, and installing energy-efficient appliances and lighting systems will reduce energy consumption in buildings. This will lead to lower energy bills for building owners and tenants, reducing energy poverty and increasing affordability.
						Reduced energy poverty: Deep renovation can yield long-term cost savings for building owners and tenants and better indoor environmental conditions, resulting in a reduction of the energy poverty exposure and of the energy-poverty related mortality.
						Increased carbon sequestration: Promote the capture and storage of carbon dioxide from the atmosphere, primarily through the growth and preservation of urban forests, green infrastructure, and other carbon-absorbing ecosystems. Increased carbon sequestration promotes biodiversity, enhances ecosystem services, and contributes to the overall goal of achieving a carbon-neutral or carbon-negative future
						Improved air quality: Deep renovation of the building stock can improve air quality by reducing emissions from buildings and their systems. This can have a positive impact on public health and the environment.

Fields of Action	Action / Indicator	Upfront Costs/Capex	Implementation Costs (incl. Capex and Opex)	Direct impacts		Indirect impacts (co-benefits)
				Emission reductions (tCO_2)	Monetary benefit (€)	
Built Environment	Deep building renovation					<u>Reduced heat island effect:</u> Deep renovations will address urban heat island effects by incorporating strategies such as green roofs, cool pavements, and urban greening. These measures will mitigate the urban heat island effect, reduce energy consumption for cooling, and improve local microclimates. The result will be a more comfortable and sustainable urban environment for residents and visitors alike.
						<u>Enhanced physical and mental well-being, comfort and productivity:</u> Deeply renovated buildings prioritize occupant comfort and well-being. Upgrades to insulation, ventilation, and indoor air quality systems create a healthier indoor environment. Enhanced thermal comfort, improved air quality, and reduced noise levels positively impact occupants' health, productivity, and overall quality of life.
						<u>Enhanced liveability attractiveness/aesthetics:</u> Deep renovation of the building stock can improve the physical and visual qualities of a place, creating a more appealing and enjoyable environment that enhances the overall quality of life for residents and visitors.
						Improved access to information, awareness & behaviour change
						<u>Increased number of skilled jobs & rate of employment</u> Deep renovation initiatives generate employment opportunities and stimulate local economic growth. The extensive retrofit projects require skilled labour in construction, engineering, architecture, and energy services. These jobs can provide stable employment for the local workforce and attract investment in the Carbon-neutral building sector. Furthermore, the renovation activities spur demand for building materials, equipment, and related services, supporting local businesses.
						<u>Increased urban forestry, plantation & improved plant health:</u> Deep renovation initiatives can contribute entailing expansion of green spaces, the establishment of urban forests, and the implementation of measures to enhance the well-being of plants. This leads to greater biodiversity, improved air quality, reduced pollution, and a healthier ecosystem. It also contributes to the beautification of urban areas and provides numerous benefits such as shade, habitat for wildlife, and a sense of tranquillity for residents.

Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Built Environment	Deep building renovation					<u>Improved nature restoration:</u> Deep renovation initiatives can revitalize and rejuvenate degraded or damaged natural ecosystems. It involves initiatives such as reforestation, wetland restoration, habitat rehabilitation, and biodiversity conservation. Nature restoration aims to restore ecological balance, enhance biodiversity, improve ecosystem services, and promote the recovery of natural habitats. This process helps to mitigate the effects of environmental degradation, preserve biodiversity, and create healthier and more resilient ecosystems for the benefit of both nature and human well-being.
						<u>Increased resilience to climate change:</u> Deep renovation of the building stock can make buildings more resilient to climate change by making them more resistant to extreme weather events, such as heat waves, floods, and droughts. This can help to protect property owners and the city from the negative impacts of climate change.
						<u>Increased property value decreased future maintenance and capital costs:</u> Deeply renovated buildings tend to have higher market value due to their improved energy performance, lower operating costs, and alignment with sustainability standards. Building owners can command higher rents or sales prices for energy-efficient properties. Additionally, Carbon-neutral building certifications and labels can further enhance the market value and attractiveness of the renovated buildings
	New carbon-neutral buildings		51.773.663	5.938 tCO2	€1.102.954	<u>Increased energy efficiency:</u> Improved utilization of energy resources to achieve the desired outcomes while minimizing energy waste. It involves implementing technologies, practices, and policies that reduce energy consumption, enhance energy performance, and optimize energy use across various sectors. Increased energy efficiency leads to lower energy costs, reduced greenhouse gas emissions, enhanced sustainability, and a more resilient energy system, contributing to environmental protection and long-term energy sustainability.

						Reduced energy demand needs or consumption: The construction of new carbon-neutral buildings will provide new built-up spaces hosting human activities, which require very low emissions. High standards for insulation, sealing air leaks, installing energy-efficient appliances and lighting systems will result in reduced energy consumption in buildings. This will lead to very low energy bills for building owners and tenants, reducing energy poverty and increasing affordability.
Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Built Environment	New carbon-neutral buildings					Reduced energy poverty: Deep renovation can yield long-term cost savings for building owners and tenants and better indoor environmental conditions, resulting in a reduction of the energy poverty exposure and of the energy-poverty related mortality
						Increased carbon sequestration: Promote the capture and storage of carbon dioxide from the atmosphere, primarily through the growth and preservation of urban forests, green infrastructure, and other carbon-absorbing ecosystems. Increased carbon sequestration promotes biodiversity, enhances ecosystem services, and contributes to the overall goal of achieving a carbon-neutral or carbon-negative future.
						Improved air quality: Carbon-neutral buildings require very low energy for their operation resulting in limited local and centralized emissions. This can have a positive impact on public health and the environment.
						Reduced heat island effect: Carbon-neutral buildings are characterized by low heat transferred to the urban space resulting in a reduction of anthropogenic heat. That is very important to limit excessive heat in urban areas, leading to lower ambient temperatures and improved urban comfort
						Enhanced physical and mental well-being, comfort and productivity: Carbon-neutral buildings must be designed to prioritize occupant comfort and well-being. Enhanced thermal comfort, improved air quality, and reduced noise levels positively impact occupants' health, productivity, and overall quality of life.

						Improved access to information, awareness & behaviour change: Empowered individuals and communities to make informed choices. Through educational campaigns, workshops, and online platforms, information about sustainable practices is disseminated, raising awareness and promoting behaviour change towards more sustainable lifestyles. This co-benefit leads to increased environmental consciousness, responsible consumption, and active participation in sustainability efforts, ultimately contributing to the transition towards a greener and more sustainable society.
Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Built Environment	New carbon-neutral buildings					Increased number of skilled jobs & rate of employment: Constructing new carbon-neutral buildings generate employment opportunities and stimulate local economic growth. Theis projects require skilled labour in construction, engineering, architecture, and energy services. These jobs can provide stable employment for the local workforce and attract investment in the Carbon-neutral building sector. Furthermore, this activity spur demand for building materials, equipment, and related services, supporting local businesses.
						Increased resilience to climate change: Deep renovation of the building stock can make buildings more resilient to climate change by making them more resistant to extreme weather events, such as heat waves, floods, and droughts. This can help to protect property owners and the city from the negative impacts of climate change.
						Increased property value and decreased future maintenance and capital costs: Deeply renovated buildings tend to have higher market value due to their improved energy performance, lower operating costs, and alignment with sustainability standards. Building owners can command higher rents or sales prices for energy-efficient properties. Additionally, Carbon-neutral building certifications and labels can further enhance the market value and attractiveness of the renovated buildings.
	Urban regeneration		168.000.000	76.225 tCO2	-	Increased carbon sequestration
						Improved air quality
						Reduced heat island effect
						Enhanced physical and mental well-being, comfort, and productivity

						Enhanced liveability attractiveness/aesthetics
						Increased number of skilled jobs & rate of employment
						Improved land-use management practices (linked to biodiversity): A policy framework on land use can promote urban micro-forestation and densification by incentivizing the incorporation of green spaces and trees in urban areas. This can include requirements for minimum tree coverage, incentives for developers to integrate green spaces, and zoning regulations that prioritize mixed-use developments and compact urban designs.
						Increased urban forestry, plantation & improved plant health
						Improved nature restoration
						Increased resilience to climate change
Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Energy Systems	Change of the energy mix	-	217.200.000	226.613 tCO2		Cascading effects on all measures that rely on grid electricity
	Energy community	420.000	2.850.799	1.416 tCO2		High RES penetration Decentralized production/consumption model Sense of ownership
	Install a 200kWth Fresnel system	949.000	2.576.000	468 tCO2		Upskilling of local businesses Direct carbonization
	Renewables in residential buildings with behind-the-meter storage	-	93.765.570	56.656 tCO2		Turn citizens into prosumers and reduce electricity consumption from the grid significantly Increase of energy autonomy High RES penetration Large volume of work for local businesses (Surveyors and installers)
	Install heat pumps at commercial and residential buildings	200.000	26.001.053	8.121 tCO2		Need for experts to perform studies and installers
	Centralised RES generation and long-term storage to satisfy increased demand from Mission actions	16.500.000	80.250.000	66.749 tCO2		

	All actions					**Technology & Infrastructure:** New RES capacity, New Behind-the-meter storage, Familiarity with solar thermal tech, Digitalized infrastructure, Novel synergies of RES and storage, Community Storage, Resource efficiency, Climate change adaptation & resilience, Offer services to the grid, Reduced pollutants, Decrease noise & vibrations, Health improvements **Governance / Policy**: Regulatory Framework for communities, Integration in energy market, Resource efficiency **Social Innovation:** New skills and capacities at prosumer level, Social cohesion **Democracy / Participation:** Jointly owned means of production, Citizen engagement and inclusion, Democratisation of production means, Sense of ownership, Opportunity for P2P energy trade, Local job creation **Financing:** New opportunities for private investors, New 'microfinancing' schemes, Potential cost reduction **Learning capabilities:** Strategic learning in all stakeholders (in a central pillar of the energy transition), Instils mindset of energy efficiency and optimum use of resources, Familiarity with solar thermal tech
Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Green Infrastructure and Nature Based Solutions	The "Green Infrastructure and Nature Based Solutions" field of action is included in the "Urban regeneration" action of the "Built Environment" portfolio of actions.					
Waste and Circular Economy	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production		54.000.000	41.277 tCO2		<u>Reduced GHG emissions:</u> Implementation of this action will contribute to the reduction of the GHG emissions produced by landfilling the organic fraction of the MSW. Limassol also has a great potential for removing of the recyclable fraction from the MSW. The action is in accordance with EU guidelines and directives for sustainable solid waste management (and many others related to sustainable environmental management). <u>Reducing environmental pollution and producing renewable energy:</u> Landfills contribute to environmental pollution, not only with GHG emissions, but also with the release of leachate and odours which are problematic for nearby communities. Sustainable MSW management will contribute to minimizing these issues and instead will be used to produce renewable energy from organic waste using anaerobic digestion. One of the added benefits from this, is that the emission factor from this source of energy is much lower than the one of current system used for electricity production in Cyprus. <u>Decreased rate of waste production:</u>

	Zero waste production (circular economy) in Limassol		6.000.000	4.753 tCO2		Applying zero waste approach (e.g., reuse, reduce, recycle) supports reduced waste production. Reduced pollution related to solid waste: On the long term, sustainable solid waste management supports several EU strategies related to human and environmental health (e.g., One Health; Soil; Biodiversity; Green Deal). Reduced consumption; avoid food waste: Sustainable MSW leads to abandoning the linear model "buy-use-throw" which is also related to increased GHG emissions and climate change. Food waste reduction is highly related to social innovation (donate; educate consumers). Enhanced well-being and sense of place: Minimizing environmental pollution from waste supports public health and citizens are proud for their neighbourhoods/community/city. Reduced waste (and related emissions): Multistakeholder approaches and community-based solutions have higher prospects for success, which ultimately leads to waste reduction and GHG emissions mitigation. Sense of place/ aesthetics: Sustainable waste management with active involvement of citizens and stakeholders has positive impact on the cooperation and collaboration (bottom up) and city aesthetics (and brand name). It enhances the overall quality of life for residents and visitors. Electricity production: Producing electricity from waste supports reducing the cost for electricity at the household and municipality levels and has positive impact to GHG emissions mitigation. Improved access to information, awareness & behaviour change: Empowers individuals and communities to make informed choices (e.g., responsible consumption, and active participation in sustainability efforts). Transition to green and sustainable society (green jobs, reduction of health care costs). "Waste to money": Educate for fighting over-consumption has a positive benefit for households. Approx. 1000 euros per households annually are related to food waste in Cyprus (LIFE FOODPRINT). Education/train/learn/MEL: Training towards sustainable MSW and circular economy leads to implementation and upscaling of the pilot projects for MSW sustainable management and circular economy, which effectively leads to GHG emissions mitigation. Increased number of skilled jobs & rate of employment: Zero Waste and Circular Economy stimulate local economic growth. These approaches yield interventions and projects that require skilled labour in green economy, engineering, environment and energy. These jobs can

						provide stable employment for the local workforce and attract investment in the Carbon-neutral concept of the NZC. Furthermore, circular economy activities spur demand for materials, equipment, and related services, supporting local businesses which need to adjust their role towards NZC concepts. Waste streams: Waste streams generation and treatment yield GHG emissions. Close monitoring reveals opportunities for waste reduction and efficient collection/treatment. This supports GHG emissions mitigation. Efficient management: Increased efficiency in waste management and opportunity of testing different management scenarios and plans. Increased resilience to climate change: Deep knowledge on complex systems such as the waste management system can increase resilience to climate change. Increased property value and decreased future maintenance & capital costs: An efficient and SMART solid waste management system removes negative aspects of waste (pollution, odours) and enhances the monetary value of assets.
Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Coastal and Sea Area	Cold Ironing Implementation in Limassol Port	400.000	35.000.000	22.960 tCO2		- Reduction of GHG emissions - Improved air quality - Improvement of health of the local community - Increased revenue for the port from increased traffic - Stimulation of economic growth in the local community. - Creation of new jobs for skilled workers - Creation of new jobs in other service sectors (such as hospitality, transportation, and logistics) due to increased economic activity at the port - Opportunity to set an example for the region
	Carbon neutrality in Blue Infrastructure – The case of Limassol Marina	300.000	2.500.000	5.770 tCO2		- Reduce GHG emissions from various activities within the Limassol Marina to transform it to a carbon neutral infrastructure - Set an example for other blue infrastructures in the country and beyond - Set-up renewable energy sources to cover energy needs of the Marina - Augment sense of ownership among co-owners and citizen engagement in the matters of green energy production via the creation of an energy community - Ensure a sustainable, smart and eco-friendly future for the rapidly advancing nautical tourism sector

	Mitigation of Risks to the Coastal Area through Technology Tools & Integrated Data Management	200.000	-	-		Increased monitoring and detection of polluting instances and the identification of their sources. Reduce the number of polluting incidents, having identified their sources and root causes. Elevate the quality of Limassol's coastal waters and increase their resilience to human pressures.
	Resilient Coastal Neighbourhoods	220.000	11.390.000	1.234 tCO2		Support of bottom up / community lead regeneration mechanisms Champion associated changes to planning policy and practice Reduction of the need to travel Better access to services locally Support schools and other local facilities Promoted multiculturism and integration of lower income groups Enhance further Green spaces Stronger sense of community Bringing the public back to the local Higher liveability, complexity and human interactions Better use of the local waterfront
Fields of Action	**Action / Indicator**	**Upfront Costs/Capex**	**Implementation Costs (incl. Capex and Opex)**	**Direct impacts**		**Indirect impacts (co-benefits)**
				Emission reductions (tCO_2)	**Monetary benefit (€)**	
Coastal and Sea Area	Assessment of Carbon Sinking Potential of Seagrass Meadows in the Limassol Bay	-	>1.000.000	n/a		Water purification and improved water quality. Maintaining habitat condition can benefit biodiversity and many endangered species. Activities such as diving/recreation and fishing can be sustained. Develop social awareness and sense of ownership. Standardised procedures for monitoring this priority habitat. Development of a best practice guide for restoring seagrass /blue carbon habitats. Boost innovation in blue technologies. Establish Limassol as a leader and research pioneer towards blue carbon and growth. Transfer of know-how in Cyprus and abroad.
	Wave Energy Harnessing for Water Desalination	-	1.700.000	230 tCO2		Climate change adaptation Aid the way for a clean energy transition and decarbonisation for Limassol's coastal regions and Limassol in general

Cross Cutting Costs (Smart Transformation)	Digital Transformation-Green IT	-	-	-		Shift operations to the cloud may result in up to 93% reduction of carbon emission. Cloud computing also enables home and remote work, reducing the need to commute and indirectly reducing transportation emissions. Re-skilling of citizens is required to adopt good practices on energy efficient utilization of resources.
	Urban Digital Platform (UDP)		-	-		Optimized energy usage, resources utilization, early identification of emission hotspots and carbon intensive activities. Provides early warnings, real-time notifications and results on their energy usage and carbon footprint raising in this way awareness and encouraging behavioural change. Embrace trustworthiness, attracts private investors
	Limassol Twin	-	-	-		
	Smart Apps	-	-	-		
TOTAL		**51.879.000**	**1.412.137.525**	**925.344 tCO2**	**10.518.763**	

Table 6a: Sectorial Costing

Sector	Subsector	Investment (CAPEX) (€'000 - cash basis 2020-2030)	Operational cost/savings (OPEX) (€'000 - cash basis 2020-2030)	Total CAPEX + OPEX (€'000 - cash basis 2020-2030)
Transport	Reduced motorized passenger transportation need	-	-	-
	Shift to public & non-motorized transport	(2.496)	-	(2.496)
	Increased car pooling	-	-	-
	Electrification of cars + motorcycles	(385)	-	(385)
	Electrification of buses	-	-	-
	Optimized logistics	-	-	-
	Electrification of trucks	(647)	-	(647)
Buildings & Heating	Building renovations (envelope)	(11.411)	801	(10.610)
	New energy-efficient buildings	(4.757)	86	(4.670)
	Efficient lighting & appliances	(3.657)	2.199	(1.458)
Energy Systems	Decarbonizing heating generation	(409)	156	(254)
Electricity	Decarbonizing electricity generation	(6.723)	5.278	(1.445)
Waste	Increased waste recycling	(1.097)	1.687	590
TOTAL		**(31.582)**	**10.208**	**(21.374)**

Note: negative numbers denote outflows of money (investment / cost) and positive numbers denote inflows of money (savings / co-benefits). All amounts shown in the table represent incremental inflows and outflows.

Table 7b: Sector costs (CITY ONLY)

Sector	Subsector	Investment (CAPEX) (€000 - cash basis 2020-2030)	Operational cost/savings (OPEX) (€000 - cash basis 2020-2030)	Total CAPEX + OPEX (€000- cash basis 2020-2030)	CO2e reduction (kton)
Transport	Reduced motorized passenger transportation need	-	107.724	107.724	17.762
	Shift to public & non-motorized transport	(41.877)	58.909	17.031	12.467
	Increased car pooling	-	35.265	35.265	4.615
	Electrification of cars + motorcycles	(44.812)	20.174	(24.638)	13.187
	Electrification of buses	(17.189)	(5.383)	(22.571)	8.392
	Optimized logistics	-	14.141	14.141	43.502
	Electrification of trucks	(46.478)	25.827	(20.651)	10.965
Buildings & Heating	Building renovations (envelope)	(228.229)	16.024	(212.205)	4.868
	New energy-efficient buildings	(47.568)	1.728	(45.841)	422
	Efficient lighting & appliances	(73.135)	43.982	29.153)	22.724
	Decarbonizing heating generation	(8.184)	3.114	(5.071)	11.082
Electricity	Decarbonizing electricity generation	(203.142)	426.084	222.943	290.057
Waste	Increased waste recycling	(1.097)	1.687	590	2.804
TOTAL		**(711.711)**	**749.275**	**37.564**	**442.847**

Note: negative numbers denote outflows of money (investment / cost) and positive numbers denote inflows of money (savings / co-benefits). All amounts shown in the table represent incremental inflows and outflows.

Table 8c: Sector costs in TOTAL (city, citizens, businesses)

Sector	Subsector	Citizens	Businesses	City	Transport Operators	Utilities	Total
Transport	Reduced motorized passenger transportation need	-	-	-	-	-	-
	Shift to public & non-motorized transport	(7.234)	-	(2.496)	(32.147)	-	(41.877)
	Increased car pooling	-	-	-	-	-	-
	Electrification of cars + motorcycles	(40.772)	(3.655)	(385)	-	-	(44.812)
	Electrification of buses	-	-	-	(17.189)	-	(17.189)
	Optimized logistics	-	-	-	-	-	-
	Electrification of trucks	-	(4.527)	(647)	(41.304)	-	(46.478)
Buildings & Heating	Building renovations (envelope)	(159.760)	(57.057)	(11.411)	-	-	(228.229)
	New energy-efficient buildings	(14.270)	(28.541)	(4.757)	-	-	(47.568)
	Efficient lighting & appliances	(51.194)	(18.284)	(3.657)	-	-	(73.135)
	Decarbonizing heating generation	(5.729)	(2.046)	(409)	-	-	(8.184)
Electricity	Decarbonizing electricity generation	(94.127)	(33.617)	(6.723)	-	(68.675)	(203.142)
Waste	Increased waste recycling	-	-	(1.097)	-	-	(1.097)
TOTAL		**(373.087)**	**(147.727)**	**(31.582)**	**(90.640)**	**(68.675)**	**(711.711)**
% of Total		**52%**	**21%**	**4%**	**13%**	**10%**	**100%**
Euros Per Capita (2030 population)		(3.621)	(1.434)	(307)	(880)	(666)	(6.907)

Note: Note: negative numbers denote outflows of money (investment / cost) and positive numbers denote inflows of money (savings / co-benefits). All amounts shown in the table represent incremental inflows and outflows.

Table 9d: Asset Owners - CAPEX / Upfront Investment (€000 cash)

4.2 Module IP-B2: Capital Planning for Climate Neutrality

You will need to definite your city's capital goals and how to achieve them. As you implement its programme the below sources of capital can be laid out as a starting point. These should be aligned with your city's goals and relevant to the actions selected. Ideally this will be a target and then you will optimise towards.

Textual element
All figures relating to the Limassol Municipality budget and Property Plant and Equipment (PPE) are strictly confidential. This module centres around capital planning and design of distinct funding and financing mechanisms and instruments, according to estimated capital needs and associated policy measures required to execute the Action Plan. Limassol Municipality's total income for FY23 stands at approximately c.€54,2m. After accounting for all operational expenses, the annual surplus for FY23 is estimated at around c.€5,5m. In addition, the estimated size range of the capital flows over the 7-year period (2024-2030) is approximately c.€137,6m. Considering the fact that the total capital needs for full implementation of the Action Plan amount to c.€1.237m it is clear that a significant funding gap arises, which needs to be bridged by utilising additional funding sources and especially by private capital. The Action Plan's capital needs could be financed through a combination of traditional financing methods, innovative sources of financing, policy incentives or disincentives to citizens, National, Regional and EU grants/schemes, bank loans, EIB funding, as well as more innovative sources of financing. For the development of the climate financing schemes, the utilisation of key technical and financial experts is essential. The Action Plan's capital needs could be financed through a combination of traditional financing methods, innovative sources of financing, policy incentives or disincentives to citizens, National, Regional and EU grants/schemes, bank loans, EIB funding, as well as more innovative sources of financing. For the development of the climate financing schemes, the utilisation of key technical and financial experts is essential. <u>Government and EU funding:</u> The combination of several EU grants and programs could finance a significant portion of the climate actions required. The Limassol Municipality has experience with EU Grants and Programs but would still require support from the Mission Platform to increase absorption of targeted funding. Examples include: - Just Transition Mechanism (JTM): A key tool to ensure that the transition towards a climate-neutral economy happens in a fair way, leaving no one behind. The Call "Public Sector Loan Facility Call (PSLF)" may support projects related to a wide range of sustainable investments such as sustainable energy, energy efficiency and integration measures, including renovations and conversions of buildings urban renewal and regeneration. - The Directorate-General for Structural Reform Support (DG REFORM): The EU body assisting European Member States in the implementation of technical and structural reforms, which could be exploited to accelerate the introduction of new policies and regulations that will impose certain environmental requirements, which will in turn facilitate the deployment of capital by private investors. - Joint Assistance to Support Projects in European Regions (JASPERS - EIB): JASPERS helps cities and regions deliver high-quality projects. Independent hands-on support in strategies, programmes and projects to make EU-funded investments that promote growth and pave the way to a greener, more connected and more innovative Europe. JASPERS assistance is free of charge for local authorities and promoters, and is available to most EU and pre-accession countries. - European Local Energy Assistance (ELENA - EIB Mechanism): provides support (technical studies, energy audits, business plans and financial advisory, legal advice, tendering procedure preparation, project bundling, project management) to three different sectors (energy efficiency, sustainable residential, urban transport and mobility). - Technical Support Instrument (TSI): the EU programme that provides tailor-made technical expertise to EU Member States to design and implement reforms. - European Structural and Investment funds: Financial tools which supports infrastructure projects with the aim to reduce regional disparities among EU regions. - Horizon Europe: As the EU's key funding tool for research and innovation, Horizon Europe targets climate change as well as other global challenges. In particular, the following clusters relate to the actions included in the Action Plan:

-> Cluster 4 (Digital, Industry and Space) aims to build a competitive, digital, low-carbon and circular industry, ensure sustainable supply of raw materials, develop advanced materials and provide the basis for advances and innovation in global challenges to society. The allocated budget for 2021-2027 is c. €15,3b.

-> Cluster 5 (Climate, Energy and Mobility) aims to fight climate change by better understanding its causes, evolution, risks, impacts and opportunities, and by making the energy and transport sectors more climate and environment-friendly, more efficient and competitive, smarter, safer and more resilient. The allocated budget for 2021-2027 is c. €15,1b.

-> Cluster 6 (Food, Bioeconomy, Natural Resources, Agriculture and Environment) aims to provide opportunities to strengthen and balance environmental, social and economic goals, and to set human economic activities on a path towards sustainability. The allocated budget for 2021-2027 is c. €9,0b.

Furthermore, as part of the Horizon Europe Mission Work Programme, all Missions will receive support from the European Investment Bank (EIB) for the identification of investment sources and outreach and engagement with potential investors or other types of funding models and mechanisms. These services will contribute to the understanding and use of appropriate financing tools and models and instruments of action, assessing and enhancing the compatibility of potential climate investment with the eligibility of different funding and financing instruments, and the development of blended instruments under InvestEU, ensuring effective financing to reach Mission objectives.

- LIFE programme: the European Union's funding instrument for the environment and climate action. The general objective of LIFE is to contribute to the implementation, updating and development of EU environmental and climate policy and legislation by co-financing projects with European added value.

Innovative sources of financing:

The adoption of new financial instruments (e.g., green bonds, crowdfunding, energy trading via smart contracts, etc.) will contribute significantly to reducing the financing gap.

- Crowdfunding: An innovative way of raising money to finance projects or businesses by collecting money from many people via crowdfunding platforms which are expected to provide a secure and easy service. The key types of crowdfunding relevant to the actions are; generation-based crowdfunding, a type of rewards-based crowdfunding in which the return consists in the supply of electricity or a discount on electricity rates, profit-sharing/revenue-sharing which involves financial support for sharing future profits or revenues with the crowd later and donation-based crowdfunding, involving the provision of financial support without the expectation of a financial or material return. Individuals offer small amounts to meet a larger funding target which typically relates to a charitable purpose. It is noted that the Limassol Municipality has no experience in in such funding mechanisms.

- Green bonds: A type of fixed-income instrument that is specifically earmarked to raise money for climate and environmental projects, and it works as any other corporate or government bond. Borrowers issue these securities to secure financing for projects that will have a positive environmental impact and investors who purchase these bonds can expect to make profit as the bond matures, and there are often tax benefits for investing in green bonds. It is noted that the Limassol Municipality has no experience in Green bonds.

- Energy trading via smart contracts: Smart contracts are one application of blockchain technology that is arguably the most relevant for the energy application layer. Smart contracts are effectively programs which are loaded into, and sit alongside traditional transactions within a blockchain, that can automatically execute pre-definable code when called (for example, automatically executing the terms of a contract when trigger events occur). The important thing about smart contracts is that they reside in a decentralised system accessible to anyone, that doesn't require the involvement of an intermediary party. Any customer implementing sustainable energy solutions is theoretically capable of participating in P2P (peer to peer) or P2G (peer to grid) trading through smart contracts, if the necessary infrastructure is in place, which at the time-being is nowhere established. There is limited experience in the Cyprus market on such financial instruments.

- Fiscal incentives: Fiscal incentives are characteristics of fiscal policy which can influence individuals and companies to take specific actions, by offering a financial reward for such actions. Actions such as energy upgrades of residences, major renovations that reach certain energy performance standards, etc. could result in types of fiscal incentives including tax credits, tax holidays, tax exemptions, etc. This is an area where the Limassol Municipality and National Authorities would need support to formulate policy.

- Financial incentives: A financial incentive is a monetary benefit offered to encourage behaviour or actions which otherwise would not occur without the monetary benefit. Typically, financial incentives take the form of a loan with preferential terms or a grant/subsidy, that covers a percentage of the costs incurred for eligible projects. The financial incentives could be secured in programs that supports investments towards rehabilitation, decarbonisation, energy efficiency, water efficiency, and overall contribution to the improvement of the energy and environmental performance of a building.

Incentives and disincentives

Certain incentives and disincentives could be introduced to its citizens in order to reduce the financing gap. This may include a dedicated transportation tax, congestion charges and parking fees/fines (that could potentially be lower for drivers of EVs), immovable property tax, pay-as-you-throw tax and property tax incentives such as land value capture (LVC) and tax increment financing (TIF).

Other sources of funding

Alternative sources of funding are grants from the Cyprus government, such as the recovery and resilience plan, with a total budget of €1,2b, which promotes the implementation of 133 investment and reforms, with an implementation period up to 2026, including 35 Grant Schemes addressed mainly to enterprises, as well as to public and private bodies, NGOs and individuals, in thematic areas falling under all 5 policy axes.

Other possible financing mechanisms include Public Private Partnerships (PPP), Institutional Investors, issuance of municipal bonds, etc. Limassol Municipality has experience in structuring projects to utilise its immovable property through either direct investments or PPP. However, it is noted that there is limited experience in large scale PPP projects.

It is noted that the total Property Plant and Equipment (PPE) after depreciation of the Limassol Municipality is equal to c.€257,6m. Specifically, Land corresponds to c.€131,2m while Buildings correspond to c.€56,2m of the total PPE value. In later stages of project maturity, an examination of the suitability of the land and buildings will be performed to determine their suitability to be utilised for the purposes of the Action Plan and form the basis for part of the capital contribution of the Municipality to specific projects that require investment in land.

At this stage, we have not yet engaged with the potential finance and funding providers to receive their feedback and incorporate it in the design and deployment of capital. However, we have considered broadly the industry average D/E ratio, for each of the industries relating to the Fields of Action / Sectors as included in the Action Plan; i.e., Transportation at c.46%, Power at c.84%, Trucking at 190%, Green & Renewable Energy at 59%, Shipbuilding & Marine at 43% and Environmental & Waste Services at c. 37%. The equity contribution will mainly be covered by private funds, with little contribution from the Municipality. At the same time, debt contributions are expected to be covered by financial institutions.

The table below lists the potential financing and funding sources for each action and lays out the process for building needed capital structures and mobilizing sources of capital. In relation to new policies, please see section IP-C1. As far as closing the funding gap for non-municipal actors, there is available private capital from citizens, businesses and financial institutions to be deployed based on macroeconomic data presented in Section A.2 and considering asset ownership (please see Table 5.d). It is imperative, however, to engage these stakeholders early in the process in a participatory manner and convince them of the benefits of climate action through a targeted communication campaign in order to facilitate the deployment of their capital and utilisation of their assets for climate actions. The Municipality and Public Sector have a role to play in enabling this process through policy providing a mix of incentives and disincentives and the dissemination of information.

Capital need (€)	Possible Sources of Capital	Sector allocation
23.136.255	Incentives or disincentives (e.g., congestion charge, parking fees, parking fines, dedicated transportation tax), National, Regional and EU grants for infrastructure such as the European Structural and Investment funds.	Increase of Public Transportation Usage in Modal Split to 20% / Passenger KMs
41.543.069	Incentives or disincentives (e.g., congestion charge, parking fees/fines, dedicated transportation tax), National, Regional and EU grants for infrastructure (such as programmes of European Structural and Investment funds). Private/Public partnerships.	Micro-mobility
3.695.600	Incentives or disincentives (e.g., congestion charge, parking fees, parking fines, dedicated transportation tax), National, Regional and EU grants for infrastructure (such as programmes of European Structural and Investment funds). Private/Public partnerships.	Pedestrian Network
45.813.615	Incentives or disincentives (e.g., congestion charge, parking fees, parking fines, dedicated transportation tax), National, Regional and EU grants (partial grants plus partial self-finance, grants falling under the RRP, policy axis 2: accelerated transition to green economy), green loans, green bonds (municipal and corporate), Private/Public partnership. For the charging stations, it would be possible to examine a form of PPP to pass the cost of building and financing the infrastructure to the private sector in return for the revenues generated. In relation to the electrification of buses, kindly note that the concessionaire is not obliged to electrify 100% of its fleet until 2030 and therefore a partial grant plus partial self -finance could provide an incentive to accelerate the electrification of its fleet.	Vehicle Electrification
35.950.000	Private/Public partnership (design, built, finance, maintain, operate), National, Regional and EU grants (HORIZON EUROPE – Cluster 5: Climate, Energy and Mobility), green bonds (municipal and corporate), municipal contribution in kind (land)	Freight Transportation
27.516.667	Private/Public partnership (Design, built, operate, transfer), EU DG reform action (TSI) for study the TDM platform, incentives or disincentives (e.g., congestion charge, traffic fines, dedicated transportation tax)	TDM Plan
17.983.333	National, Regional and EU grants (HORIZON EUROPE – Cluster 5: Climate, Energy and Mobility), disincentives (e.g., traffic fines, dedicated transportation tax)	Smart Technologies
338.975.870	Tax incentives (reduced tax rate), green loans with favourable terms, financing from development banks (EIB), energy communities and ESCOs, revolving funds, municipal green bonds, Private/Public partnerships concessionaires for deep building renovation. A mix of tax incentives, subsidies and green loans with favourable terms would incentivize private households to deploy own capital for deep building renovation. At the same time, banks would benefit from improved loan to value ratios. Public and private buildings can form an energy community to build scale and enter into an energy performance contract (EPC) with an ESCO to finance the cost of energy efficiency improvements. Revolving funds to provide working capital to ESCOs for performing deep building renovations, this can either be set up as an internal or external revolving fund.	Deep building renovation

50.670.709	Energy performance contract for ESCOs, financing from development banks (EIB), property tax incentives, permits pricing incentives, planning incentives for Real Estate Developers, business tax disincentives (immovable property tax), Private/Public Partnerships, bank loans with favourable terms, Just Transition Fund (JTF), crowdfunding platforms for co-housing. Establishing public-private partnerships between the Municipality with its contribution being land and private investors or companies (e.g., ESCOs) to activate private capitals for constructing new Carbon-neutral buildings and zero emission neighbourhoods.	New carbon-neutral buildings
Capital need (€)	**Possible Sources of Capital**	**Sector allocation**
168.000.000	Tax incentives (Tax Increment Financing, Land Value Capture), Planning incentives for Real Estate Developers, energy communities, municipal green bonds, energy performance contract for ESCOs, property tax incentives/disincentives, crowdfunding platforms, National, Regional and EU grants, incentives for urban farms/micro-farming, municipal contribution in kind (land).	Urban regeneration
217.200.000	The Government has secured funds in relation to this project, thus the specific amount of €217,2m has not been included in the total funding needs.	Change of the energy mix
6.400.431	DG reform for regulatory framework, Private/Public partnership, municipal contribution in kind (land), green loans with favourable terms, crowdfunding, energy cooperative, municipal contribution in kind (land).	Energy community
3.825.000	National, Regional and EU grants for innovative projects such as those provided by the Innovation Fund.	Install a 200kWth Fresnel system
106.606.446	National, Regional and EU grants, bank loans with favourable terms, ESCOs, Property tax incentives, tax incentives	Renewables in residential buildings with behind-the-meter storage
26.916.605	National, Regional and EU grants, bank loans with favourable terms, ESCOs, Property tax incentives, tax incentives	Install heat pumps at commercial and residential buildings
227.612.701	National, Regional and EU grants for innovative projects such as those provided by the innovation fund, Private Public Partnership where the Municipality contribution is land. This will require opening up the electricity market in Cyprus and creating a framework for such services.	Centralised RES generation and long-term storage to satisfy increased demand from Mission actions
	National, Regional and EU grants (such as LIFE), crowdfunding, charitable donations, tax incentives	Green Infrastructure and Nature Based Solutions
54.000.000	Pay-as-you-throw tax, Government and EU grants, Private/Public partnership	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production
6.000.000	Pay-as-you-throw tax, Government and EU grants, Private/Public partnership	Zero waste production (circular economy) in Limassol
35.400.000	Ship and Port operators, National, Regional and EU grants, Green bonds, bank loans with favourable terms	Cold Ironing Implementation in Limassol Port
2.800.000	Private sector, Energy community, ESCOs	Carbon neutrality in Blue Infrastructure – The case of Limassol Marina
200.000	Municipality, Public sector, Private investors, Cyprus Port Authority, Shipping organisations, National, Regional and EU grants, fines and penalties	Mitigation of Risks to the Coastal Area through Technology Tools & Integrated Data Management

11.610.000	Tax incentives (Tax Increment Financing, Land Value Capture), Planning incentives for Real Estate Developers, Private/Public partnership for ESCOs, municipal contribution in kind (land), bank loans with favourable terms, crowdfunding, energy cooperative, Limassol Municipality, Public sector, NGOs, incentives or disincentives (e.g., limited access to cars), National, Regional and EU grants, bank loans with favourable terms	Resilient Coastal Neighbourhoods
>1.000.000	National, Regional and EU grants/funding (such as LIFE programme)	Assessment of Carbon Sinking Potential of Seagrass Meadows in the Limassol Bay
1.700.000	National, Regional and EU grants/funding	Wave Energy Harnessing for Water Desalination

Table 10: Capital Planning

4.3 Module IP-B3: Economic and Financial Indicators for Monitoring, Evaluation and Learning

A range of financial policies need to be considered to execute the actions laid out in the 2030 Climate Neutrality Action Plan. You should align your city's financial policies with their current process and capital allocation. This will depend on the actions selected and be drawn from possible financial tools to assist the transition.

B-3.1: Textual element
This section of the Investment Plan provides the monitoring and evaluation framework to be implemented to track progress for the implementation of the plan. A set of economic and financial indicators is aligned with climate neutrality commitment and aligned with the actions in the Action Plan. Effective indicators track the implementation progress, compare actual delivery to projected impact, assess effectiveness, and make adjustments over time. Below there is a list of financial and economic indicators to monitor and evaluate progress as the city as a whole move towards 2030. Currently, the City does not have a monitoring evaluation and learning system in place to evaluate the impact of green investments. Therefore, such an MEL system should be developed to assess progress of the actions in the Action Plan and successful execution over time. The MEL system will help assess, evaluate, and verify the level of impact each investment has achieved. The system will assist in capital planning and monitoring the Action Plan and Investment Plan progress. To this end, we present below a list of economic and financial indicators that can be applied to the different fields of action and to the Municipality's finances in a broader manner, including other actors within the city. A detailed analysis on the Purpose, Scope and Scale, Use of findings and Execution can be found in the Action Plan. Specifically, it should be noted, for each field of action, a system following recognized methodology has been developed to estimate emission reduction and co-benefits. This will allow us to measure the impact and effectiveness of investments, primarily in reducing emissions and the materialization of associated co-benefits. To monitor and map deviations for the capital investment planning process, we have set milestones target indicators bi-annually (i.e., 2025, 2027 and 2030). Any deviation from this target indicators will be identified and the variance of actual versus targeted results will be analysed to understand the underlying factors leading to the deviation for corrective action or alternatively for reassessing the effectiveness of capital deployed in the specific area. Finally, the indicators presented below are considered to be the most aligned with the Action Plan and for which there is capacity to collect the data. In certain cases, other stakeholders will need to be engaged for the collection of the required data. These instances with the specific stakeholders have been identified in the Action Plan for each field of action in Table 7 and Table 8.

Fields of Action	Indicator	Indicator Unit	Indicator Baseline	Indicator Target 2030
Transportation	GHG Emissions reduction	tCO2	-	144.185
	Modal split of public transportation	%	<6%	20%
	Modal split of micro-mobility	%	<3%	10%
	Modal split of pedestrians	%	<1,5%	5%
	Market share of electric vehicles	%	<14%	47%
	Market share of electric buses	%	<30%	100%
	Reduction of freight transportation ton-kms	%	0%	10%
	Wellbeing of citizens (questionnaire)	%	0%	Satisfaction +50% with respect to baseline
Built Environment	Reduction in GHG emission from stationary energy	t CO2 equivalent	0%	100%
	Rate of retrofit	%	0,90%	3,50%
	Reduction of the energy use by fuel/energy type within city boundary	%	0%	60%
	Reduction in PM2.5 concentration levels	%	-	50%
	Reduction in PM10 concentration levels	%	-	20%
	Reduction in Urban Heat Island (UHI) Effect	*C UHImax	-	-1.5 ºC
	Mean value of daily maximum temperature (TXX)	ºC TXX	-	- 4 ºC
	Mean value of daily minimum temperature (TNN)	ºC TNN	-	-1 ºC
	Heatwave (HW) incidence	# of HW in summer	4 (estimated, not monitored)	2
	Wellbeing of citizens (questionnaire)	Likert scale	0%	Satisfaction +30% with respect to baseline
	Green Spaces	%	0%	Improvement +50% with respect to baseline
Energy Systems	Grid emissions factor	tCO2eq/MWh	0,874	0,285
	Local renewable energy production	%	17%	40%
	Aerosol pollutant concentrations reduction	%	0%	15%
	Active engagement of citizens in decision-making	engagement % (via short survey)	0%	80%
	Open data sets	#	0	5
	Green jobs	# of new green jobs	0	1000
	Youth unemployment rate (<30 years old)	% of people	>15%	0,12
	Signatories to CCI plan	# of signatures in SMEs, large corporations and local/national authorities	0	30

Fields of Action	Indicator	Indicator Unit	Indicator Baseline	Indicator Target 2030
Green Infrastructure and Nature Based Solutions	The “Green Infrastructure and Nature Based Solutions” field of action is included in the “Urban regeneration” action of the “Built Environment” portfolio of actions			
Waste and Circular Economy	(Organic Waste) % of organic waste (mass) in Limassol municipality, separately collected (household/company segregation)	%	0%	90%
	Emissions reduction (%) due to sustainable waste management in Limassol municipality	%	0%	- 80%
	Percentage of the recyclable material diverted from the landfill	%	0%	75%

Table 11: Economic indicators by sector

Fields of Action	Indicator	Indicator Unit
Transportation	NPV total investment - CAPEX	Amount in euros of Capital expenditure's net present value
	NPV OPEX	Amount in euros of operating expenditure's net present value
	NPV co-benefits	Monetary amount in euros of cobenefits net present value
	NPV total investment per kton CO2e reduction	Net present value of total costs per kton of CO2e reduction
	Return on Investment (ROI)	% of returns on capital invested for projects/actions related to Green Transportation, considering Grants where applicable
	Capital Investment	% of capital invested in green transportation (over the all-city budget)
	Private to Public Capital	% private capital to public capital ratio in green transportation
	Carbon x Capital Invested	Unit of carbon abated per unit of currency spent in green transportation
	EU Funds to Capital Invested	% of EU Funding to total Capital in Green Transportation
	Carbon Footprint of Bank Loans	Financed CO2 emissions in the Transportation sector
	Green tax Revenues	Revenues raised from Green taxation relating to Transportation
	Research and Development (R&D) intensity	Ratio of R&D Investment to Revenue in Transportation sector
	Utilisation of Government and EU Grants directed to Transportation	% of funds utilised to funds available
	Public Private Partnership (PPP) Projects	Number of Public Private Partnership (PPP) Projects and Project Value
	Green Bond Issuances	Number of Green financial instruments issued and amounts raised relating to Transportation
Built Environment	NPV total investment - CAPEX	Amount in euros of Capital expenditure's net present value
	NPV OPEX	Amount in euros of operating expenditure's net present value
	NPV co-benefits	Monetary amount in euros of cobenefits net present value

Fields of Action	Indicator	Indicator Unit
Built Environment	NPV total investment per kton CO2e reduction	Net present value of total costs per kton of CO2e reduction
	Return on Investment (ROI)	% of returns on capital invested for projects/actions related to green investment in Built Environment, considering Grants where applicable
	Capital Investment	% of capital invested in Built Environment (over the all-city budget)
	Private to Public Capital	% private capital to public capital ratio in Built Environment
	Carbon x Capital Invested	Unit of carbon abated per unit of currency spent in green Built Environment
	EU Funds to Capital Invested	% of EU Funding to total Capital in Green Built Environment
	Carbon Footprint of Bank Loans	Financed CO2 emissions in the Real Estate and Building Material sector
	Green tax Revenues	Revenues raised from Green taxation relating to Real Estate
	Research and Development (R&D) intensity	Ratio of R&D Investment to Revenue in Real Estate and Building Material sectors
	Utilisation of Government and EU Grants directed to the Built Environment	% of funds utilised to funds available
	Public Private Partnership (PPP) Projects	Number of Public Private Partnership (PPP) Projects and Project Value
	Green Bond Issuances	Number of Green financial instruments issued and amounts raised relating to Real Estate and Building Material sectors
Energy Systems	NPV total investment - CAPEX	Amount in euros of Capital expenditure's net present value
	NPV OPEX	Amount in euros of operating expenditure's net present value
	NPV co-benefits	Monetary amount in euros of cobenefits net present value
	NPV total investment per kton CO2e reduction	Net present value of total costs per kton of CO2e reduction
	Return on Investment (ROI)	% of returns on capital invested for projects/actions related to Energy Systems, considering Grants where applicable
	Capital Investment	% of capital invested in Energy Systems (over the all-city budget)
	Private to Public Capital	% private capital to public capital ratio in Energy Systems
	Carbon x Capital Invested	Unit of carbon abated per unit of currency spent in Energy Systems
	EU Funds to Capital Invested	% of EU Funding to total Capital in Energy Systems
	Carbon Footprint of Bank Loans	Financed CO2 emissions in the Energy Systems sector
	Green tax Revenues	Revenues raised from Green taxation relating to Energy Systems
	Research and Development (R&D) intensity	Ratio of R&D Investment to Revenue in Energy Systems sector
	Utilisation of Government and EU Grants directed to Energy Systems	% of funds utilised to funds available
	Public Private Partnership (PPP) Projects	Number of Public Private Partnership (PPP) Projects and Project Value
	Green Bond Issuances	Number of Green financial instruments issued and amounts raised relating to Energy Systems
Green Infrastructure and Nature Based Solutions	NPV total investment - CAPEX	Amount in euros of Capital expenditure's net present value

Fields of Action	Indicator	Indicator Unit
Green Infrastructure and Nature Based Solutions	NPV OPEX	Amount in euros of operating expenditure's net present value
	NPV co-benefits	Monetary amount in euros of cobenefits net present value
	NPV total investment per kton CO2e reduction	Net present value of total costs per kton of CO2e reduction
	Capital Investment	% of capital invested in Green Infrastructure and Nature Based Solutions (over the all-city budget)
	Private to Public Capital	% private capital to public capital ratio in Green Infrastructure and Nature Based Solutions (including donations and crowdfunding)
	Carbon x Capital Invested	Unit of carbon abated per unit of currency spent in Green Infrastructure and Nature Based Solutions
	Public Private Partnership (PPP) Projects	Number of Public Private Partnership (PPP) Projects and Project Value
	EU Funds to Capital Invested	% of EU Funding to total Capital in Green Infrastructure and Nature Based Solutions
Waste and Circular Economy	NPV total investment - CAPEX	Amount in euros of Capital expenditure's net present value
	NPV OPEX	Amount in euros of operating expenditure's net present value
	NPV co-benefits	Monetary amount in euros of cobenefits net present value
	NPV total investment per kton CO2e reduction	Net present value of total costs per kton of CO2e reduction
	Return on Investment (ROI)	% of returns on capital invested for projects/actions related to Waste and Circular Economy, considering Grants where applicable
	Capital Investment	% of capital invested in Waste and Circular Economy (over the all-city budget)
	Private to Public Capital	% private capital to public capital ratio in Waste and Circular Economy
	Carbon x Capital Invested	Unit of carbon abated per unit of currency spent in Waste and Circular Economy
	EU Funds to Capital Invested	% of EU Funding to total Capital in Waste and Circular Economy
	Carbon Footprint of Bank Loans	Financed CO2 emissions in the Waste and Circular Economy
	Green tax Revenues	Revenues raised from Green taxation relating to Waste and Circular Economy
	Research and Development (R&D) intensity	Ratio of R&D Investment to Revenue in Waste and Circular Economy
	Public Private Partnership (PPP) Projects	Number of Public Private Partnership (PPP) Projects and Project Value
	Green Bond Issuances	Number of Green financial instruments issued and amounts raised relating to Waste and Circular Economy
Coastal and Sea Area	NPV total investment - CAPEX	Amount in euros of Capital expenditure's net present value
	NPV OPEX	Amount in euros of operating expenditure's net present value
	NPV co-benefits	Monetary amount in euros of cobenefits net present value

	NPV total investment per kton CO2e reduction	Net present value of total costs per kton of CO2e reduction
Fields of Action	**Indicator**	**Indicator Unit**
Coastal and Sea Area	Return on Investment (ROI)	% of returns on capital invested for projects/actions related to Coastal and Sea Area, considering Grants where applicable
	Capital Investment	% of capital invested in Coastal and Sea Area (over the all-city budget)
	Private to Public Capital	% private capital to public capital ratio in Coastal and Sea Area
	Carbon x Capital Invested	Unit of carbon abated per unit of currency spent in Coastal and Sea Area
	EU Funds to Capital Invested	% of EU Funding to total Capital in Coastal and Sea Area
	Carbon Footprint of Bank Loans	Financed CO2 emissions in the Coastal and Sea Area
	Green taxation / fines	Revenues raised from Green taxation relating to Coastal and Sea Area
	Research and Development (R&D) intensity	Ratio of R&D Investment to Revenue in Coastal and Sea Area
	Public Private Partnership (PPP) Projects	Number of Public Private Partnership (PPP) Projects and Project Value
	Green Bond Issuances	Number of Green financial instruments issued and amounts raised relating to Coastal and Sea Area

Table 12: Financial indicators by sector

5 Part C – Enabling Financial Conditions for Climate Neutrality by 2030

Part C "**Enabling Conditions for Climate Neutrality by 2030**" is the third section of the Investment Plan and is intended to identify other enabling factors the city needs to consider in the implementation of the Investment Plan.

5.1 Module IP-C1: Climate Policies for Capital Formation and Deployment

You will need to optimise the allocation of capital between both public and private sources across the portfolio outlined in the Action Plan to meet the cost of the actions identified for reaching climate neutrality over time.

C-1.1: Textual element
This part references the range of climate-related policies, which should be identified and described in the Action Plan, based on the barriers identified in part A3, to support effective capital formation and deployment. The main barriers identified in section A3 relate to (i) scarcity of public funds, (ii) need to increase the capacity of the Limassol Municipality to absorb EU funding, (iii) lack of willingness of the private sector to deploy capital to green investments, (iv) lack of incentives and legislative framework to promote Private investment and alternative funding in climate related actions, (v) need to strengthen capacity for green budgeting, investment appraisal and sustainable procurement processes and (vi) the need to finance reskilling, upskilling and training for the green economy. Examples of policies and regulations that could support deployment of capital include market-based instruments, enabling building and planning regulations and standards, green tax incentives (including penalties, fines, congestion charges, etc.), and others. Similarly, policies, regulations and incentives that hinder the pathway towards climate neutrality should be considered as well as their adjustment to enable capital flows (e.g., existing planning regularities that obstruct the utilisation of building retrofit grants for energy efficiency purposes). Such policy updates or their introduction will enhance directing existing revenue streams or fee mechanisms as described in the Action Plan or change market conditions that enable more effective actions by non-internal actors to implement actions critical to climate neutrality. The city will need to enhance its existing capacity for policy formulation by creating transversal roles to support collaboration across city departments for climate action and to support its financing as well as to fund innovative areas. This includes a reform of the scope of policy delegated to the Municipality and establishing processes for the transition team to cascade action and input on financial/funding policy across all Municipality operations for the 2030 ambition.

Climate Policy	Description of the policy (sector, targeted audience, etc.)	Intended Outcome for Capital Formation
New European Urban Mobility Framework (NEUMF)	The new urban mobility initiative complements the proposal for revised guidelines for the Trans-European Transport Network (TEN-T revision). The goal is for all major cities on that network to develop a sustainable urban mobility plan by 2025. The NEUMF outlines a list of measures and initiatives to meet the challenge of making their mobility more sustainable.	1. Contribute to EU Green House Gas reduction targets as set in the Climate Law (including -55% by 2030) and exceeding the legal requirement to meet the 2050 target by 2030. 2. Improve transport and mobility to, in and around cities as well as improve the efficiency of goods and home deliveries and stimulate the creation of green jobs in the transportation sector.
Climate Target Plan 2030	Reduce GHG emissions to at least 55% below 1990 levels by 2030.	This will be achieved by implementing more drastic and innovative measures i.e., set a more ambitious and cost-effective path to achieving climate neutrality by 2030, stimulate the creation of green jobs and continue cutting greenhouse gas emissions whilst growing the economy in the period up to 2030 and encourage international partners to increase their ambition to limit the rise in global temperature to 1.5°C and avoid the most severe consequences of climate change.
European Green Deal	The European Green Deal, approved in 2020, is a set of policy initiatives by the European Commission with the overarching aim of making the European Union (EU) climate neutral in 2050. The plan is to review each existing law on its climate merits, and also introduce new legislation on the circular economy, building renovation, biodiversity, farming and innovation.	1. Key to a climate neutral and sustainable EU 2. A more aggressive roadmap for the transition to a climate neutral city by 2030 instead of 2050. 3. Reduce energy dependence and shift to renewable energy sources
New European Bauhaus	Creative and interdisciplinary initiative linking the European Green Deal with living spaces.	1. Bridge the world of science and technology, and art and culture through social innovation, to address green, digital and social challenges. 2. Address complex societal problems together through co-creation using alternative funding mechanisms such as crowdfunding and new structures, e.g., energy communities.
Barcelona convention	Barcelona Convention is a regional convention adopted in 1976 to prevent and abate pollution from ships, aircraft and land-based sources in the Mediterranean Sea. This includes but is not limited to dumping, run-off and discharges. Signers agreed to cooperate and assist in dealing with pollution emergencies, monitoring and scientific research.	Protection of the Marine Environment and Coastal Areas of the Mediterranean Sea and through monitoring and imposing penalties and fines to polluters.
EU Cohesion Policy 21-27	Cohesion policy is the European Union's main investment policy as well as a strategy to strengthen economic, social and territorial cohesion in the EU member countries.	Strengthening economic and social cohesion in the city to correct imbalances between neighbourhoods through green and digital transition.
Support scheme for the production of electricity from renewable energy sources for own use: Net-metering	Provide the option to residential and small commercial consumers to cover all or part of their electricity consumption from a PV. Consumers pay only for the difference between the energy consumed and energy produced (net electricity used) plus a cost that reflects the cost of the electricity grid to support continuous supply and taxes.	Increase in renewable energy (Energy supply) through the support scheme to promote private capital deployment. The policy will also address instances where there is insufficient space to install PVs through virtual net metering.
Support scheme to produce electricity from renewable energy sources for own use: Net-billing	Provide the option to medium and large-scale electricity consumers to cover all or part of their electricity consumption from RES. Generated RES electricity that is not self-consumed is credited to the consumer in the respective purchase price of electricity from RES. Fees and taxes are applied.	Increase in renewable energy (Energy supply) through the support scheme to promote private capital deployment. The policy will also address instances where there is insufficient space to install PVs through virtual net metering.

Climate Policy	Description of the policy (sector, targeted audience, etc.)	Intended Outcome for Capital Formation
Self-consumption of electricity from renewable energy sources	Provide the option to medium and large-scale electricity consumers to cover all or part of their electricity consumption from RES. No credit is applied to the consumer for non-self-consumed RES generated. Fees and taxes are applied.	Increase in renewable energy (Energy supply) through the support scheme to promote private capital deployment. The policy will also address instances where there is insufficient space to install PVs through virtual net metering.
Stand-alone RES systems	Support scheme for installation of Stand-alone PV and small wind generators	Increase in renewable energy (Energy supply) through the support scheme to promote private capital deployment.
Installation of net-metering PV systems in houses of vulnerable consumers	Financial support scheme for the installation of net-metering PV systems in houses of vulnerable consumers (low-income families, disabled persons etc.).	Increase in renewable energy supply and reduction of energy poverty by providing more intensive grants to vulnerable consumers.
Support scheme for the installation or replacement of solar water heaters in households	Subsidy for the installation of a solar water heater, or the installation/replacement of solar panels.	Increase the use of renewable energy in heating and support the local industry through capital flows incentivized by the subsidies scheme.
Support scheme for the installation of RES systems that will operate in the competitive electricity market	Scheme for the installation of commercial plants producing electricity from Renewable Energy Sources (RES) that will participate in the competitive electricity market. Up to one year after the operation of the competitive electricity market, the produced electricity will be sold to the Electricity Authority of Cyprus. The scheme allows the installation of commercial PV systems, wind parks, solar concentrated station, and biomass/biogas stations and wave energy systems.	Increase in renewable energy (Energy supply) by establishing a policy framework for opening up a competitive electricity market.
Incentives for encouraging the use of RES in different types of developments	Provide incentives and/or requirements to encourage the use of RES in different types of developments, encouraging natural and legal persons to produce energy from RES. Incentives include increasing the building permit ratio, or making the use of RES a requirement for applicability of other incentives under the development plans.	Increase the use of renewable energy sources (Energy supply) by providing planning incentives making houses more affordable and reducing energy poverty whilst deploying private capital from the business sector e.g., real estate developers.
Certification of small-scale RES system installers	Registration as certified installers of RES systems in the registry of the Ministry of Energy, Commerce, Industry and Tourism available for installers of small scale (up to 30kw) biomass boilers and stoves, photovoltaic systems, solar thermal system, shallow geothermal systems and heat pumps after the completion of their training and a success in a theoretical and practical examination.	Deployment of private capital for training RES system installers.
Research and innovation programs in the sector of RES	Participation in various research programs regarding the implementation of CSP units, solar desalination, production of hydrogen from RES	Increased intensity in research and Innovation by the private sector.
Incentives for encouraging the use of RES in different types of developments & RES communities	Installation of PV Systems in public schools up to 20kW with Net-metering	Increase the use of renewable energy sources (Energy supply) by deploying public capital
Support scheme for storage units	Support scheme for the installation of electricity storage units in national grid that will allow the further penetration of RES	Increase the use of renewable energy sources (Energy supply) in storage units through the deployment of private capital incentivized by the support scheme
Renewable Energy Communities	Implementation of an enabling framework to promote and facilitate the development of Renewable Energy Communities	Increase the use of renewable energy sources (Energy consumption) and energy efficiency upgrades by providing scale to such projects for deploying private capital and making investment attractive.

Climate Policy	Description of the policy (sector, targeted audience, etc.)	Intended Outcome for Capital Formation
PV Systems installation scheme	Installation of PV Systems in governmental buildings with the net-billing scheme.	Increase the use of renewable energy sources (Energy supply) through the deployment of public capital.
Support Scheme for RES to promote innovation and reduce CO2	NER300 Scheme, 2 CSP projects were financed and 1 Project with Smart Grid and Storage.	Increase the use of renewable energy sources (Energy supply) through EU funding for innovative projects that help to manage challenges in the grid.
Create localised tools for selecting the appropriate PV size and scheme	Software tool developed for assisting both consultants and end users. (http://www.mcit.gov.cy/mcit/EnergySe.nsf/All/312EB6608C682704C22582CF0025445D?OpenDocument)	Promote awareness to assist investment appraisal in PV projects.
Statistical Transfer (RES)	Technical assistance requested from SRSS for 2020, use of platform for 2030.	Reach the Target in more economical way to allow for increasing available public funds to be recycled into the Investment Plan.
Energy Storage	Further analysis for both behind the meter and central storage for further Penetration of RES http://www.stores-livinglab.eu/ & http://www.foss.ucy.ac.cy/pdf/highlights/StoRES%20Layman's%20Report%20-%20V4%20-%20Online%20version.pdf	Increase the Penetration of RES by allowing for storage at scale which will make an attractive investment for private capital.
Virtual net-metering	Extend net-metering scheme, in order to give the opportunity to both hotels and multi-apartment buildings to install a PV system with net-billing scheme (since no space is available.	Increase in renewable energy (Energy supply) through the support scheme to promote private capital deployment in the hospitality sector and multi-unit buildings. The policy will also address instances where there is insufficient space to install PVs through virtual net metering.
Replacement of the conventional transport fuels with biofuels	According to the relevant decree, the suppliers of transport fuels (petrol and diesel) are obliged to blend biofuels to conventional transport fuels to achieve a certain target, which is percentage of biofuels to whole annual sales of petrol and diesel, in energy content.	Increase the consumption of renewable energy in transport sector to achieve the renewable energy targets.
Public transportation contracts	Enable regulation/framework for public transportation contracts through PPP. Implementation of Smart systems (e.g., monitoring systems, etc.).	Private sector to bear the cost of compliance with support from the public sector where necessary.
Tax incentives/ disincentives	Various fiscal incentives (tax allowances) and disincentives (e.g., taxes, fines, penalties) need to be designed to promote the implementation of actions by burdening polluters with increased costs and providing benefits to compliant businesses and individuals.	This will facilitate the deployment of public capital through revenues raised.
Green Financial Instruments	Development of a framework to promote alternative methods of financing such as green bonds and other financial instruments. The public sector (e.g., Limassol Municipality) may proceed with an issue of such bonds to test and establish the market.	This will facilitate the deployment of private and institutional capital.
Green Budgeting and Sustainable Procurement	A transversal team should be established in the Limassol Municipality to cascade climate action across all activities and operations of the Municipality by tracking carbon emission reduction through green budgeting and sustainable procurement.	Public capital will be deployed to support climate actions and private sector will be incentivised to undertake climate action e.g., suppliers of the Limassol Municipality.

Table 13: List of climate policies to enable capital deployment

5.2 Module IP-C2: Identification and Mitigation of Risks

Your team should consider the risks relevant to the implementation of an Investment Plan, which may impact their ambition to achieve climate neutrality, mitigation techniques should be identified where necessary and where possible, these should align with the financial policies selected.

C-2.1: Textual element

This section describes the risks that may affect action implementation and proposes some mitigation measures. There are various types of risk identified in this section, such as climate risks, operational risks, market specific risks, stakeholders' engagement risks, economic risks, policy-related risks, technical risks, regulatory risks etc. Some of the most critical risks that are evident in all fields of action are the following:

- Availability of skilled workforce;
- Availability of materials locally;
- Availability of data for monitoring purposes;
- Timeframe to implement actions within period up to 2030 for benefits to materialise;
- Economic inequality, soaring prices, increasing interest rates, rising construction costs, and stagnant wages;
- High initial capital costs;
- Scalability issues;
- Lack of supporting infrastructure, policy and regulations;
- Resistance from relevant actors and low levels of community involvement;
- Uncertain ROI; and
- Failure to raise capital.

Most actions require adequate infrastructure and new mechanisms to be established, based on a specific timeline. Strategic plans and methodologies relevant to each action should be prepared at the preliminary phase of the feasibility study and updated accordingly. Careful planning, collaboration, and stakeholder engagement are also vital to the implementation process for each action. It is also necessary to continuously audit and monitor the project implementation conditions to assess their effectiveness in reducing emissions and achieving climate neutrality goals.

As most actions proposed are innovative and highly technical, advanced technologies need to be adopted and specific technological knowledge is required. The utilisation of smart technologies calls for robust data management and essential privacy measures. It is therefore deemed mandatory to hire talent and provide the necessary training to all the parties involved.

The risks identified need to be assessed for the purposes of the investment decision making process by performing a risk analysis. For each investment action / project, risks need to be identified through SWOT analysis and then categorised according to the severity of impact and probability of occurrence. These risks will also cover financing actions and their impact will be assessed through scenario and sensitivity analysis when performing a feasibility study. After performing such an analysis, risks which are considered material will be mitigated by addressing the areas of weaknesses to build resilience against them.

Fields of Action	Sectoral Project	Risks Identified	Description of Risk	Likelihood of occurring	Impact	Mitigation of Risk
Transportation	Increase of Public Transportation Usage in Modal Split to 20% / Passenger KMs	Promotion of public transportation strategies is complicated	The promotion of public transportation strategies is a complicated procedure where an interdisciplinary approach is needed. It requires specific technological and knowledge in the area of public transportation, where these techniques need to be applied in a very specific empirical setting.	High	High	Careful planning, collaboration, and stakeholder engagement.
	Micro-mobility	Development of dedicated bike lanes might meet resistance	Foster partnerships and engage all relevant parties for a coordinated and cohesive approach.	Medium	High	Regular monitoring and evaluation of the action's implementation are essential to assess its effectiveness and make necessary adjustments. Establishing key performance indicators, collecting data on modal share, emissions reduction, infrastructure usage, and user feedback enables evidence-based decision making.
	Pedestrian Network	Implementation of pedestrian network might meet resistance	Successful implementation requires an integrated planning approach considering factors such as land use, transportation infrastructure, urban design, and community needs to ensure the effective integration of the pedestrian network into the existing urban fabric.	Medium	High	Regular monitoring of key metrics, such as modal share, pedestrian volumes, safety records, and environmental indicators, provides valuable data to measure the impact of the project, identify areas for improvement, and inform future decision making.
	Vehicle Electrification	Robustness of charging infrastructure	Robust charging infrastructure network requires strategic planning to determine optimal charging locations, considering factors such as accessibility, convenience, and availability of renewable energy sources.	Medium	High	Collaboration with energy providers and local authorities is crucial to ensure the timely deployment of charging stations and address any infrastructure gaps. Regular tracking of key performance indicators, such as EV adoption rates, emissions reduction, and infrastructure expansion, will ensure the action's effectiveness.
	Freight Transportation	Resistance from stakeholders to collaborate	Engage with relevant stakeholders, including freight carriers, logistics providers, manufacturers, and local authorities, to ensure their active involvement and support.	Medium	High	Invest in the development of supportive infrastructure, such as loading zones, and intermodal terminals. Additionally, encourage the adoption of advanced technologies, such as telematics, automation, and data analytics, to optimize freight operations and improve overall efficiency. Regularly monitor to assess their effectiveness through KPIs.

Fields of Action	Sectoral Project	Risks Identified	Description of Risk	Likelihood of occurring	Impact	Mitigation of Risk
Transportation	TDM Plan	Unsuccessful implementation of a TDM Plan	Effective implementation requires supportive governance structures and policies.	Medium	High	Regular monitoring and evaluation using metrics such as modal shift, vehicle kilometres travelled, greenhouse gas emissions, and public perception can help track progress. Implementation should be viewed as an iterative process, with ongoing evaluation and feedback mechanisms. Regular review of the performance and incorporation of new technologies and innovative approaches ensuring that the strategies remain relevant and effective over time.
	Smart Technologies	Unsuccessful implementation of smart technologies	Inter-disciplinary process. Implementing smart technologies, there is a need for robust data management and privacy measures.	Low	Medium	Regular monitoring and evaluation of the implemented strategies are vital to assess their effectiveness and make necessary adjustments. Collecting data on KPIs, such as emissions reductions, mode shifts, and user satisfaction, provides valuable insights for future improvements. As technologies advance and cities evolve, the implemented solutions should be able to accommodate future growth and changing needs, ensuring long term sustainability.
Built Environment	Deep Building Renovation & New carbon-neutral buildings	No established measures to monitor building stock performance	There are no established measures to monitor building stock performance	Medium	Low	No mitigation
	Deep Building Renovation & New carbon-neutral buildings	Professional practice is only recently integrating environmental assessment schemes for high performance buildings	Professional practice in Cyprus is only recently integrating environmental assessment schemes for high-performance buildings.	Medium	Low	Theoretical training and establishment of building monitoring/metering for commissioning purposes.
		Construction companies lack competence in high performance buildings	The deep renovation of existing buildings and the construction of carbon-neutral buildings require very skilled workforce. In particular SMEs do not typically have the required skills to install advances HVAC components,	Medium	High	Provide hands-on and theoretical training for upskilling and reskilling the construction workforce.

			provide airtight envelopes, integrate multifunctional devices.			
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Built Environment	Urban Regeneration	Lack of local companies making high performance materials/components, resulting in a strong dependence on imports	The deep renovation of the building stock of Limassol at a rate compatible to achieve the NZC target requires huge quantities of building materials (e.g., insulations, membranes) and components (e.g., high-performance windows and doors, HVAC components, sensors, wires). The lack of an established local supply chain is a crucial barrier, resulting in a strong dependence on imports.	High	High	Set a national industrial plan to stimulate local industrial production and require the establishment of effective supply chain for the materials and components that won't be produced and/or assembled locally.
		Lack of an established network of weather stations	There is a lack of an established network of weather stations to monitor environmental parameter (mostly related to the thermal and air quality domains) in different areas of the city. It is an opportunity to model the city with mesoscale models and identify the most relevant spot where more severe conditions may happen.	Medium	Medium	Install a network of weather stations in several spots of the city to monitor environmental parameters affecting citizens' health and quality of life, for example, the thermal environment and air and noise pollution.
		Economic inequality, soaring prices, increasing interest rates, rising construction costs, and stagnant wages	In the last years, induced by the COVID19 pandemic and exacerbated by the Russian-Ukrainian war, we have assisted soaring prices, increasing interest rates, rising construction costs, and stagnant wages causing the rise of economic inequality.	High	High	Targeted subsidies and grants to support vulnerable groups in the climate transition.
		Displacement of local people	The increase of the real estate prices in the centre and coastal areas of the city are causing the displacement of local people to suburbs and more prereferral areas.	Medium	Medium	Targeted planning incentives to restrict real estate prices in the city centre.
		Loss of place character	High regeneration projects are substantially changing the morphology, functions and identity of some areas of the city causing a loss of the original place character.	Medium	Low	Imposing building standards
		Abandoned spaces and buildings	As in other cities of Cyprus, also in Limassol there are abandoned spaces and buildings,	High	Medium	Targeted fiscal incentives/ disincentives

			which will not be easily regenerated or renovated.			
						De-risk deep energy renovations: Overcoming the current investment gap by mobilising private financing through providing long-term funding to final beneficiaries and reducing project financing risk.
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Built Environment	Urban Regeneration					Risk mitigation strategies: Developing risk mitigation strategies to address financial uncertainties and risks associated with deep renovation projects. This involves mechanisms such as insurance products, loan guarantees, and performance-based contracting arrangements. These strategies reduce the perceived risks for investors and financial institutions, enhancing their confidence in supporting deep renovation initiatives.
Energy Systems	Change of the energy mix	Key events are likely to be delayed	Market Liberalisation, interconnection are likely to be delayed	Medium	High	No mitigation
		Dependence on national authorities	The implementation will take place if the pledges made by national authorities are fulfilled	Low	High	While these changes are part of the official national energy strategy for 2030 as submitted in the NECP to the EU commission, their implementation is not binding (e.g., the arrival of Natural Gas for electricity production has been touted before but not yet materialised).
	Energy community	Roofs/land available	Limited availability of roofs and land	High	Medium	No mitigation
		Regulatory framework	The regulatory framework is under development and is expected to be presented by CERA within the next months.	Medium	High	No mitigation immediately. A regulatory sandbox may be put in place to test different models.
		Unknown model for Cyprus	There is no previous experience in establishing energy communities.	Medium	High	Perform research and get guidance from other EU cities that have experience in the Energy community model.
		Mobilisation of citizens	Convincing people to join an energy community and become part of the energy transition might prove difficult	Medium	High	Organise campaigns to educate people about the importance of the energy transition. Moreover, give incentives to people who join energy communities.

	Install a 200kWth Fresnel system	Ceilings and applications available	Fresnel systems require large areas to be installed. Fresnel systems provide low and medium heat.	Medium	High	They can be considered suitable for the majority of industrial applications in Cyprus.
		Relatively unknown technology / lack of familiarity	There is not much experience in this type of technology.	High	Medium	Just Transition Plan, train the workforce on this technology.
	Install a 200kWth Fresnel system	Cost	Fresnel systems require high initial capital costs.	High	High	Get guidance from experts to reduce installation costs and pursue green financing schemes
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Energy Systems	Renewables in residential buildings with behind-the-meter storage	Roofs available	Limit of available roofs for installation of local PV systems	High	Medium	Engage citizens and provide technical support to identify available rooftops and also to explain the scheme of net-metering, where citizens are allowed to install photovoltaics at a different location. Utilise alternative structures for shading and farming.
		Available workforce	Limitation of available companies and trained personnel to install pv systems	High	High	The Government should provide incentives for people to get trained in the respective field and found new companies to follow the increased demand
		Availability of materials	Increased demand in renewable technologies	High	High	There is an increased demand in renewable energy technologies, especially photovoltaics. Given that photovoltaics are imported in Cyprus and there is no local production if demand increases significantly, it could become a medium risk and delay the implementation.
		Licensing speed (electrical connection)	Delay in licencing and connection to the grid for renewables due to increased demand	High	High	The TSO and DSO should simplify the process and request more personnel to carry out the licensing process more effectively
		Timeframe	Availability of private companies to install photovoltaics might be limited given the timeframe.	High	High	Training and upskilling
		Capability of absorbing energy from the grid	The Cyprus power system is isolated and has high variations in the demand which poses challenges to the stability of the system. Further, in specific nodes there is a need of upgrade to be able to absorb more electricity from renewables	High	High	Electricity storage systems that are proposed in the system will tackle this issue to a large extent, as the producers will be able to store their energy and limit the electricity exchange with the grid.

	Install heat pumps at commercial and residential buildings	Workforce / businesses	Availability of technicians might be limited to carry out all these projects.	High	High	The Government should provide incentives for people to get trained in the respective field and found new companies to follow the increased demand
		Collective decision requirement	The replacement of existing diesel burners with heat pumps in existing buildings is a challenge for blocks of flats who need a collective decision for such significant investments.	High	Low	Engage blocks of flats and explain the benefits of installing a central heat pump. Further, economic incentives might be offered if required.
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Energy Systems	Install heat pumps at commercial and residential buildings	Availability of heat pumps	Increased demand in heat pumps	Medium	Low	There is an increased demand in heat pumps in Europe. Given that heat pumps are imported in Cyprus and there is no local production if demand increases significantly, it could become a medium risk and delay the implementation.
		Initial cost	Heat pumps have a significant high capital cost.	Medium	Medium	Offer support to consumers who will install heat pumps
	Centralised RES generation and long-term storage	Scale of project is high	Complex process involving multiple stakeholders.	High	High	A critical aspect is the correct optimisation of the system to serve city needs, and effective deployment of demand-side management measures, and the legal representation of the city.
Green Infrastructure and Nature Based Solutions	The “Green Infrastructure and Nature Based Solutions” field of action is included in the “Urban regeneration” action of the “Built Environment” portfolio of actions.					
Waste and Circular Economy	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production	Attraction of participating businesses	Interest of businesses may be low	Medium	High	Incentive programs for electronic waste and battery recycling must be economically viable. The collaboration with Green Dot Cyprus should be leveraged to maximize efficiency in packaging waste management.
		Difficulty in successful implementation of waste reduction and recycling initiatives	Successful implementation of waste reduction and recycling initiatives in Limassol requires careful planning, collaboration, and ongoing evaluation. Adequate resources and active participation from stakeholders are crucial.	Medium	High	Regular monitoring is necessary to identify areas for improvement. Engaging businesses, residents, and educational institutions is essential for long-term success. Clear goals, effective communication, and commitment are key to achieving desired outcomes.

		Anaerobic digestion and biodiesel production programs	Anaerobic digestion and biodiesel production programs	Medium	High	Establishing efficient and convenient collection systems is critical. Partnerships with local businesses could be beneficial in enhancing the effectiveness and reach of these programs.
		Home composting program and the proper disposal of used cooking oil	Participation from citizens might be low	Medium	Medium	Educational and promotional campaigns will also be essential to encourage participation in the home composting program and the proper disposal of used cooking oil. Partnerships with local businesses could be beneficial in enhancing the effectiveness and reach of these programs.
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Waste and Circular Economy	Waste segregation (in house/in business) to remove organic waste for energy and fertilizer production	Dependency on community participation.	The creation of a waste exchange space promotes reuse, but success will rely on community participation and awareness.	Medium	Medium	Promote awareness to encourage community participation through promotional campaigns.
	Zero waste production (circular economy) in Limassol	Difficulty of Implementation of the "Pay-as-You-Throw"	Implementation of the "Pay-as-You-Throw" scheme in Limassol will require careful planning, effective communication, and continuous monitoring. The success of the scheme hinges on broad community participation	Low	High	Strong public awareness campaign to inform and educate residents and businesses about their roles and responsibilities. Continuous evaluation and feedback mechanisms should be in place to monitor progress, address challenges promptly, and make necessary adjustments to improve effectiveness over time.
		Switching to electronic billing and signatures.	Switching to electronic billing and signatures might be challenging.	Low	Medium	Adequate digital training for residents will be crucial.
		Tax incentives	Encouraging repair through tax incentives might burden the municipal budget.	Medium	Medium	Careful fiscal management will be needed.
		Supportive platform	Establishing a supportive platform efficacy.	Medium	Medium	Required regular updates to ensure its efficacy.
		Accurate waste tracking and fair billing	Accurate waste tracking and fair billing might be challenging	Medium	High	It's crucial to ensure the RFID or barcode technology integration is smooth and reliable, facilitating accurate waste tracking and fair billing.
Coastal and Sea Area	Design and Development of	Technical integration	Onshore electrical power instead of ships using onboard diesel generators while docked	High	High	Technical advisor needs to be engaged

	Cold Ironing Infrastructure for the Limassol Port	High costs	Technology and infrastructure.	High	High	Technological developments will be monitored since as technology matures, costs will reduce.
		Regulatory complexities	Change of legislation.	Medium	High	Engage with regulators and international maritime bodies
		Resistance	Ship owners and port operators may be resistant to change	High	Medium	Engage, inform and consult industry to ease concerns
		Limited renewables	Use of RES	High	High	Storage solutions will be examined
		Grid constraints	Implementation of the power stations in suitable locations.	Medium	High	Potential upgrade of power stations
		Uncertain ROI	The project might have a low ROI and thus be unattractive for port operators	Medium	High	Possibility of grant will be examined
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Coastal and Sea Area		Stakeholder coordination	Various stakeholders needed to align.	Medium	Medium	Project management best practises will be applied
	Carbon neutrality in Blue Infrastructure – The case of Limassol Marina	Bureaucratic procedures	Action Plan licensing and implementation	High	Medium	Engage with regulators and relevant stakeholders
		Involve end-users and stakeholders.	Various stakeholders needed to align.	Medium	Medium	Project management best practises will be applied
		Access sensitive data.	Integration of fragmented data.	Medium	Low	Apply best practises relating to GDPR and data management
	Mitigation of Risks to the Coastal Area through Technology Tools & Integrated Data Management (MERA)	Funding	Financing difficulties	High	High	Examine the possibility of a grant
		Fragmentation of monitoring authorities	Alignment of monitoring authorities	High	High	Engage with regulators and relevant stakeholders
		Involve end-users and stakeholders.	Various stakeholders needed to align.	Medium	Medium	Project management best practises will be applied
		Access sensitive data	Integration of fragmented data.	Low	Low	Apply best practises relating to GDPR and data management
	Assessing carbon stock and sinking potential of seagrass meadows in Limassol coastal waters	Lack of verified data	Verified data required on many aspects of the sustainable agenda	High	High	Triangulation of data
		Securing EU and national funding.	Financing difficulties	High	High	Engage with a financial advisor to obtain EU funding
		Piloting change	The action needs to be implemented on a piloting basis.	Medium	Medium	No mitigation
		Restoration may never be feasible in these waters.	Degradation of Limassol seagrasses cannot be halted since pollution from Limassol city cannot be stopped.	Medium	High	No mitigation

	and pilot restoration	Restoration methods	Not sustainable yet.	High	High	No mitigation
	Assessing carbon stock and sinking potential of seagrass meadows in Limassol coastal waters and pilot restoration	Funding required to implement the above can exceed €1 million	Financing difficulties	High	High	Engage with a financial advisor to obtain EU funding
		Trial stage	Transplant trials across EU are still at RTD stages.	Medium	Medium	No mitigation
		Infrastructure	Infrastructure to grow seedlings will be needed.	High	Medium	No mitigation
		Permits	Permits for mass restoration not granted by authority.	Medium	Medium	Engage with relevant stakeholders
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
Coastal and Sea Area	Wave Energy Harnessing for Water Desalination	Potentially legislative	Potentially legislative in nature, has not been done before anywhere in the world.	Medium	High	Engage with relevant stakeholders
		Standardized frameworks	There are no standardized frameworks. However, guidelines exist (e.g., Lloyds Register, DNV)	Medium	High	Engage with policy expert to prepare framework
City Wide Risks (Cross Cutting)	Urban Digital Platform (UDP)	Difficulty in successful implementation of UDP	Difficulty in successful implementation of UDP	Medium	Medium	The implementation of UDP requires close collaboration between the leaders and stakeholders of the vertical fields of action, the municipality and the technical team of the horizontal field of action (i.e., the smart transformation)
	Urban Digital Platform (UDP)	Inadequate contribution by the vertical thematic partners with respect to requirement specification and identification of needs	This may lead to delays and failure to meet the deadlines	Medium	Medium	Close monitoring, plan assessment and re-adjustments on the implementation plan
	Urban Digital Platform (UDP)	Lack of resources	This may lead to delays and failure to incorporate all vertical fields needs	Medium	Medium	Efficient utilization/re-adjustment of resources, secure funds from EU commission and external resources as well as prioritization of actions
	Urban Digital Platform (UDP)	Data security and compliance risks	Offer inefficient security and the platform/tools do not comply to GDPR and EU regulations	Medium	Medium	Frequent communication with experts to test and validate the platform's security and compliance

	Urban Digital Platform (UDP)	Low performance and functionality inefficiencies	The platform, smart apps and intelligent modules perform poorly with respect to speed, accuracy, efficiency, etc	Medium	Medium	Employ rigorous tests, re-design the components, modules, algorithms.
	Urban Digital Platform (UDP)	Fragmented Infrastructure	Challenges with Integration and Interoperability	Medium	Medium	Clear architecture design and implementation plan with detailed documentation for integration as well as data models and APIs for utilizing the platform
	Urban Digital Platform and Smart Apps	Poor Adoption by the public	The public may not accept and consequently not use the digital platform and the smart apps	Medium	Medium	Implement and frequently assess and update the plan for raising awareness regarding the benefits of digital transformation.
	Urban Digital Platform and Smart Apps	Conflict with existing governmental plans for digitization	Existing national strategies on digitization and digital transformation may become an obstacle for effective incorporation of UDP and smart apps to municipality's daily operations.	Medium	Medium	Political decision making for ensuring the successful execution of the proposed plan.
Fields of Action	**Sectoral Project**	**Risks Identified**	**Description of Risk**	**Likelihood of occurring**	**Impact**	**Mitigation of Risk**
City Wide Risks (Cross Cutting)	Smart Apps and Intelligent Modules	Inexperience / Lack of knowledge on using new software	Employees are not familiar with new green technologies and operations.	Medium	Medium	Re-skilling employees and be remote-ready: Train employees on green technologies, energy-efficient process management and operations, as well as environmental impact mitigation.
	Intelligent modules	Unfamiliar Technology for involved users	The interested parties find difficulties in using the smarts apps and the intelligent modules.	Medium	Medium	Provide support to partners for their day-to-day operations as well as give emphasis on the user needs
	Digital Transformation - Green IT	Limited replacement of electronic devices	Limassol citizens, governmental organizations and companies do not accept to replace their existing electronic devices and/or switch to the cloud.	Medium	Medium	Offer incentives such as the «Εξοικονομώ – Αναβαθμίζω στις Κατοικίες» model
	All Projects	Failure to raise capital	Failure to mobilise private capital and insufficient support from public capital sources will result in failing to implement the investment plan.	Medium	High	Financial advice is necessary for the successful implementation of the investment plan from the early stages. Technical, legal and financial feasibility is essential and needs to be assessed and updated at all stages to ensure that resources are directed in an effective manner and allocated efficiently. This will also allow to consider different forms of financing depending on the risk profile and return of each project.

Table 14: List of Project level Risks

5.3 Module IP-C3: Capacity Building and Stakeholder Engagement for Capital and Investment Planning

You should assess and finally work to develop internal capacity and capabilities, working with both internal and external stakeholders to accelerate the transition to climate neutrality by 2030.

C-3.1: Textual element
This section is a self-assessment of the internal capacity of the Municipality for implementing the Investment Plan and the connections to different stakeholders that can help finance the transition to climate neutrality. This stakeholder mapping focuses on building capacity by developing skills and capabilities related to capital planning and financing initiatives with the help of key stakeholders. The goal is to ensure adequate capacity within the city municipality to achieving climate neutrality. The engagement of the stakeholders is essential for the successful implementation of the plan. The municipality may already have connections (e.g., Cyprus Government) or seek to build a relationship (e.g., European Union) with relevant stakeholders. **Meetings should be arranged with the various stakeholders in order to educate the relevant stakeholders about the various Climate Actions, receive feedback and plan for further engagement.** **The Stakeholders mapping** <u>Internal stakeholders:</u> Internal stakeholders include any persons and bodies under the umbrella of the Limassol Municipality. The Municipality is responsible for the overall supervision of the Action and Implementation Plan. Currently the Municipality needs to increase its internal capacity and capability towards the generation of funds, enhancement of technical knowledge and overall achievement of the Climate Actions. The following steps are considered: - Informing staff on the Municipality's goals and overall strategy for achieving climate neutrality - Training staff on marketing and communication strategies in engaging with the various stakeholders - Consulting with technical and financial advisory experts to minimize the knowledge gaps on developing and delivering the Action Plan (e.g., innovative financial instruments, technical feasibility studies, etc.) - Digital transformation to facilitate and enable the implementation of the Action Plan <u>External stakeholders:</u> External stakeholders consist of persons and organisations who have interest or involvement with the implementation and funding of the actions. The style of participation for the external stakeholders needs to be appropriate for gaining and maintaining their ownership. Each of the external stakeholders falls below one of the following major categories: - High influence – High interest: these stakeholders are likely to be key players, have the biggest impact and will need to be fully engaged on the project. It is required to secure their engagement, commitment and collaboration through the implementation of the Investment Plan. Efficient collaboration with these stakeholders is crucial.

- High influence – Low interest: these stakeholders need to be constantly kept informed with any developments in relation to the Action Plan, even though they may not be interested in the outcome, they have high influence and power to affect the actions/projects. It is crucial to keep these stakeholders satisfied in order to ensure that they use their political power positively (i.e., towards the achievement of the actions).
- Low influence – High interest: these stakeholders will need to be kept adequately involved and informed. These people can be useful by providing their expertise and insight towards the implementation of the actions.
- Low influence – low interest: these stakeholders do not require excessive communication, however, they should be monitored, since depending on the development of the Action Plan (e.g., changes in policies, increased investment opportunities, etc.) their interest could be elevated.

Level and Type of Engagement:

- Informing - Inform these stakeholders about the project. This is one-way communication.
- Consulting - Consult with these stakeholders. This is two-way communication.
- Involving - Some stakeholders will be actively involved in the project.
- Collaborating - These stakeholders are part of the Project team.

Stakeholders involved	Network	Influence	Interest	Level and type of Engagement
Limassol Municipality - Internal	Public Sector	Medium	High	Overall supervision of the Action/Implementation Plan
European Union	EU Grant Funds	High	High	Consulting, Involving, and Collaborating: Engage with relevant bodies to assess eligibility for funding (EU grants such as LIFE) and implement action for obtaining it.
Cyprus government	Public Sector	High	High	Informing, Consulting, Involving, and Collaborating: Engage at all levels to ensure sponsorship of Limassol as a Mission City.
National Authorities	Public Sector	High	High	Involving, and Collaborating: Consult and involve National Authorities in areas where they have interest and influence to ensure the implementation of necessary reforms.
Universities/Energy consultants	Public Sector	Medium	Medium	Consulting, Involving, and Collaborating: Work together with subject matter experts to ensure technical feasibility of innovative projects
Cyprus Energy Regulatory Authority	Public Sector	High	High	Informing, Consulting: Consult and inform CERA on energy related matter to ensure their support on the necessary reforms.
Banks	Private Sector	High	Medium	Collaborating, Informing, Involving: Banks need to be involved to ensure their collaboration in deploying private capital to support climate actions.
Industrial units	Public Sector	High	Medium	Informing, Involving: Need to be informed and involved in the process to ensure acceptance of the climate actions and adoption of the climate actions.
Private Investors	Private Sector	High	Medium	Collaborating, Informing, Involving: Private investors need to be involved and made aware of the benefits to ensure their collaboration in deploying private capital to support climate actions.
Local Renewable Energy providers	Private Sector	High	High	Informing, Consulting: Inform and consult with them to ensure they have the capacity to serve the needs of the Action Plan.

Stakeholders involved	Network	Influence	Interest	Level and type of Engagement
RES companies associations	Public Sector	High	High	Informing, Consulting: Inform and consult with them to ensure they have the capacity to serve the needs of the Action Plan.
Citizens' communities	Public Sector	Medium	Medium	Collaborating, Informing, Involving: Citizens need to be informed and involved to ensure acceptance and their collaboration in deploying private capital to support climate actions.
Energy Service Unit/Ministry of Energy	Public Sector	High	High	Informing, Consulting: Consult and inform on energy related matter to ensure their support on the necessary reforms.
Land Department of Cyprus	Public Sector	High	Medium	Involving, and Collaborating: Consult and involve the Land Department of Cyprus in areas where they have interest and influence to ensure the implementation of necessary reforms.
Citizens/Private owners of buildings	Private Sector	High	Medium	Collaborating, Informing, Involving: Citizens need to be informed and involved to ensure acceptance and their collaboration in deploying private capital to support climate actions.
Entrepreneurs / Traders in connection to Energy	Private Sector	Medium	High	Informing, Consulting, Involving, and Collaborating: Entrepreneurs need to be involved to ensure their collaboration in undertaking relevant ventures and deploying private capital to support climate actions.
Contractors/builders/providers of building materials	Private Sector	Low	Low	Collaborating, Informing, Involving: Construction sector need to be involved to ensure their collaboration in building the supply chain capacity to support climate actions.
Department of Town Planning and Housing	Public Sector	High	Medium	Involving, and Collaborating: Consult and involve the Department of Town Planning and Housing in areas where they have interest and influence to ensure the implementation of necessary reforms.
Ministry of Transport, Communications and Works	Public Sector	High	Medium	Involving, and Collaborating: Consult and involve the Ministry for transportation and public works matters to ensure the implementation of necessary reforms and their support to implement the Action Plan.
Cyprus House of Representatives	Public Sector	High	Low	Informing, Involving, and Collaborating: The members of Parliament need to be informed and involved to support relevant bills of law for the necessary reforms.
European Structural and Investment funds	EU Grant Funds	High	High	Consulting, Involving, and Collaborating: Engage with relevant bodies to assess eligibility for funding and implement action for obtaining it.
Energy Service Companies (ESCOs)	EU Grant Funds	High	High	Consulting, Involving, and Collaborating: ESCOs need to be involved and consulted to ensure their collaboration as they form an integral part in a number of actions.
European Innovation Fund	EU Grant Funds	High	High	Consulting, Involving, and Collaborating: EIF needs to be consulted to assess eligibility for financing and ensure that necessary actions towards obtaining financing are pursued.
European Investment Bank	EU Funds	High	High	Consulting, Involving, and Collaborating: EIB needs to be consulted to assess eligibility for financing and ensure that necessary actions towards obtaining financing are pursued.
Ship and Port operators	Private Sector	High	Low	Informing, Involving, and Collaborating: The shipping and port industry needs to be informed and involved by obtaining their views and addressing their concerns to ensure acceptance of the proposed actions and successful collaboration.

Table 15: Stakeholder Engagement Mapping